Motor Driver Board for the BBC micro:bit

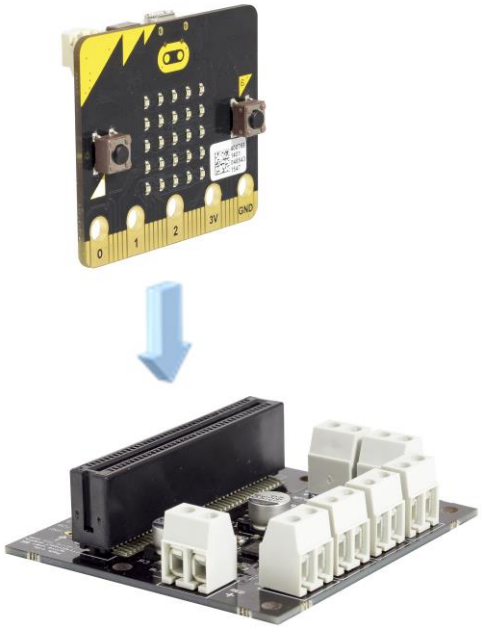
www.kitronik.co.uk/5620

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 analog 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.

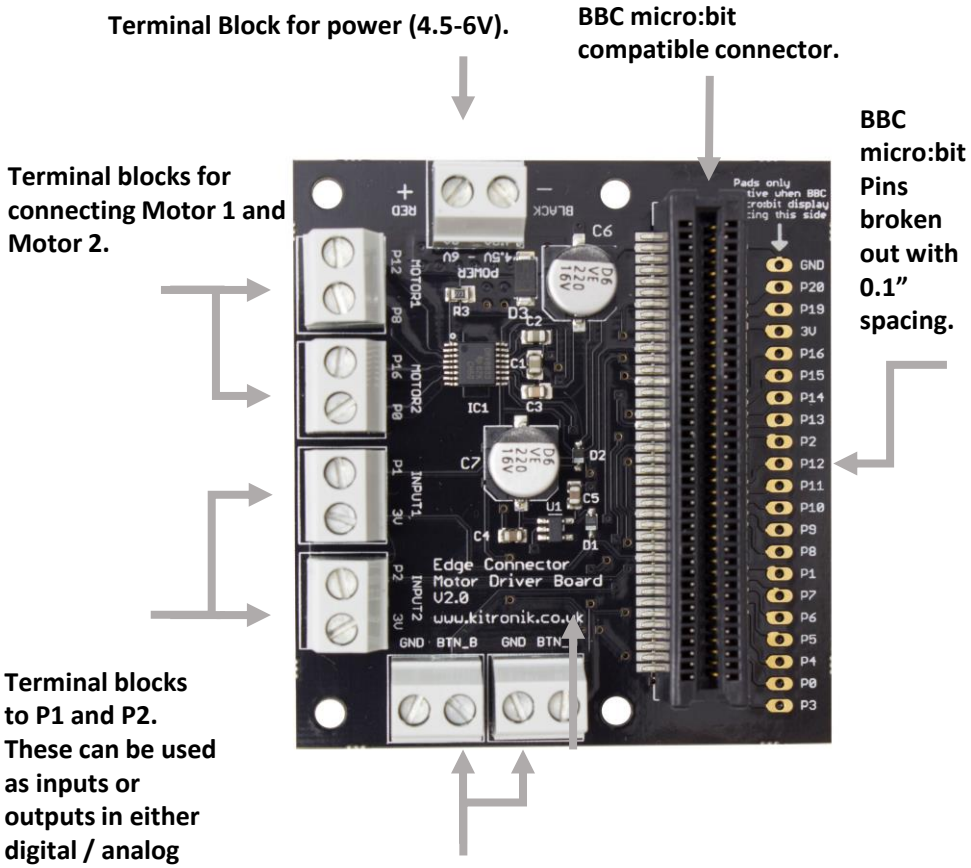


Inserting a BBC micro:bit: To use the motor driver board the BBC micro:bit should be inserted firmly into the connector as shown left.

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

Layout:



Motor Driver Board for the BBC micro:bit

www.kitronik.co.uk/5620

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	Vm = Vcc – 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

Motor Driver Board for the BBC micro:bit

www.kitronik.co.uk/5620

Example Connections and Touch Develop Code

When the Touch Develop script shown below is transferred on to a BBC micro:bit, which is then inserted into the Motor Driver Board, with the motors and switches connected as shown below right, the functionality described in the boxed areas should be observed.

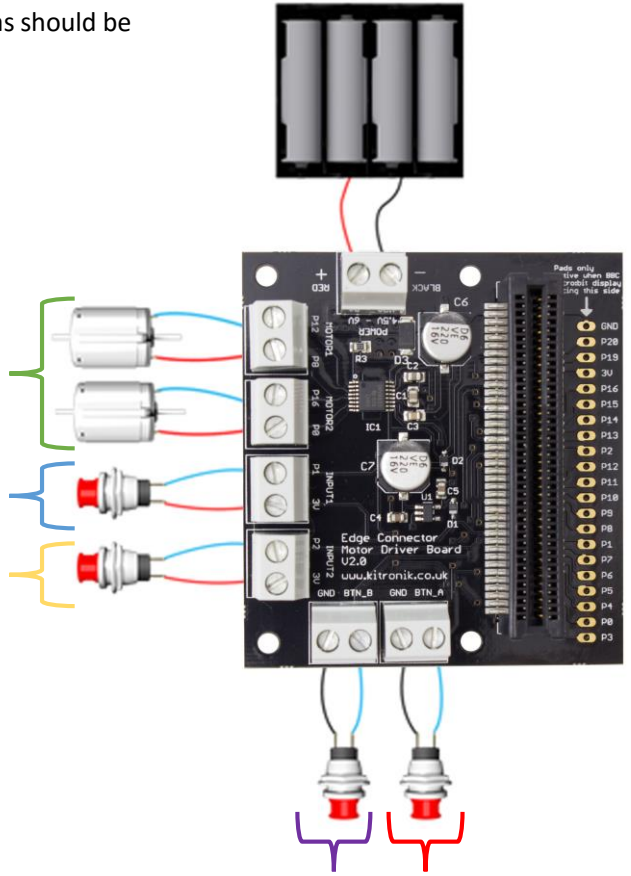
```
script 5602 test code
function main ()
    basic → forever do
        if pins → digital read pin(P1) = 1 then
            pins → digital write pin(P12, 1)
            pins → digital write pin(P8, 0)
        else add code here end if
        if pins → digital read pin(P2) = 1 then
            pins → digital write pin(P16, 1)
            pins → digital write pin(P0, 0)
        else add code here end if
        if input → button is pressed(A) then
            pins → digital write pin(P12, 0)
            pins → digital write pin(P8, 1)
        else add code here end if
        if input → button is pressed(B) then
            pins → digital write pin(P16, 0)
            pins → digital write pin(P0, 1)
        else add code here end if
    end
end function
```

If P12 is on and P8 is off then Motor 1 will spin one way. If P12 is off and P8 is on Motor 1 will spin the opposite way.

If P16 is on and P0 is off then Motor 2 will spin one way. If P16 is off and P0 is on Motor 2 will spin the opposite way.

Pressing this button connects P1 to 3V bringing it high (1) and activating the blue section of code to the left.

Pushing this button connects P2 to 3V brings it high (1) and activates the yellow segment of code.



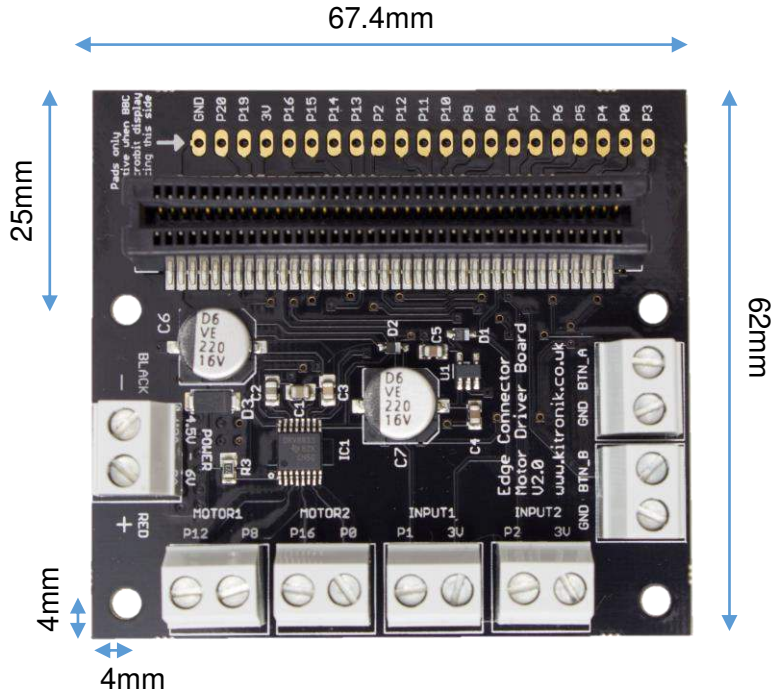
Pushing this button brings the BTN_B pin low (0) and releasing it activates the 'button is pressed (B)' function in the code.

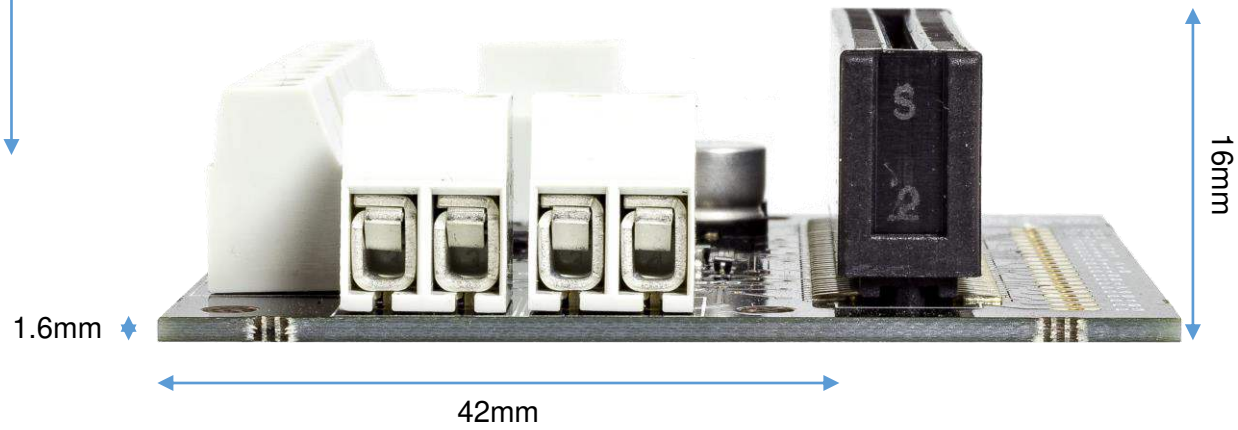
This button works the same way as BTN_B, but it will activate the 'button is pressed (A)' function in the code.

Motor Driver Board for the BBC micro:bit

www.kitronik.co.uk/5602

Dimensions





(Dimensions +/- 0.8mm)