

bit:booster

overview

DC Motor A

P1 (I/O) &
P15 (Power)

10 Neopixels BATT, GND, P2

DC Motor B

P8 (I/O) &
P16 (Power)

Servo A

BATT
GND
P13

Servo B

BATT
GND
P14

H-Bridge Disable
for using
P8
GroveB

Grove A I2C

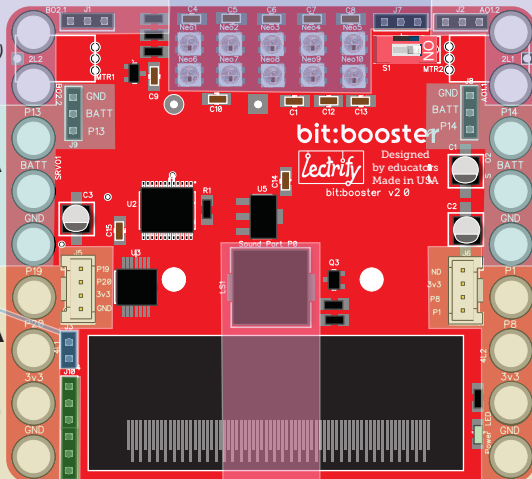
P19 (SCL)
P20 (SDA)
3.3V
GND

Grove B

P1 (A/D)
P8 (D)
3.3V
GND

Extra
pins
P3, P4,
P9, P10

Sound
P0



DescriptionPin(s)MakeCode Blocks

NeoPixels

P2

 Neopixel

DC Motors A & B

Motor A P1 (I/O) & P15 (power)
Motor B P8 (I/O) & P16 (power) Pins

Servo A & B

Servo A P13
Servo B P14 Pins

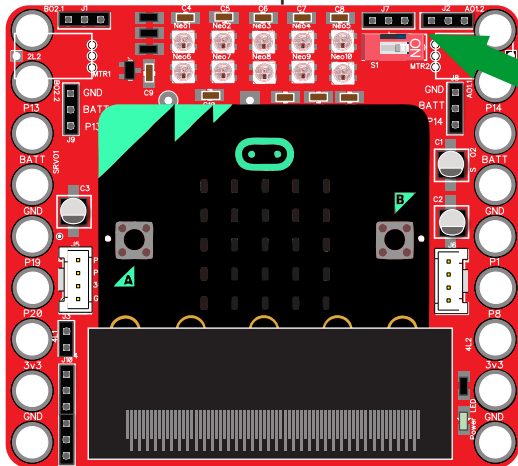
Sound (Piezo)

P0 (default for MakeCode)



 MusicGrove A & B
(Sensors)Grove A I2C P19 (SCL) P20 (SDA)
Grove B P1 (A/D) P8 (D)* Pins**Use H-Bridge disable jumper if using P8*

Visit <http://lectrify.it/bitbooster> for ideas and support.

There are 10 built in addressable RGB LEDs (NeoPixels) built into the top of the board in a 2X5 array.



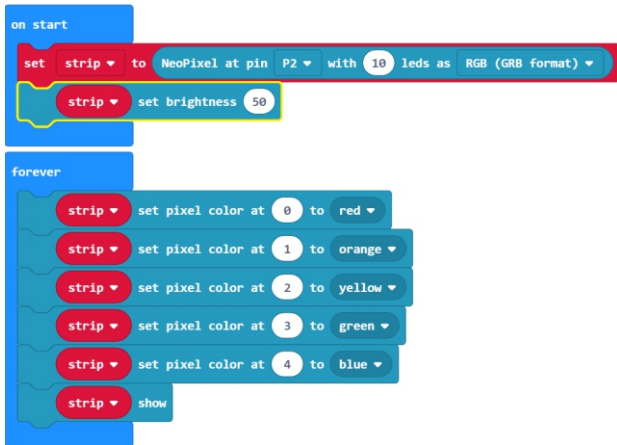
Additional NeoPixels can be powered from J7 on the top of the board (P2, Batt, GND)

MakeCode - Use  **Neopixel** blocks,
*If not visible, go into **extensions** under the  icon and select **neopixels**.*

Sample code behavior:

Start by telling the code which pin (P2) the neopixels are on and how many (10 on the board numbered 0-9). Set brightness (0-255) to 100 or lower to save power and your eyes.

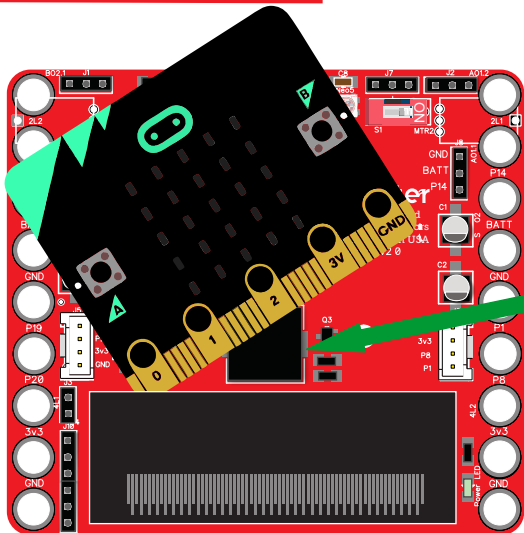
The top row of neopixels will light up as a rainbow. They are arrayed left to right. If you add additional neopixels they start at 10.



```
on start
  set strip to NeoPixel at pin P2 with 10 leds as RGB (GRB format)
  strip set brightness 50
forever
  strip set pixel color at 0 to red
  strip set pixel color at 1 to orange
  strip set pixel color at 2 to yellow
  strip set pixel color at 3 to green
  strip set pixel color at 4 to blue
  strip show
```

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sound



The built-in Piezo Buzzer can play notes and melodies and is located behind the micro:bit on the board.

MakeCode - Use  **Music** blocks

The built in piezoelectric tone generator is already configured to the default port for sound (P0). Experiment using the different blocks under the Music icon.

Start melody

dadadum ▼

Repeating

once ▼

NOTE: Since this is a tone generator and not a speaker, some of the melodies in the melody block may sound odd because of the limited frequency range of the buzzer.

Play tone

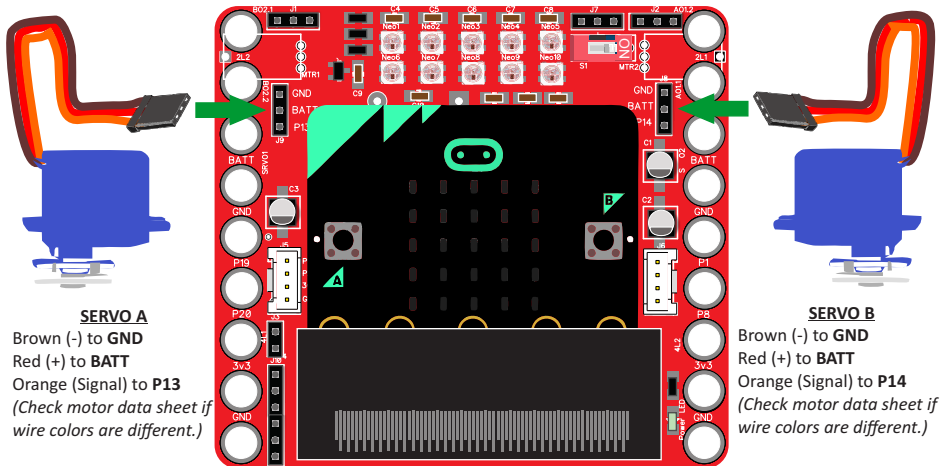
Middle C

For

1 ▼ beat

Students may prefer to explore building their music note by note.

Servo A and Servo B use 3-pin connectors for standard Servo Motors



There are two types of Servo motors, Continuous (360) and 180, each is controlled differently by the same code.

MakeCode - Use  **Pins** blocks

180 Servo: Rotation degrees are entered directly as a variable.

Sample code behavior:

Motor starts at 0° waits 1 second, moves to 90° waits 1 second, then moves to 180°.

Continuous (360) Servo: Direction and power is relative to 90 (stopped).

Sample code behavior:

Motor runs full power 1 second in one direction, stops 1 second, then runs full power 1 second in the other direction.



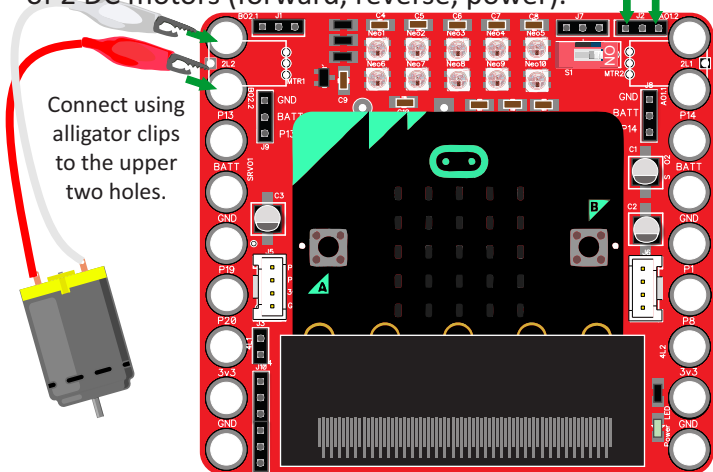
```
on start
  servo write pin P14 (write only) to 0
  pause (ms) 1000
  servo write pin P14 (write only) to 90
  pause (ms) 1000
  servo write pin P14 (write only) to 180
  pause (ms) 1000
  digital write pin P14 to 0
```

The image shows a sequence of code blocks in a Scratch-like environment. It starts with an 'on start' block, followed by a 'servo write pin' block set to 'P14 (write only)' and '0'. This is followed by a 'pause (ms)' block set to '1000'. The sequence repeats for '90' and '180' degrees, each with a '1000' ms pause. The final block is a 'digital write pin' block set to 'P14' and '0'.

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dc motors

Motor A and Motor B pins enable full control of 2 DC motors (forward, reverse, power).



Or use a 3-Pin jumper wire to the outer two pins of the vertical 3pin jumper

Motor A: direction is controlled by Pin 1 (1/0) and speed/power by Pin 15 (0-1023)

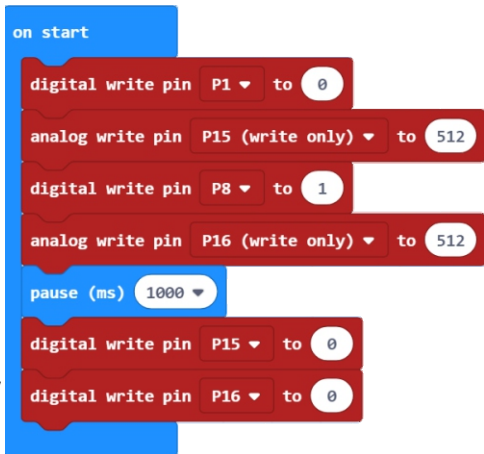
Motor B: direction is controlled by Pin 8 (1/0) and speed/power by Pin 16 (0-1023)

MakeCode - Use  Pins blocks

The speed and direction can vary between motors. Test different power levels and cable wiring options to achieve desired outcome

Sample code behavior:

Motor A moves in direction 0 at 50% power (512) for 1 second while Motor B simultaneously moves in direction 1 at 50% power for 1 second then stops. If both move in the same direction, reverse the cable on one motor. You may chose to define 1 as forward and 0 as backwards and set the cable accordingly.



```
on start
  digital write pin P1 to 0
  analog write pin P15 (write only) to 512
  digital write pin P8 to 1
  analog write pin P16 (write only) to 512
  pause (ms) 1000
  digital write pin P15 to 0
  digital write pin P16 to 0
```