littleBits™

MODULE CARDS

TABLE OF CONTENTS

INPUTS

i1 slide switch
i2 toggle switch
i3 button
i5 slide dimmer
i6 dimmer
i7 remote trigger
i11 pressure sensor
i13 light sensor
i16 pulse
i17 timeout
i18 motion trigger
i19 roller switch
i20 sound trigger
i21 microphone
i22 sequencer

MORE INFO littleBits.cc/Bits

INPUTS

i30 keyboard
i31 oscillator
i32 filter
i33 envelope
i34 random
i35 delay
i36 micro sequencer
i37 mix

MORE INFO littleBits.cc/Bits

WIRES

w1 wire
w2 branch
w3 double OR
w4 double AND
w6 Arduino
w7 fork
w8 latch
w10 inverter
w11 wireless receiver
w12 wireless transmitter
w15 NOR
w16 NAND
w17 XOR
w19 split

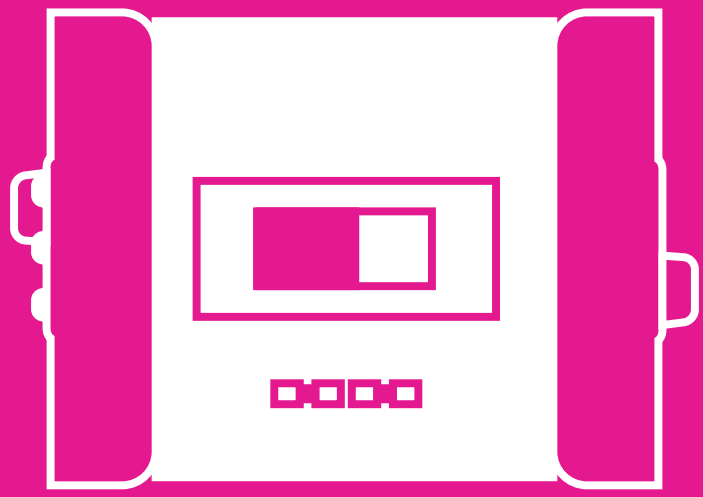
MORE INFO littleBits.cc/Bits

OUTPUTS

- 1 LED
- 2 long LED
- 3 RGB LED
- 4 vibration motor
- 5 DC motor
- 6 buzzer
- 7 IR LED
- 9 bargraph
- 11 servo
- 13 fan
- 14 bright LED
- 15 UV LED
- 16 light wire
- 21 number
- 24 synth speaker

MORE INFO littleBits.cc/Bits

littleBits™

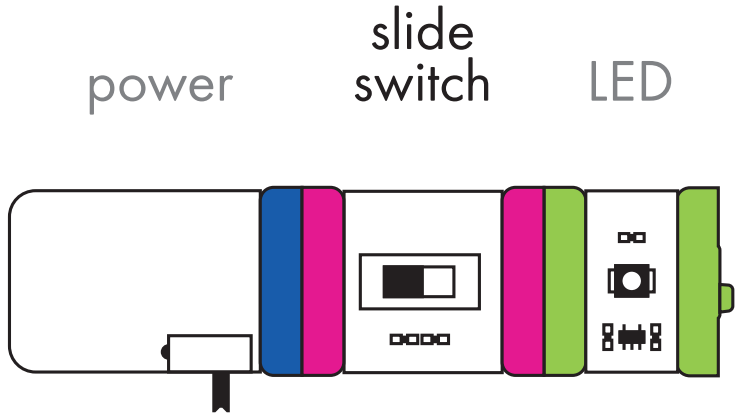


i1

SLIDE SWITCH

The slide switch is a small and convenient way to turn your creations *on* and *off*. It uses a sturdy plastic lever to switch back and forth. Try it with any of your favorite modules, like the DC motor or bright LED!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Flip the slide switch from off to on.

③ Watch your green output module turn on!

COLOR CODE

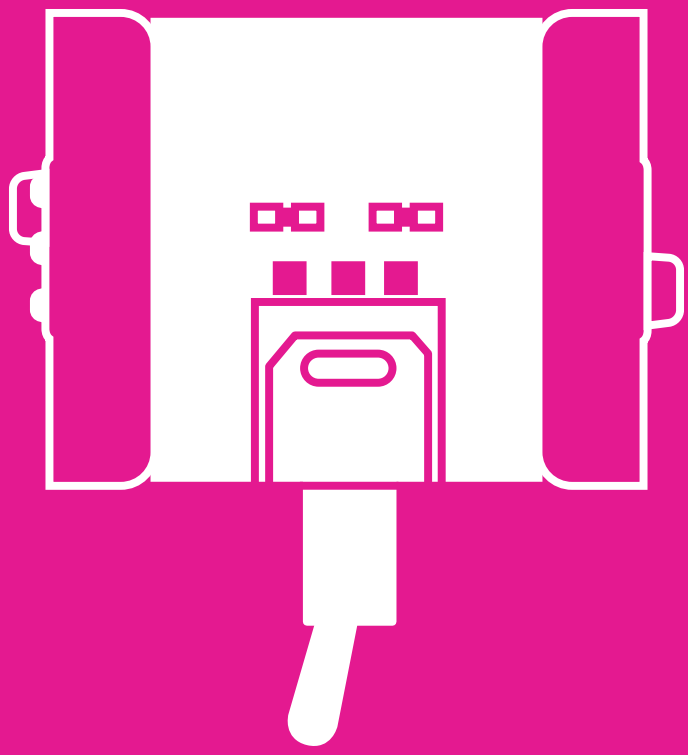
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/slide-switch

Ages 8 to ∞

littleBits™

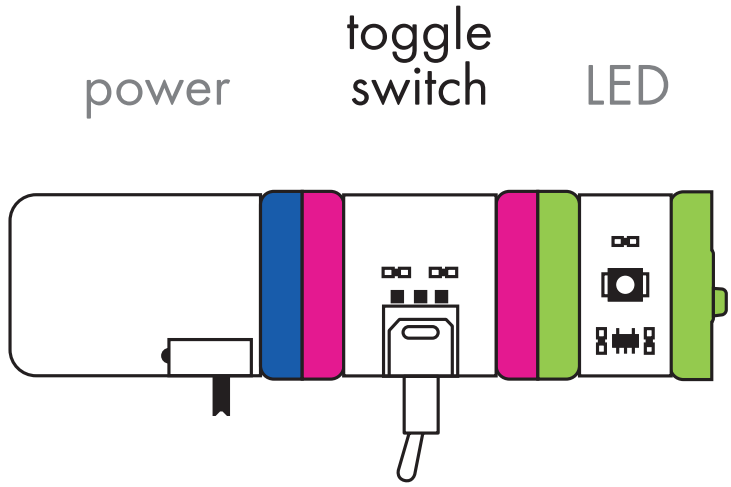


i2

TOGGLE SWITCH

The toggle switch is a sturdy *on/off* switch that you can use to activate your creations with a nice, solid click. The toggle switch gives a great look and feel to any project! Snap it in before a LED to make a lamp.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Flip the toggle switch from off to on.

③ Watch your green output module turn on!

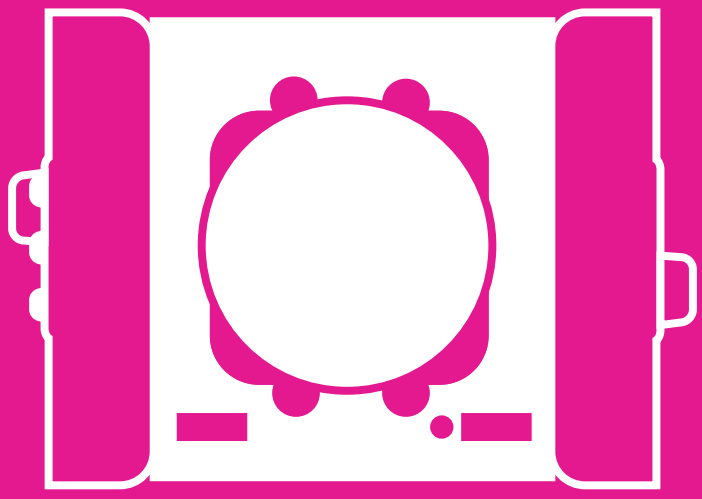
COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/toggle-switch Ages 8 to ∞

littleBits™

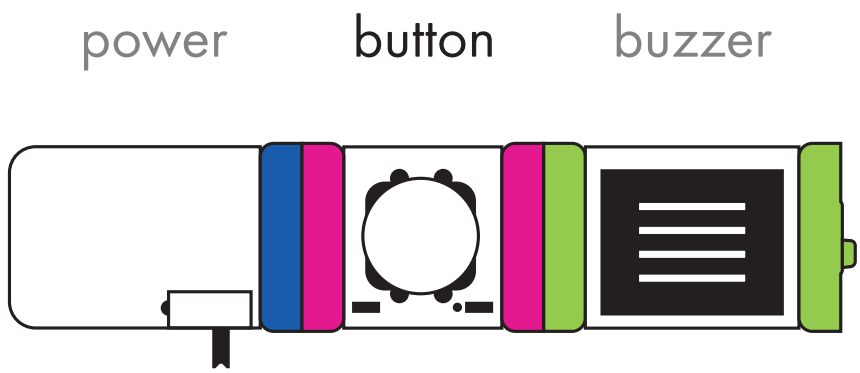


i3

BUTTON

The button module is a classic: big, round and springy for comfortable pressing! Push it to turn your creation *on*, and release it to turn it *off*. Snap a buzzer in place after your button to sound out signals in morse code!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Push the button.

③ Watch your green output module turn on!

COLOR CODE

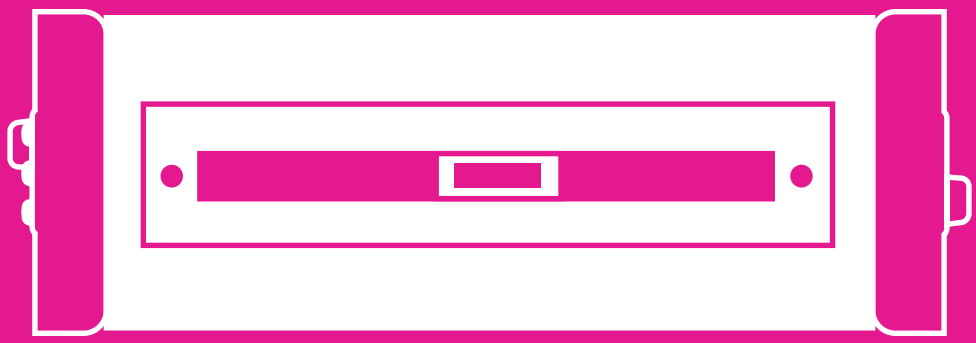
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/button

Ages 8 to ∞

littleBits™

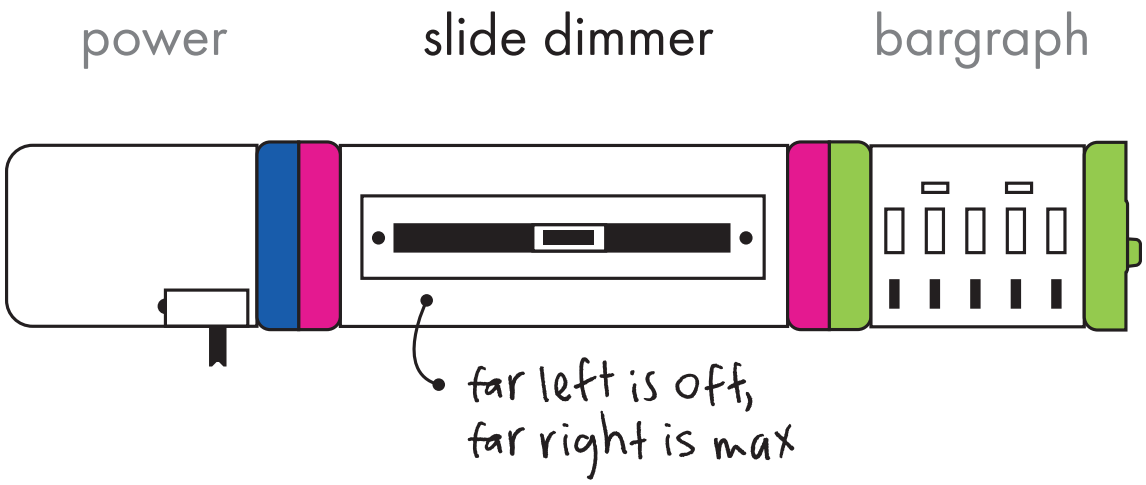


i5

SLIDE DIMMER

You control the slide dimmer by moving its slider from one end of the module to the other. It functions just like a light dimmer you might find at home, or a volume fader in a recording studio. Snap a bar-graph after it for some adjustable mood lighting.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Push the slide dimmer to the right.

③ Watch your green output module gradually turn on!

COLOR CODE

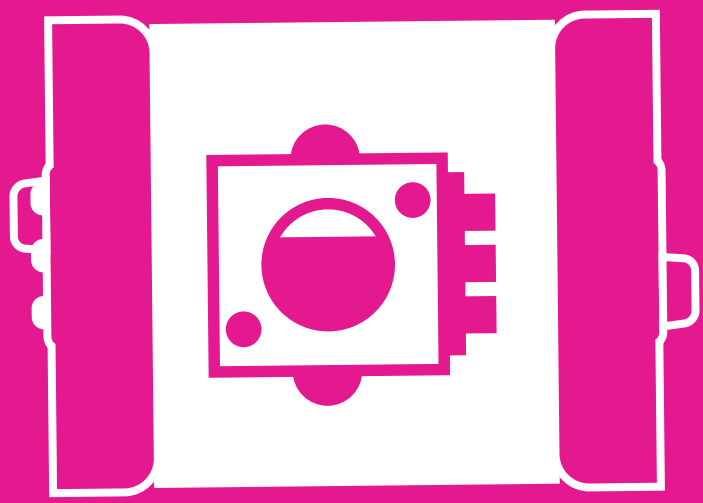
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/slide-dimmer

Ages 8 to ∞

littleBits™

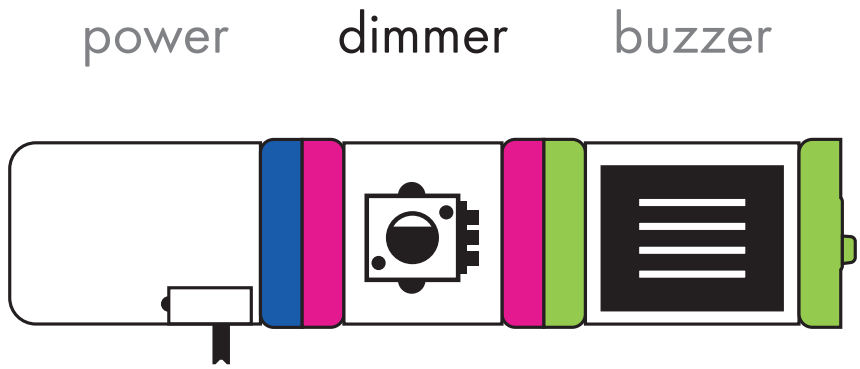


i6

DIMMER

The dimmer lets you control your creations with a simple knob, just like the volume on your stereo. Turn it clockwise to send more signal to the following modules. Try using it to control the volume of the buzzer or speed of the DC motor.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Twist the dimmer knob clockwise.

③ Watch your green output module gradually turn on!

COLOR CODE

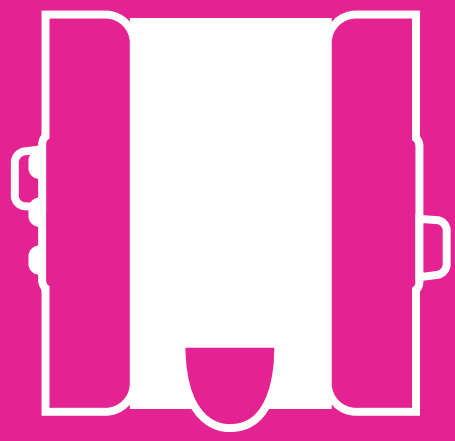
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/dimmer

Ages 8 to ∞

littleBits™

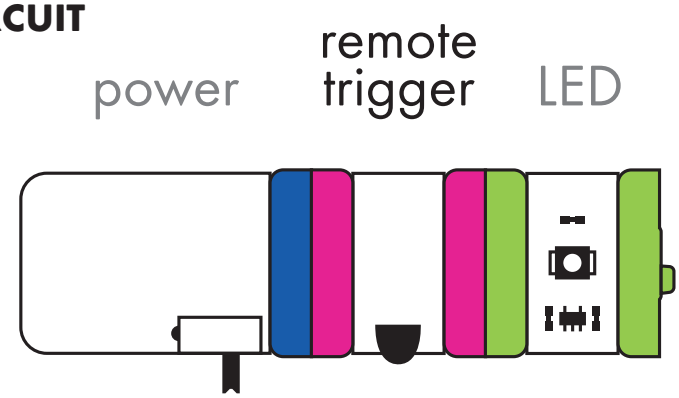


i7

REMOTE TRIGGER

The remote trigger lets you use a common remote control with your modules. Make your littleBits circuit and point your remote control at the remote trigger's sensor. Then, press any button on your remote control to activate the module. The remote trigger will work with almost any button on a remote that uses infrared light to send signals.

TRY THIS CIRCUIT



1. Start with a blue power module and turn it on.
2. Press a button on your remote control.
3. Watch your LED light up from across the room!

COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/remote-trigger

Ages 8 to ∞

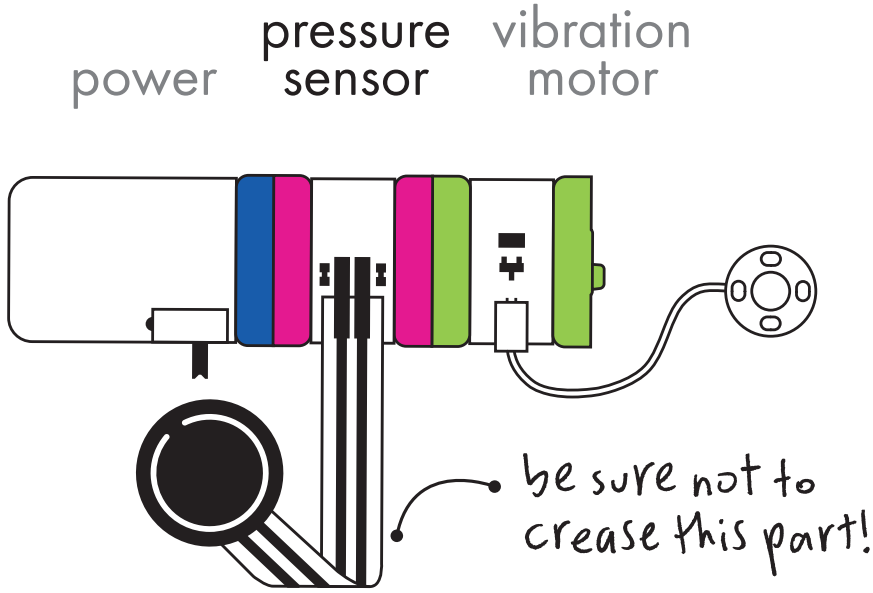
littleBits™

i11

PRESSURE SENSOR

The pressure sensor is a touch-activated module: give its pad a little squeeze to activate it. The more pressure you apply, the more signal it sends out. Put it in front of a vibration motor to control how much it shakes!

TRY THIS CIRCUIT



1. Start with a blue power module and turn it on.
2. Squeeze the circular pad of the pressure sensor.
3. Watch your green output module turn on!

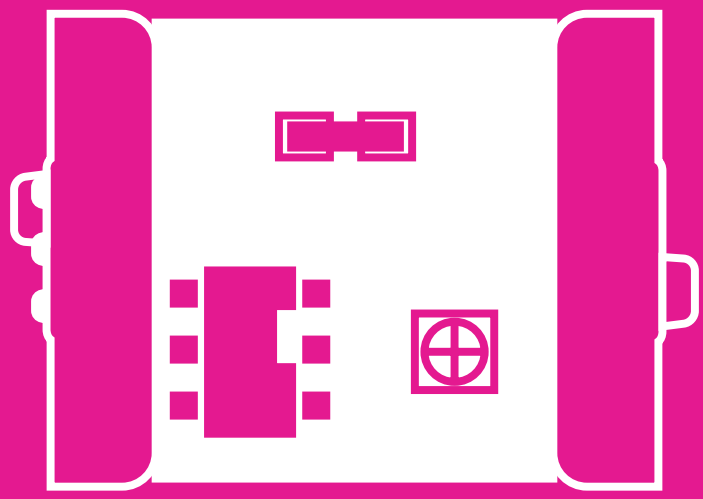
COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/pressure-sensor Ages 8 to ∞

littleBits™

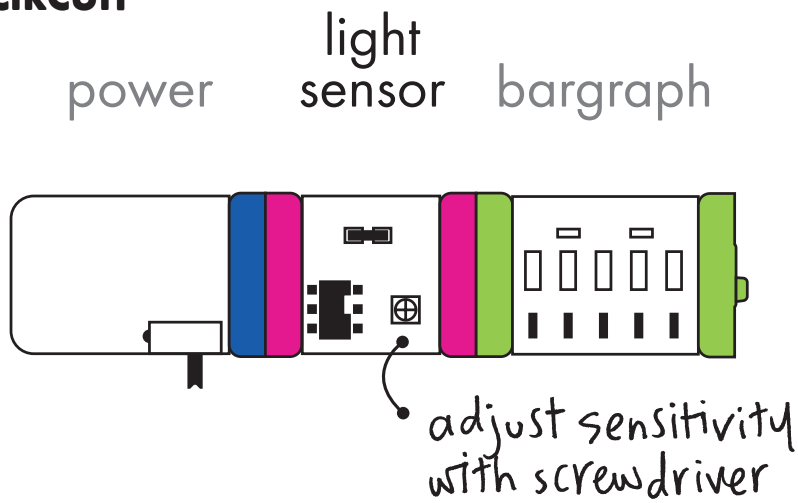


i13

LIGHT SENSOR

The light sensor measures how much light is shining on it. It has two modes: "light" and "dark." In "light" mode, the more light the sensor receives, the higher the signal it sends out. In "dark" mode, it's just the opposite – the signal increases as light decreases. You can use a screwdriver to adjust the sensitivity. Use a bargraph to see how it's working!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Set the light sensor mode to "light" or "dark."

③ Watch your green output module turn on!

COLOR CODE

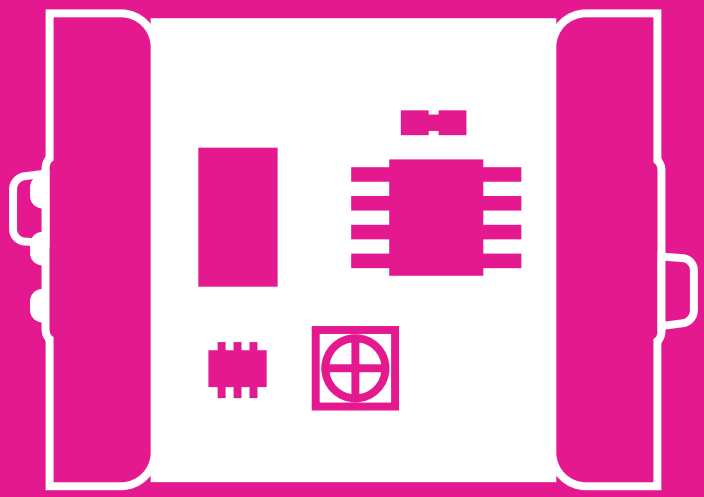
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/light-sensor

Ages 8 to ∞

littleBits™

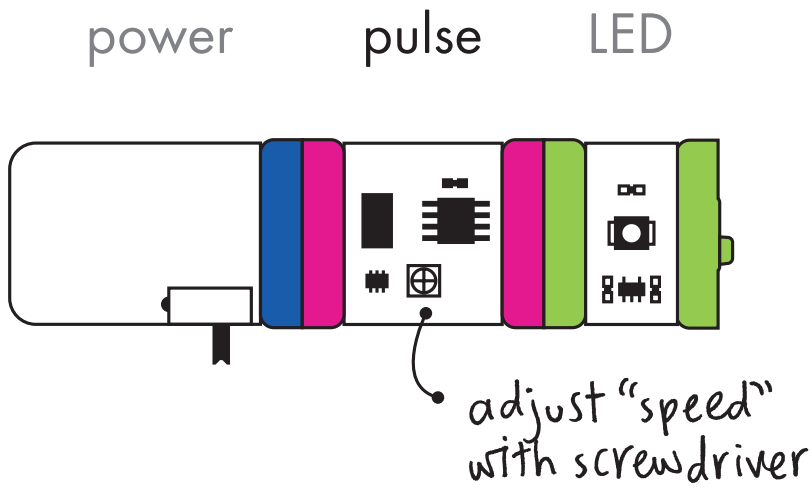


i16

PULSE

The pulse is like an electronic heartbeat. It sends out a stream of short *on* signals, and you can make the speed of the pulses faster or slower using the included screwdriver. It's great for making LEDs blink!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Use the screwdriver to adjust the "speed" of the pulse.

③ Watch your green output module activate!

COLOR CODE

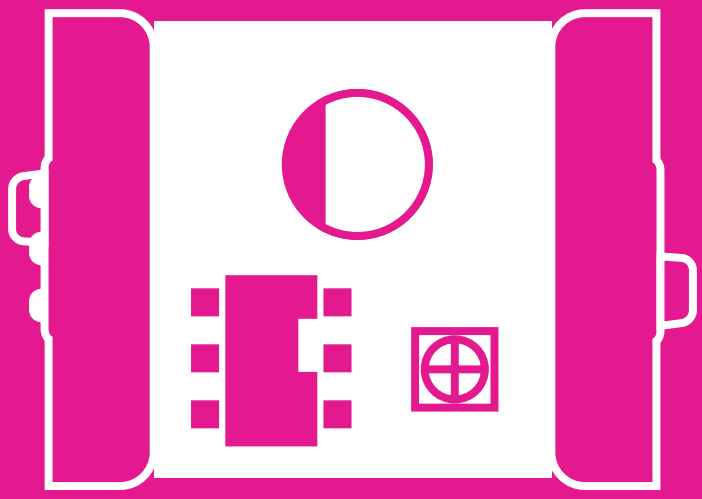
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/pulse

Ages 8 to ∞

littleBits™

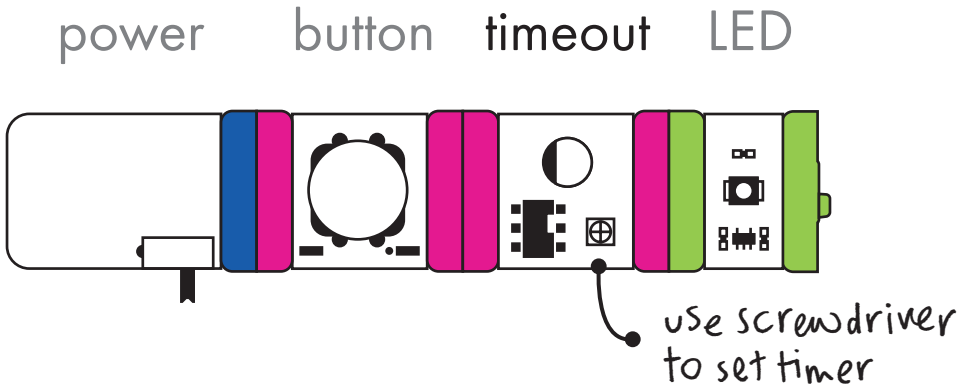


i17

TIMEOUT

The timeout is a settable timer. Try it after a button and follow it with a light. Press and release the button to start the countdown. In "on-off" mode, the light will go on as soon as you release the button and the timer will start counting down to turn-off time. In "off-on" mode, the light will go out when you release the button and will turn back on after the timer reaches the allotted time. The time ranges from approximately 1 second to 5 minutes. Try it with a motion sensor and buzzer to create an intruder alarm!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Flip the switch on the timeout to "off" or "on."

③ Watch your green output module turn on!

COLOR CODE

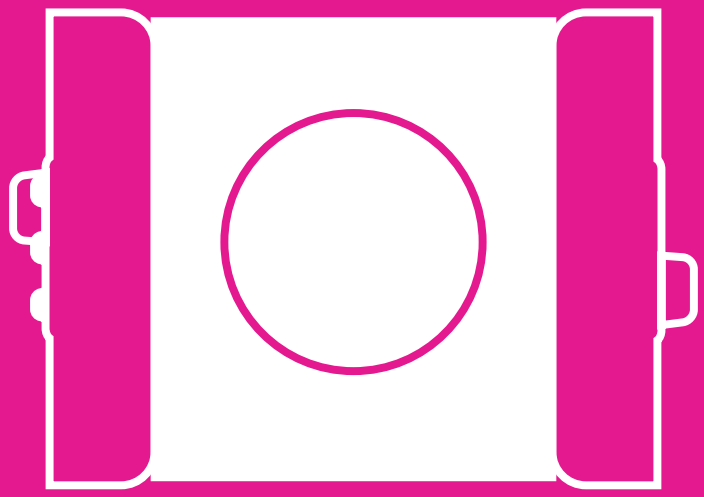
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/timeout

Ages 8 to ∞

littleBits™

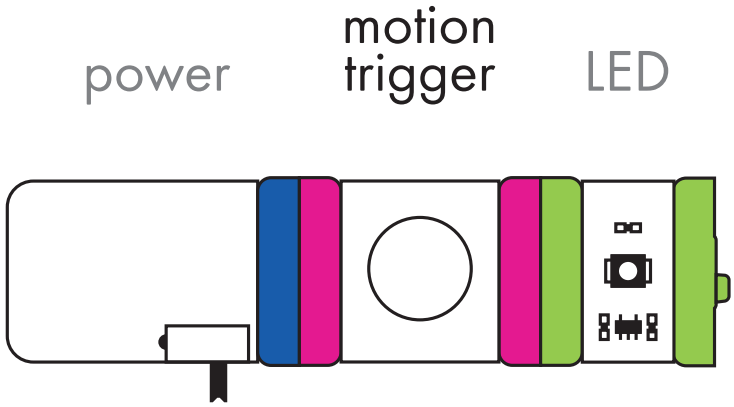


i18

MOTION TRIGGER

The motion trigger senses the slightest movement 360 degrees around it. It is similar to the sensor on an automatic door. When someone is moving nearby, it sends an *on* signal to the following module. It is very sensitive. The motion trigger can sense an area of around 10' x 10'.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Wave, dance, or move to activate the motion trigger.

③ Watch your green output module turn on!

COLOR CODE

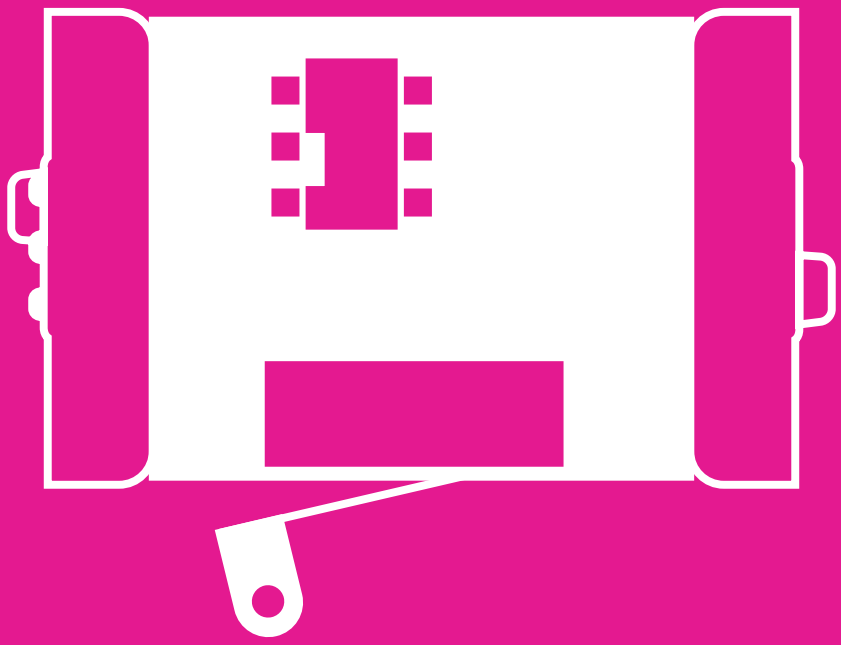
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/motion-trigger

Ages 8 to ∞

littleBits™

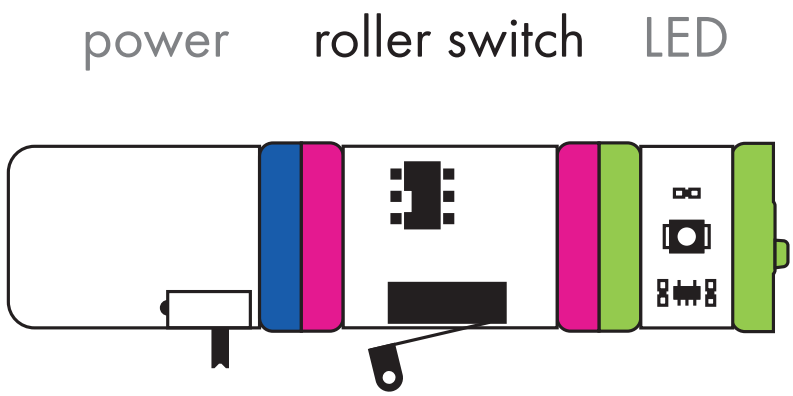


i19

ROLLER SWITCH

The roller switch is handy – it has a little lever with a wheel and activates when something presses it – just like inside your refrigerator. You can also flip the mode switch to make it turn *off* when the lever is pushed in.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Set the roller switch to "open" or "close."

③ Watch your green output module react!

COLOR CODE

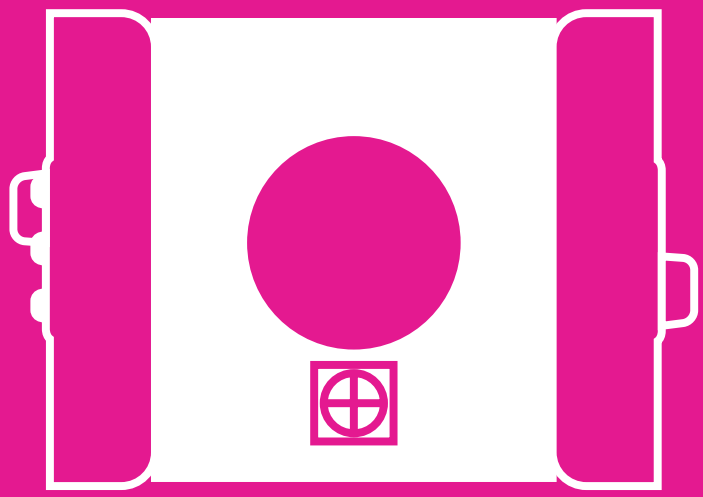
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/roller-switch

Ages 8 to ∞

littleBits™

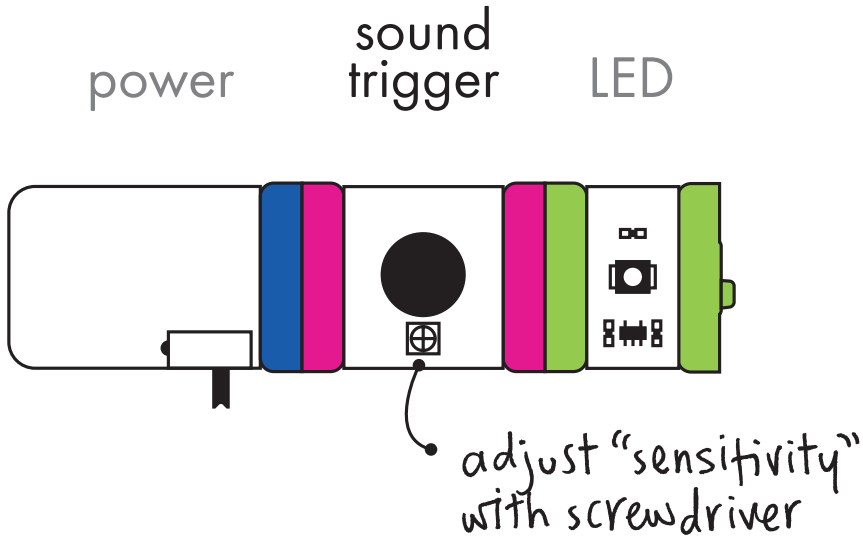


i20

SOUND TRIGGER

The sound trigger listens to the noise level in your room, and sends an *on* signal when the loudness goes over a certain threshold. You can make that target level louder or softer using the included screwdriver. We like to use it with an LED to light up your room when you snap your fingers.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Make some noise near the sound trigger.

③ Watch your green output module turn on!

COLOR CODE

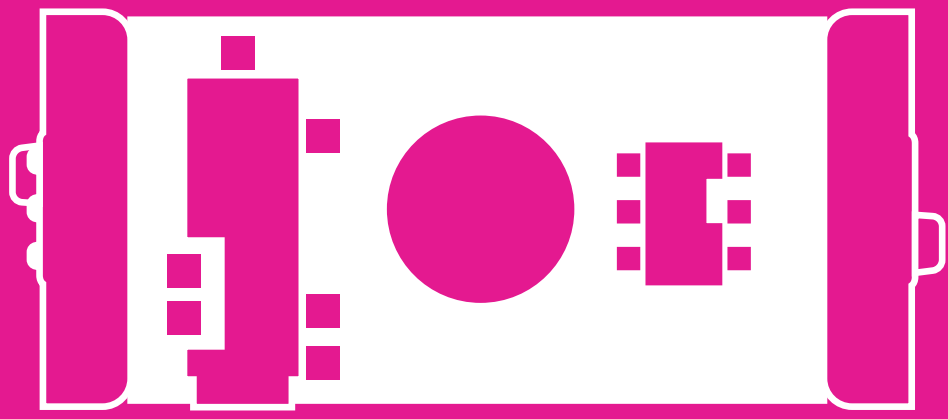
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/sound-trigger

Ages 8 to ∞

littleBits™

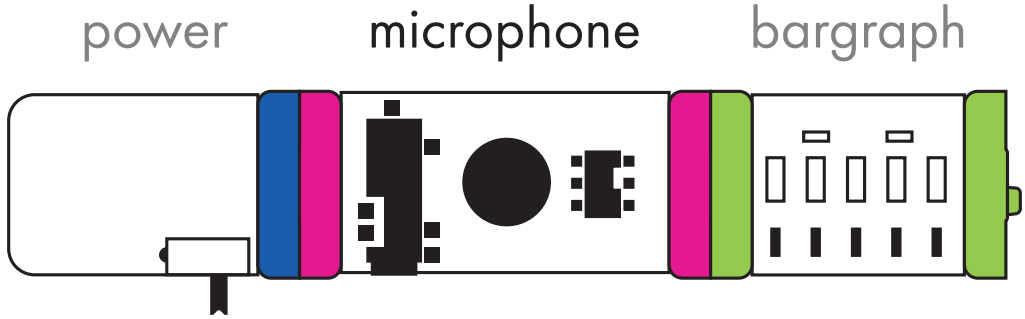


i21

MICROPHONE

The microphone translates sound into the electronic language of littleBits. You can use it to turn sounds into light or motion, or use it with the speaker like a small megaphone! Make sure the switch is set to "sound" when you're using it with the speaker, and "other" for all your other Bits modules, like LEDs and motors. The microphone also has a 3.5 mm input jack so you can plug in your computer or mp3 player.

TRY THIS CIRCUIT



① Snap to any blue power module and turn on.

② Make some noise near the microphone.

③ Watch your green output turn on!

COLOR CODE

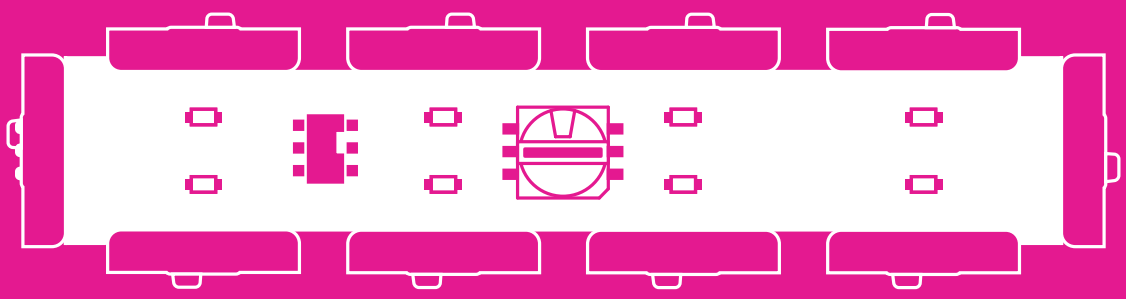
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**, **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/microphone

Ages 8 to ∞

littleBits™

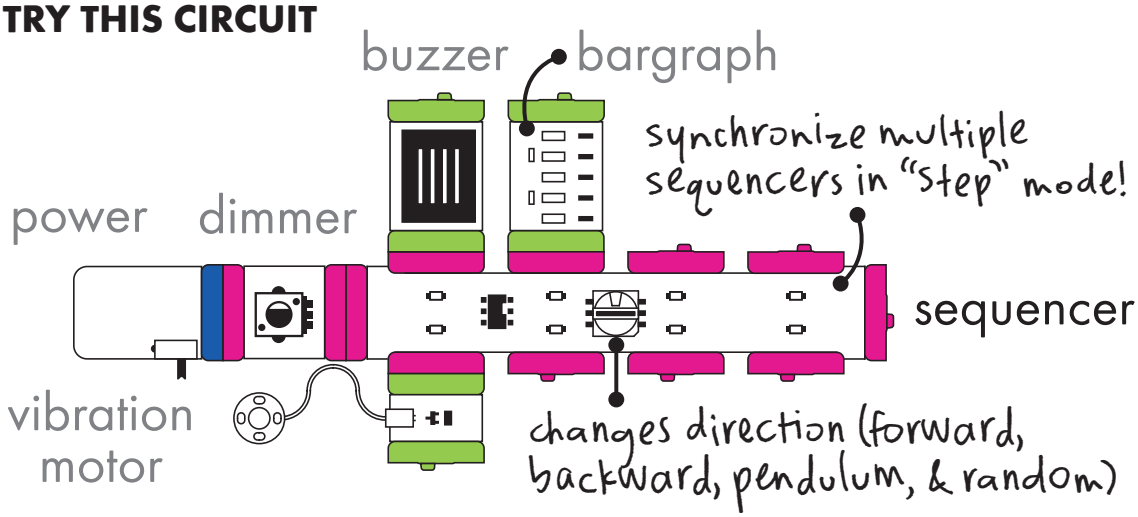


i22

SEQUENCER

The sequencer allows you to connect up to eight outputs (labeled 1 through 8) and control them in sequential patterns. In "step" mode, the sequence will advance every time the module receives a *high* signal at the input, like pressing a button. In "speed" mode, the sequence will advance at a speed determined by the input signal. Try using a dimmer to control the speed. It also features a four-position switch that lets you select the direction the sequence runs. The bitSnap™ at the end of the module pulses at the same speed as the sequencer.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Place a dimmer after the power and set the sequencer to "speed" mode.

③ Attach output modules to sequencer and see what happens!

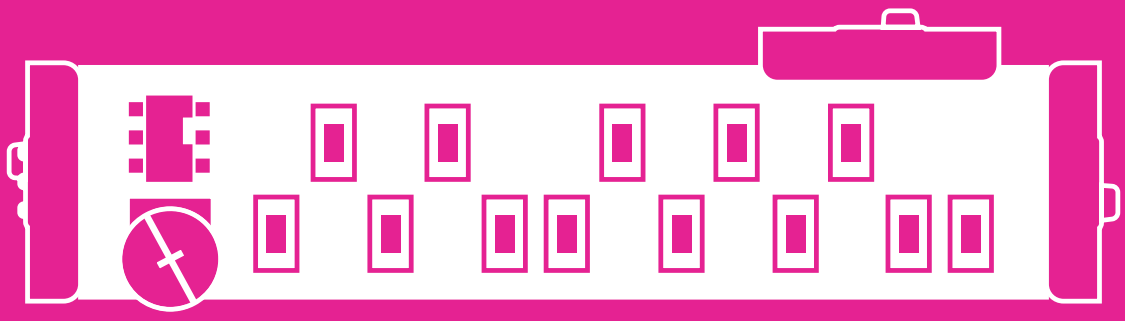
COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/sequencer Ages 14 to ∞

littleBits™

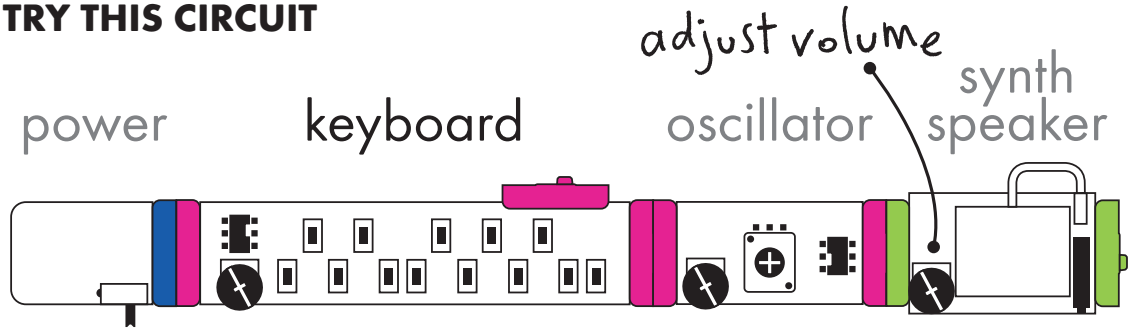


i30

KEYBOARD

The keyboard lets you play melodies – it features 13 buttons that make up an octave of notes. It has two modes: "press", which only produces output when you press a button and "hold", which will sustain the last note you played. It also features an octave control which changes the playable range. In addition to its main output, which is great for controlling our oscillators, it also has a "trigger out", which you can send to the "trigger in" of the envelope or other littleBits modules.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Press keys on keyboard to make sounds.

③ Adjust the oscillator "pitch" so you can hear it.

COLOR CODE

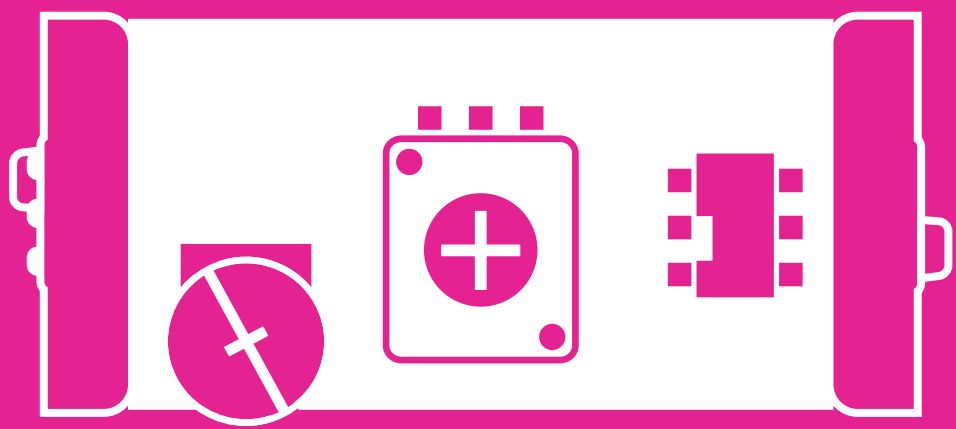
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/keyboard

Ages 8 to ∞

littleBits™

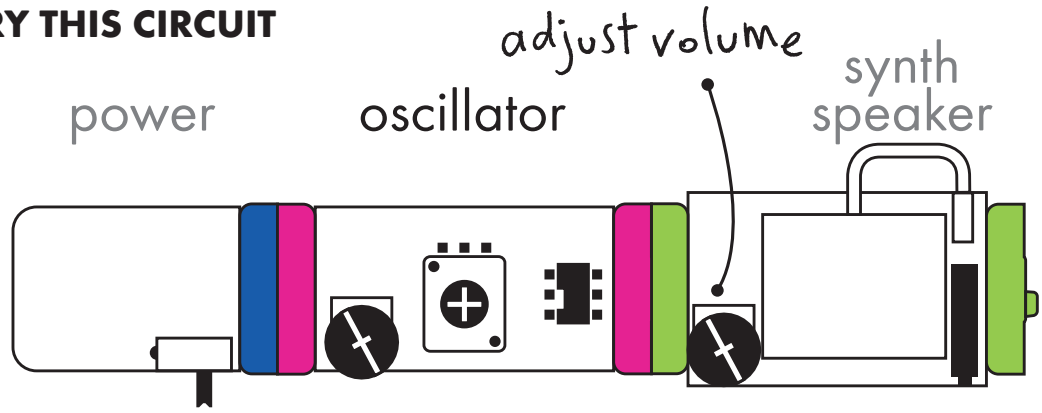


i31

OSCILLATOR

The oscillator is the main sound source in the Synth Kit and is capable of creating audio tones that will be used in almost every sound experiment you create. It features a "pitch" knob to adjust its output tone and a "tune" dial for adjusting the tuning. It also features a mode switch that selects between "square" and "saw" waveforms. The "square" waveform has a rich, powerful character, and the "saw" waveform has a more mellow, round character.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Adjust the oscillator "pitch" so you can hear it.

③ Switch the "waveform" and hear the timbre change.

COLOR CODE

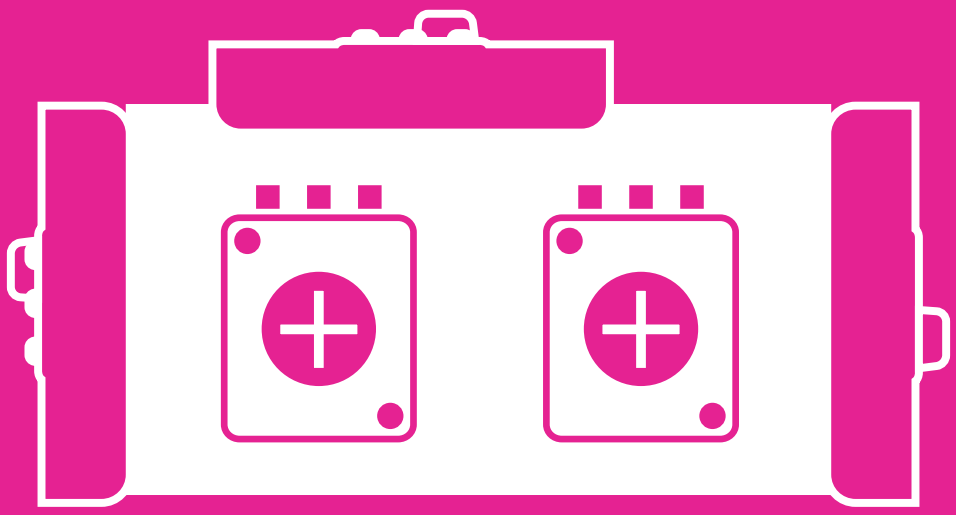
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/oscillator

Ages 8 to ∞

littleBits™

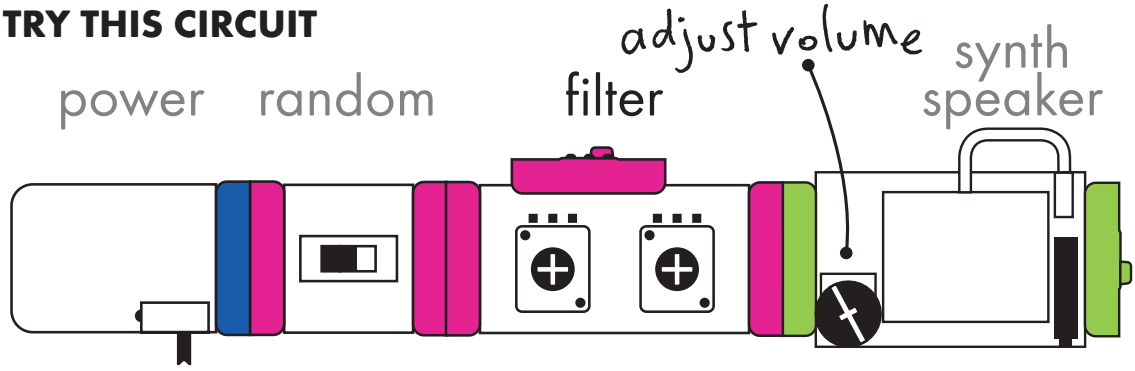


i32

FILTER

The filter has the biggest effect on the sound's character or "timbre." It affects the timbre by changing the relative volume of certain frequencies in the sound. Use it to give the impression that a sound is "brighter" (more high frequencies) or "darker" (more low frequencies). The "cutoff" knob sets the frequency to be emphasized, and the other controls "peak", or intensity of the filter. If the "peak" is turned up all the way, the filter turns into an oscillator!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Set the random module to "noise" mode.

③ Adjust the "cutoff" and "peak" settings to change the sound.

COLOR CODE

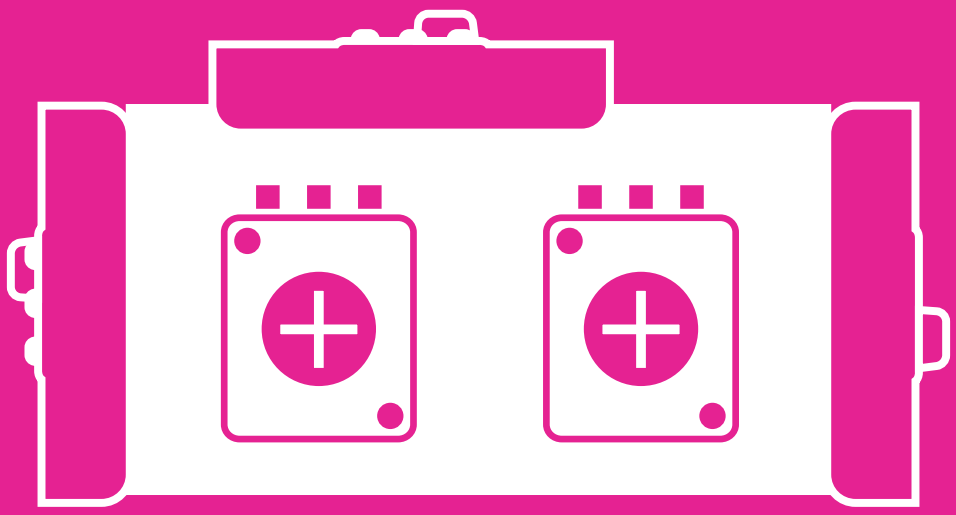
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/filter

Ages 8 to ∞

littleBits™

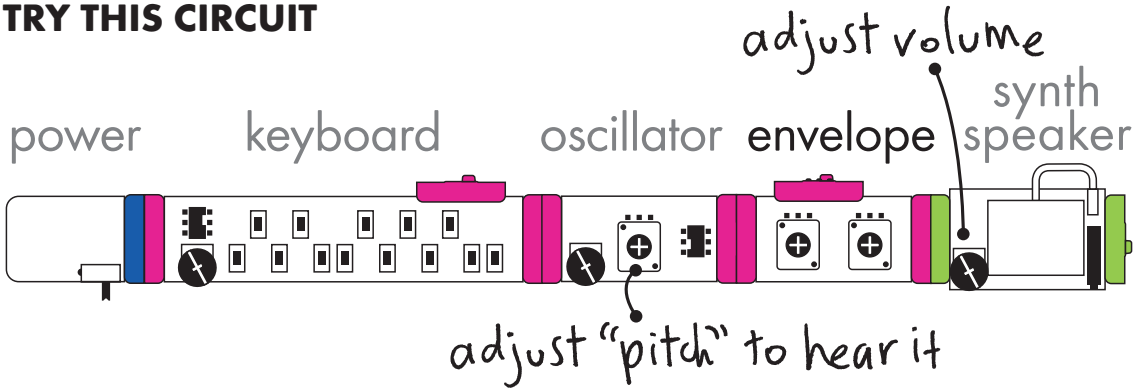


i33

ENVELOPE

The envelope modifies the loudness contour of a sound. It takes a sound input and shapes it into something you'd hear from an acoustic musical instrument, like a piano or saxophone. This envelope has two controls: "attack", which is how long it takes to ramp up to maximum volume, and "decay", which is how long it takes to fade to silence again. You can use its third bitSnap™ to trigger the envelope from different sources, like the keyboard.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Press keys on keyboard to make sounds.

③ Adjust the "attack" and "decay" settings to shape your sounds.

COLOR CODE

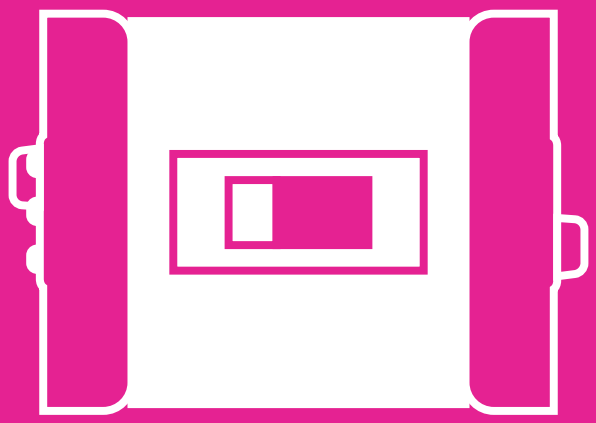
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/envelope

Ages 8 to ∞

littleBits™

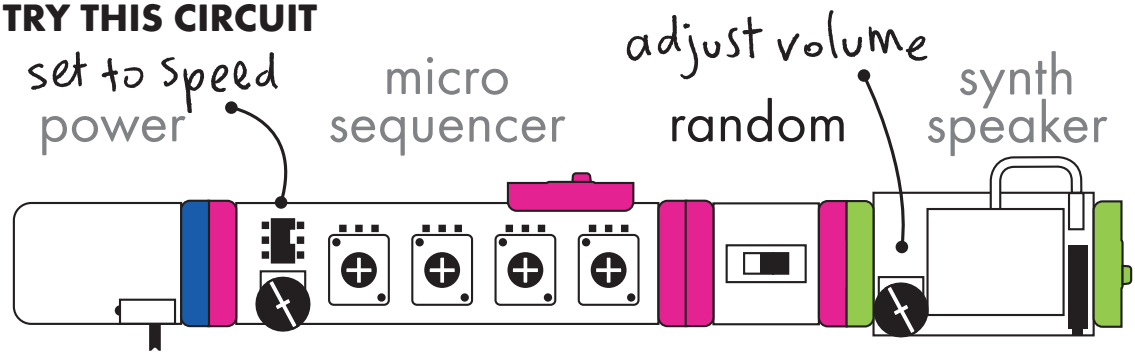


i34

RANDOM

The random module has two modes: "noise" and "random voltage." In "noise" mode, it outputs white noise, like a television set not tuned to any channel. In "random voltage" mode, it outputs random voltage signals that can control oscillators and make them play random pitches. The random module needs a clock input like the pulse or micro sequencer. Adjust the speed to change the random rate.

TRY THIS CIRCUIT



1. Start with a blue power module and turn it on.
2. Set the random module to "random voltage" mode.
3. Adjust the knobs on the micro sequencer to set the range of random voltages.

COLOR CODE

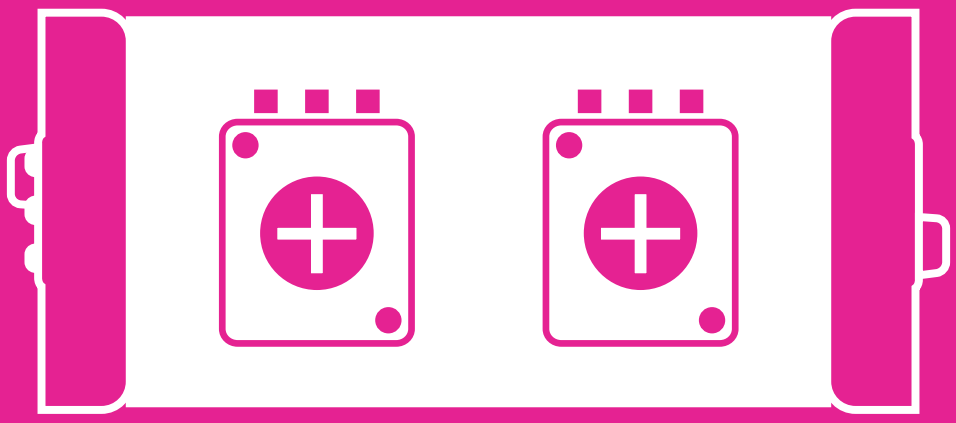
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/random

Ages 8 to ∞

littleBits™

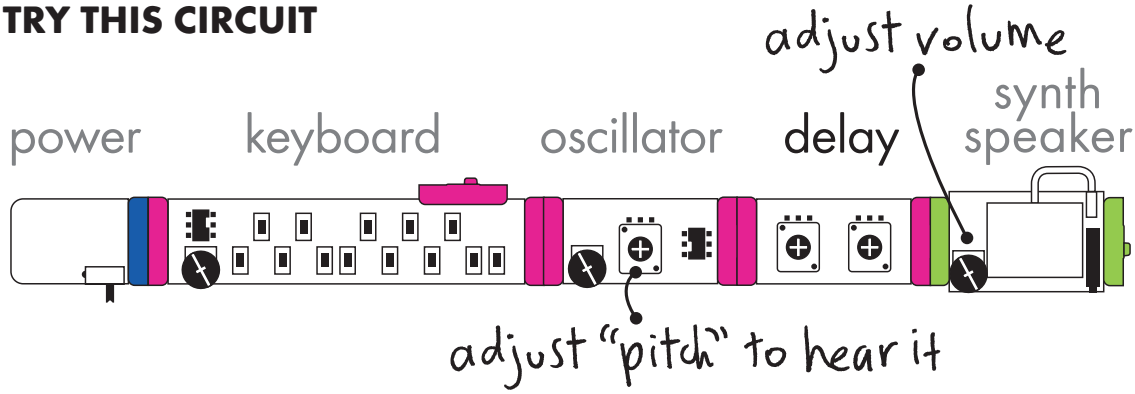


i35

DELAY

The delay module takes incoming audio and repeats it, like an echo. It has two knobs: "time", which sets the delay length between a sound and its repetition, and "feedback", which controls how many times the sound repeats. Delays can be long and spacey, like shouting into the Grand Canyon, or loud and crazy. This module will play forever if you turn the "feedback" knob all the way up. You can also shift the pitch of a sound by turning the "time" control while a sound is repeating.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Press keys on keyboard to make sounds.

③ Adjust the "time" and "feedback" knobs to change the delay of the sound.

COLOR CODE

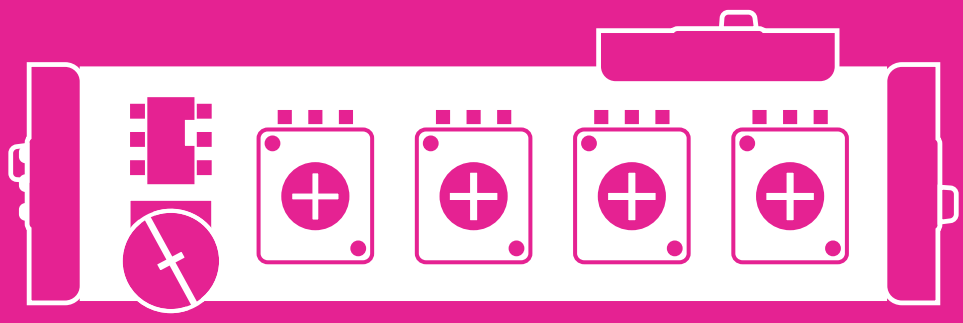
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/delay

Ages 8 to ∞

littleBits™

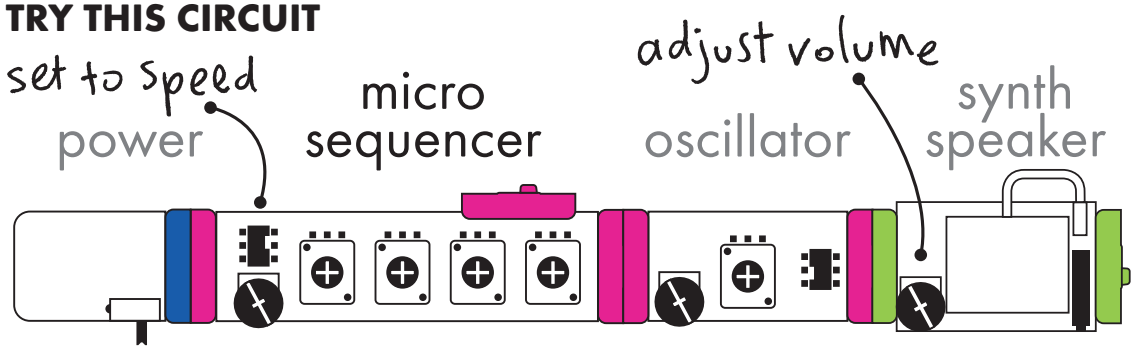


i36

MICRO SEQUENCER

The micro sequencer sends out voltages based on the position of each of the four "step" knobs. Connect it to an oscillator and it will step through the "sequence" consecutively to make a melody (The LEDs tell you which step is active). Turn a knob fully counterclockwise to make the step silent. Use the module in "speed" mode to set the speed using the dial, or flip the switch to "step" mode to use an input module like a pulse or button for control. It also has a "trigger out", which you can send to any of your other modules.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Adjust the oscillator "pitch" so you can hear it.

③ Adjust the knobs on the micro sequencer to create a melody.

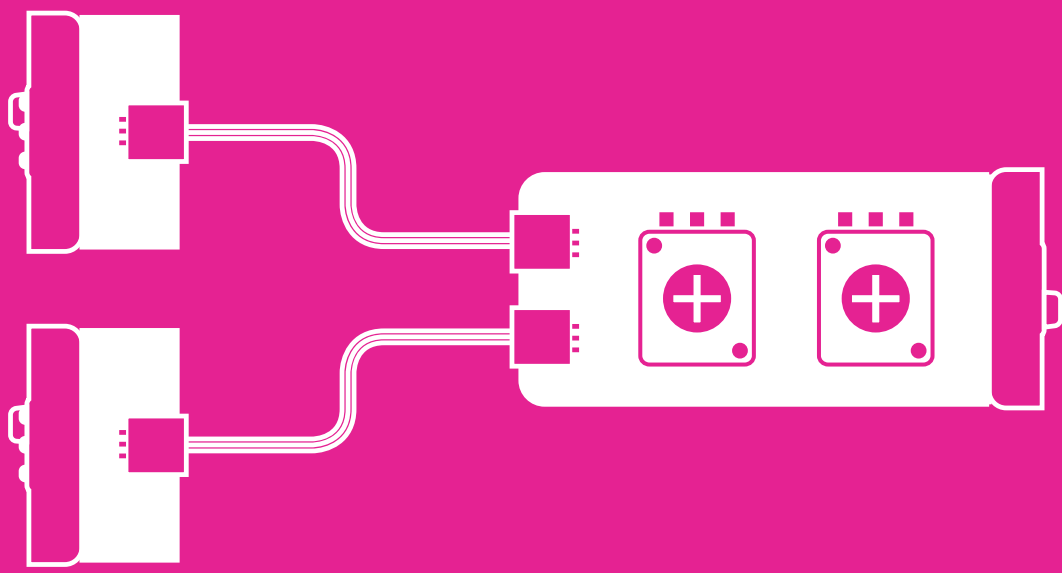
COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/micro-sequencer Ages 8 to ∞

littleBits™

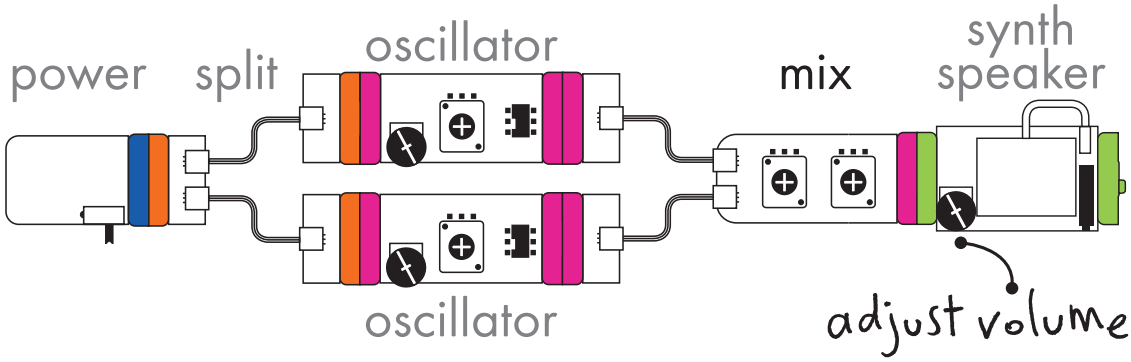


i37

MIX

The mix module allows you to combine two inputs and send them to a single output. It also has a level control for each of its inputs – that's where the mixing comes in. Use it to play two oscillators on a single speaker!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Turn the mix controls up so you can hear the oscillators.

③ Adjust the "pitch" of both oscillators.

COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/mix

Ages 8 to ∞

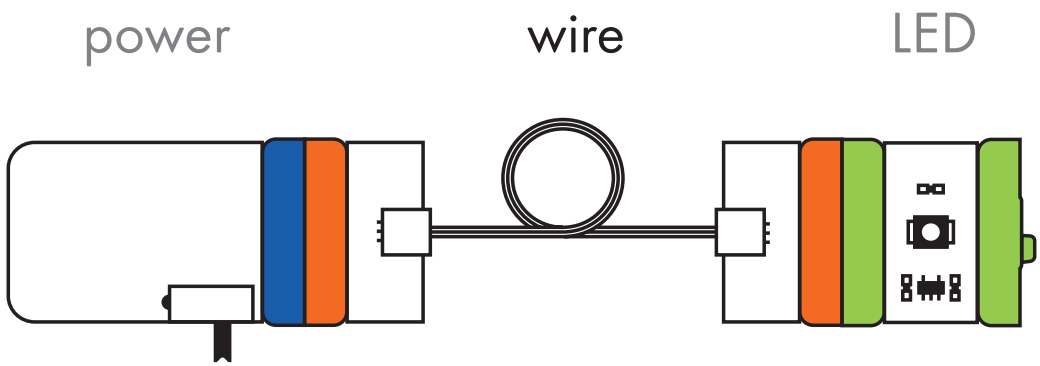
littleBits™

w1

WIRE

The wire is just what it sounds like – it allows you to physically separate your modules, turn corners and build your circuit in any direction. Try it whenever you need to break up your chain, like when you need to put a light at the top of a model building! You'll find many situations where you'll want a wire.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Use the wire to separate your modules.

③ Snap any green output module and watch it activate!

COLOR CODE

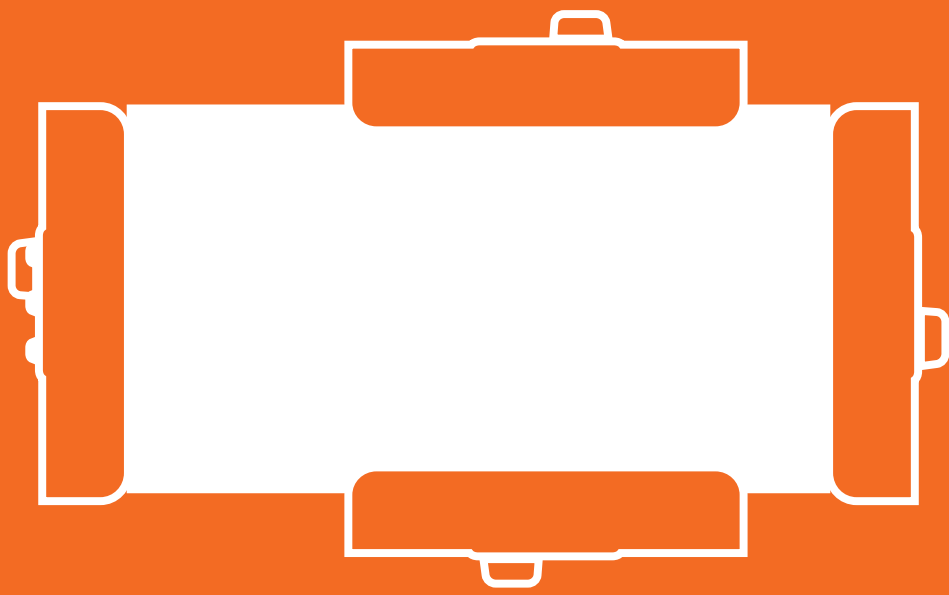
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/wire

Ages 8 to ∞

littleBits™

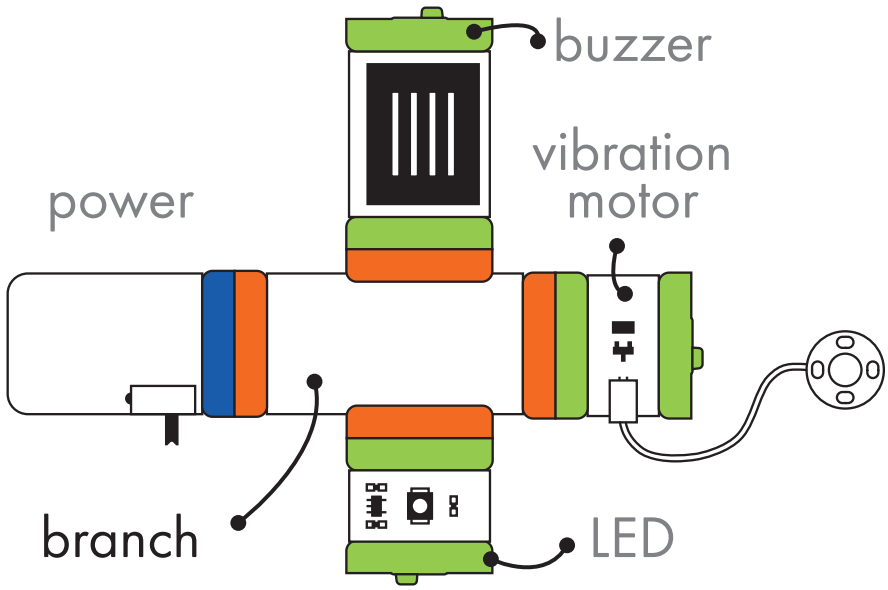


w2

BRANCH

The branch gives you more options for connecting your modules. It lets you connect a single module to as many as three others, oriented in different directions. The branch is an amazing way to raise the level of complexity in any project.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap the branch to the blue power module.

③ Snap up to 3 green outputs to the branch and see them activate!

COLOR CODE

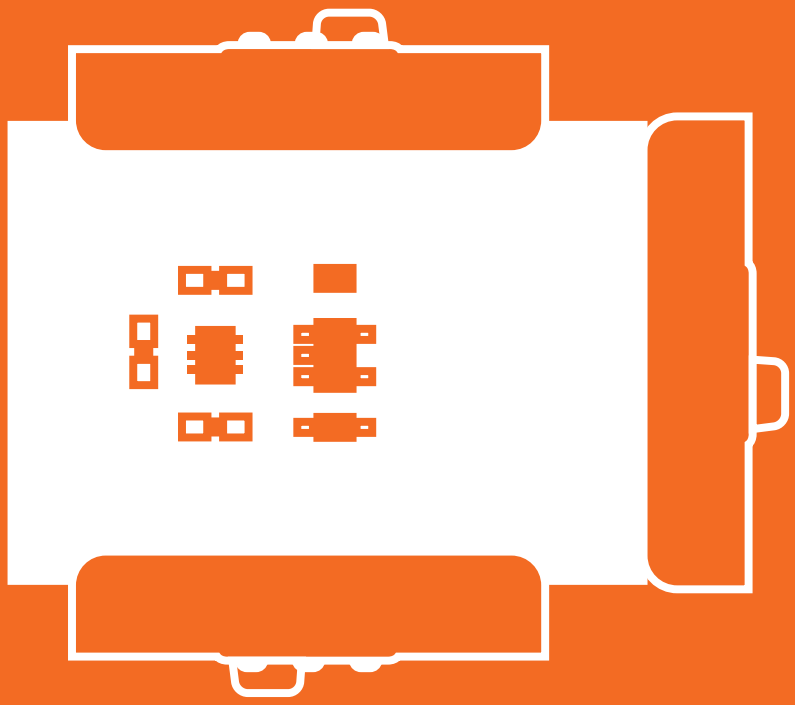
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/branch

Ages 8 to ∞

littleBits™

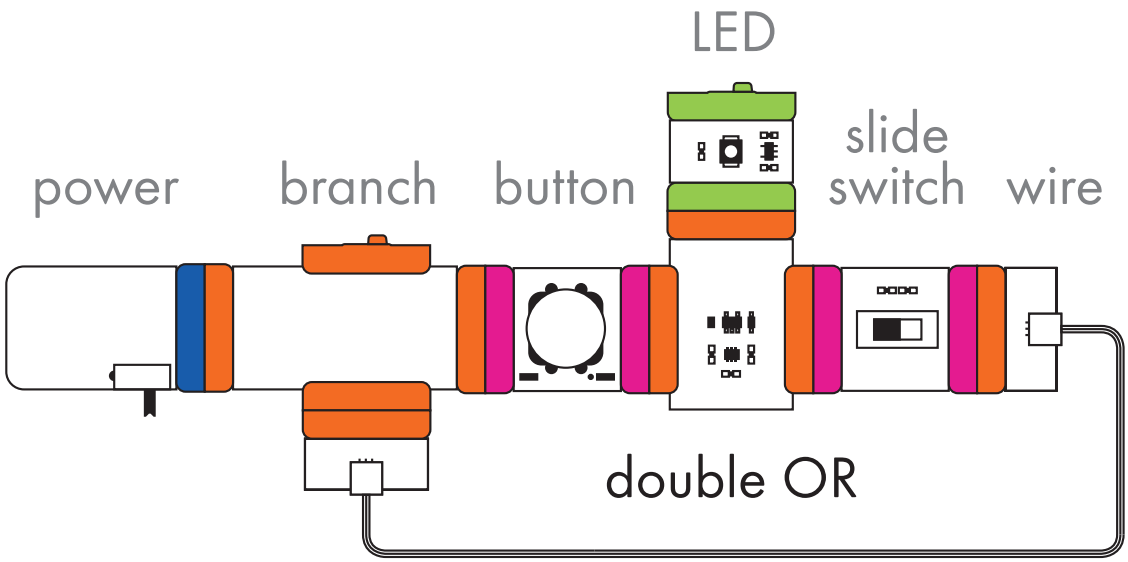


w3

DOUBLE OR

The double OR module is a logic gate with two inputs. Just like its name, if input one *or* input two is receiving an *on* signal, then it sends an *on* signal from its output.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Activate only one pink input module.

③ Watch the double OR module affect the output module.

COLOR CODE

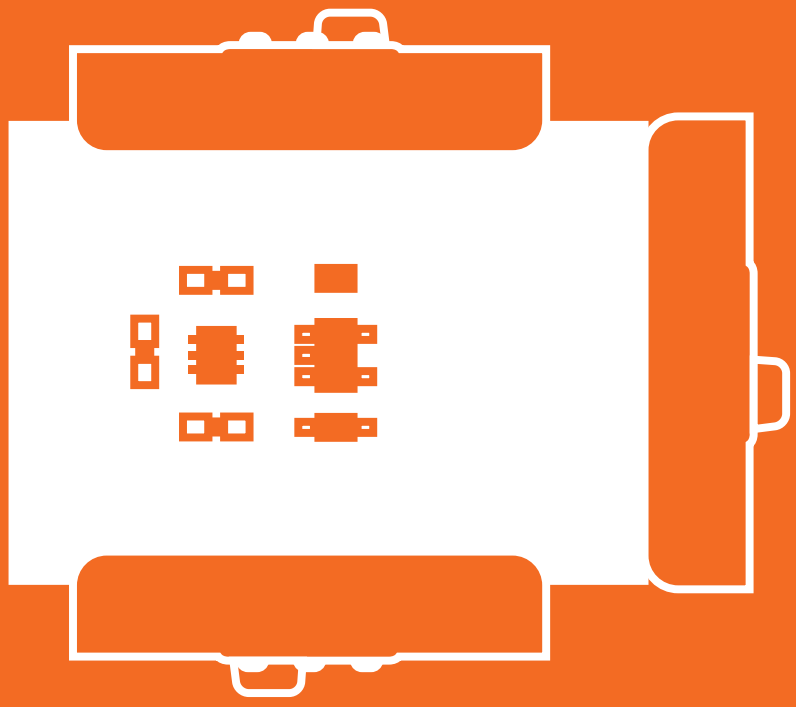
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/double-or

Ages 8 to ∞

littleBits™

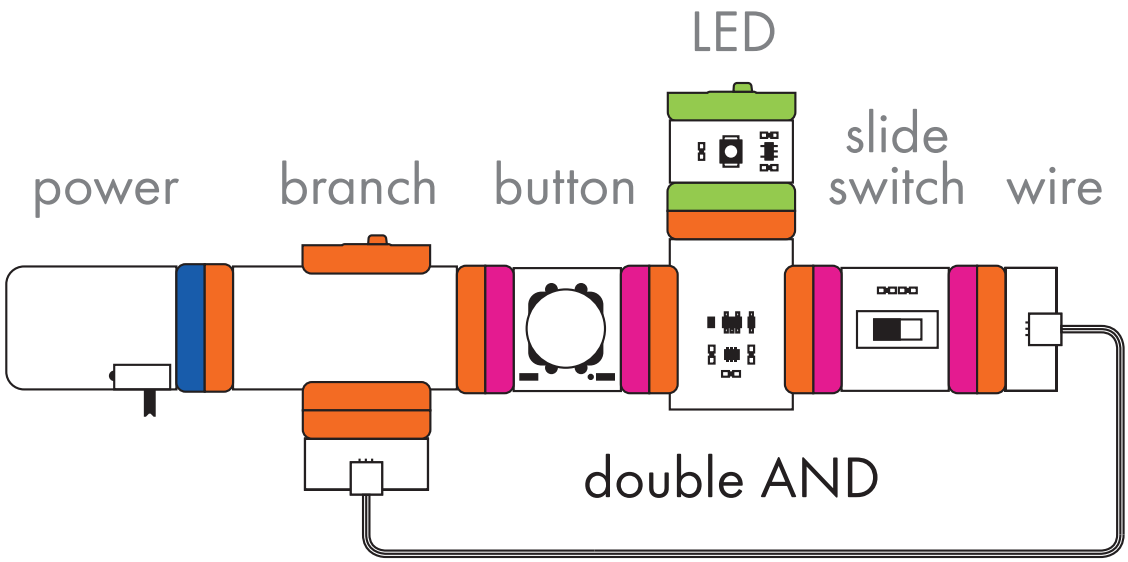


w4

DOUBLE AND

The double AND module is a logic gate with two inputs. Just like its name implies, it sends an *on* signal from its output only when input one *and* input two are both receiving an *on* signal.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Activate both pink input modules.

③ Watch the double AND module affect the output module.

COLOR CODE

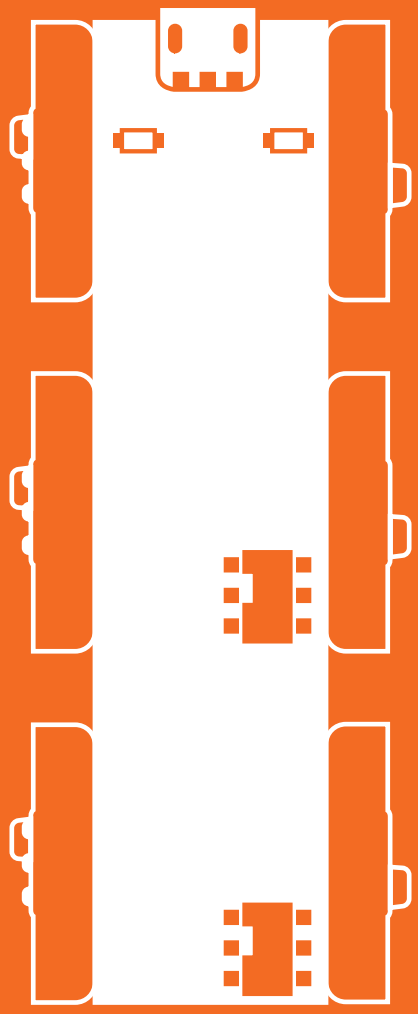
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/double-and

Ages 8 to ∞

littleBits™



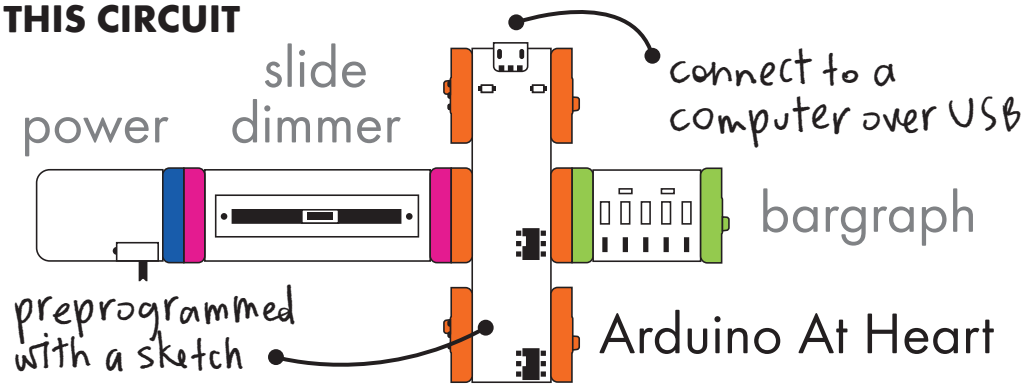
w6

ARDUINO

ARDUINO AT HEART™

The Arduino At Heart™ module allows you to easily incorporate computer programming into your littleBits circuits. It is built upon the Arduino™ programming environment. If you're new to programming microcontrollers, littleBits takes care of the electronics so you can focus on coding. All of the resources available for the Arduino community, including community support, can be utilized with this module. There are three inputs and three outputs so you can program advanced hardware interactions or communicate with software. You're only limited by your imagination! Get started with 10 sample sketches at littleBits.cc/Bits/arduino-atheart.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Connect the slide dimmer to pin a0 and the bargraph to pin d5.

③ Move the slide dimmer to change the speed of fading.

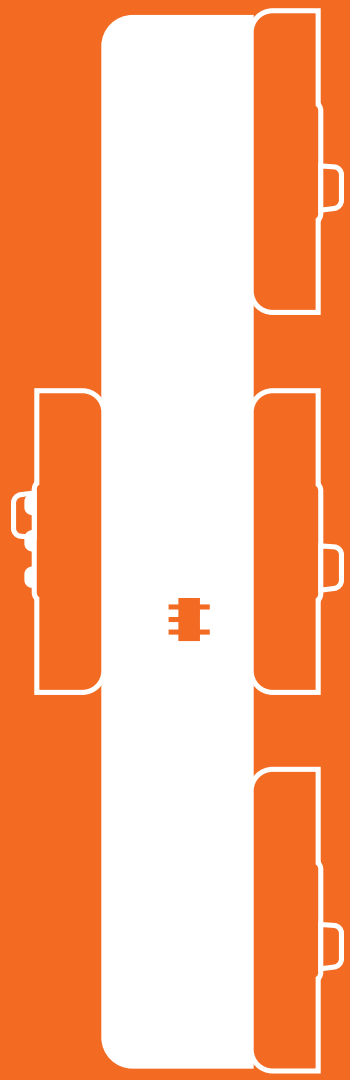
COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/arduino-atheart Ages 14 to ∞

littleBits™

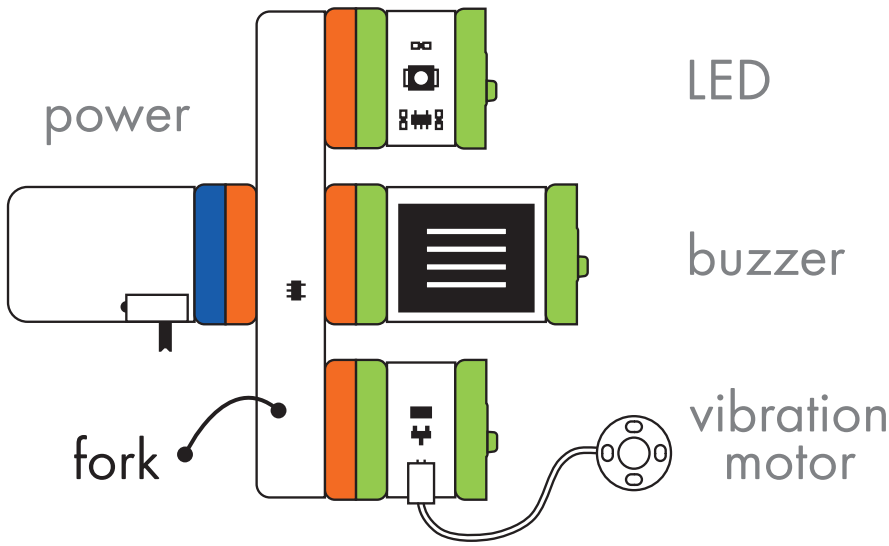


w7

FORK

The fork gives you more options for connecting your modules: it lets you connect a single module to as many as three others. The fork is an amazing way to raise the level of complexity in any project.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap the fork after it.

③ Snap up to 3 green outputs to the fork and see them activate!

COLOR CODE

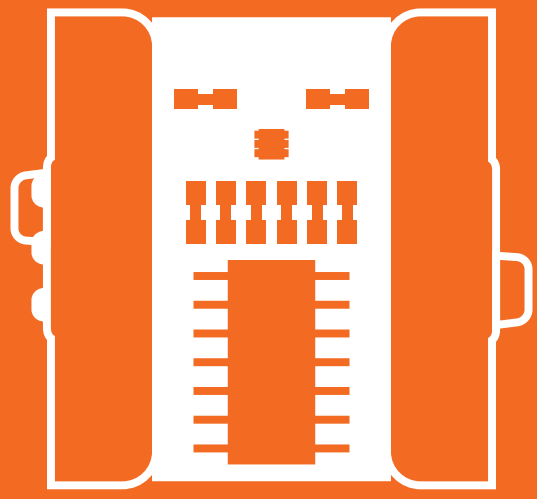
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/fork

Ages 8 to ∞

littleBits™

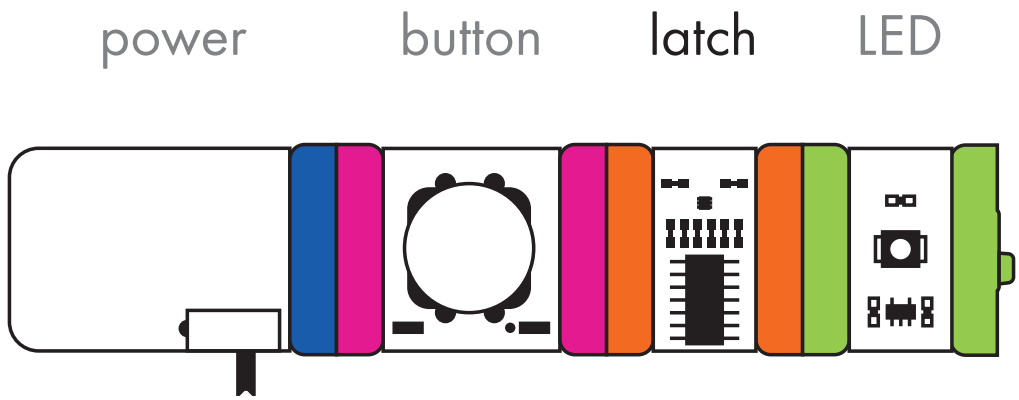


w8

LATCH

Use the latch to turn any momentary input, like a button, into an on/off switch. If you place a button in front of the latch, and a light after, pressing the button once will turn it *on* and keep it *on*. Pressing it again will turn it *off*. Try placing a sound trigger in front of the latch and a light after it, then, just snap your fingers!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Snap the latch before your output and see how it affects the output.

COLOR CODE

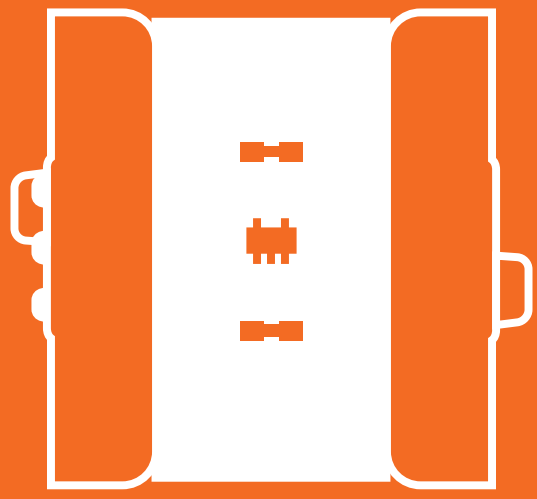
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/latch

Ages 8 to ∞

littleBits™

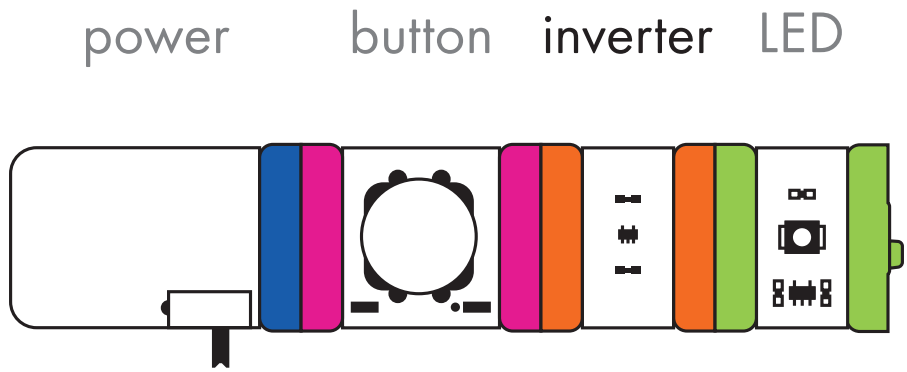


w10

INVERTER

The inverter is a very contrary logic module. It sends out the opposite of whatever it receives: send it an *on* signal, and the inverter changes it to an *off* signal, or vice versa. Try putting it between two lights after a button: clicking will make the LEDs blink back and forth, like the lights on top of a police car!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Snap the inverter before your output and see how it affects the ouput.

COLOR CODE

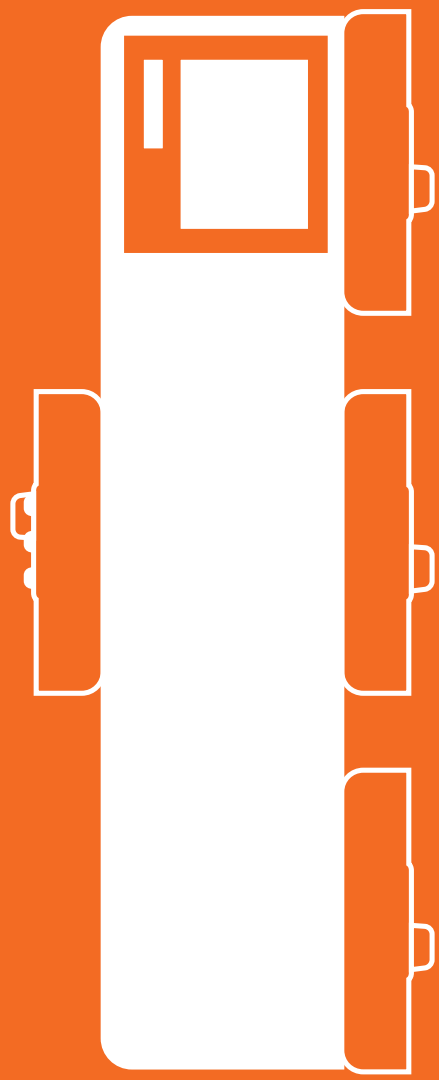
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/inverter

Ages 8 to ∞

littleBits™

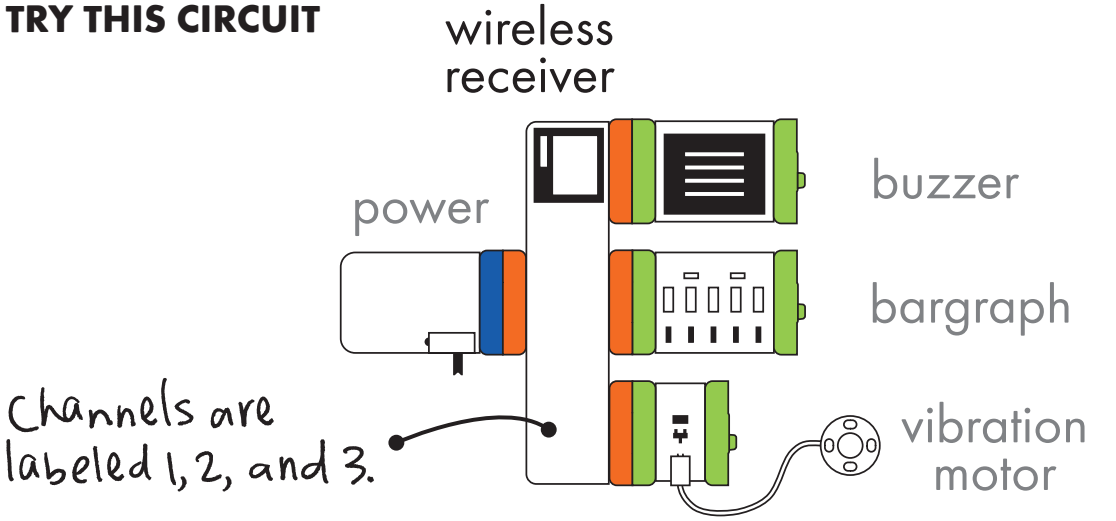


w11

WIRELESS RECEIVER

The wireless receiver module receives a signal from your wireless transmitter and activates your circuit remotely! The three channels on the transmitter and receiver correspond to each other and can be used simultaneously. The module can receive a signal at a distance of about 100' indoors. Multiple wireless receivers can be used with a single transmitter, but only one transmitter can be used in proximity to another transmitter.

TRY THIS CIRCUIT



1. Start with a blue power module and turn it on.
2. Adjust the modules connected to the wireless transmitter.
3. See the output modules turn on.

COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/wireless-receiver Ages 8 to ∞

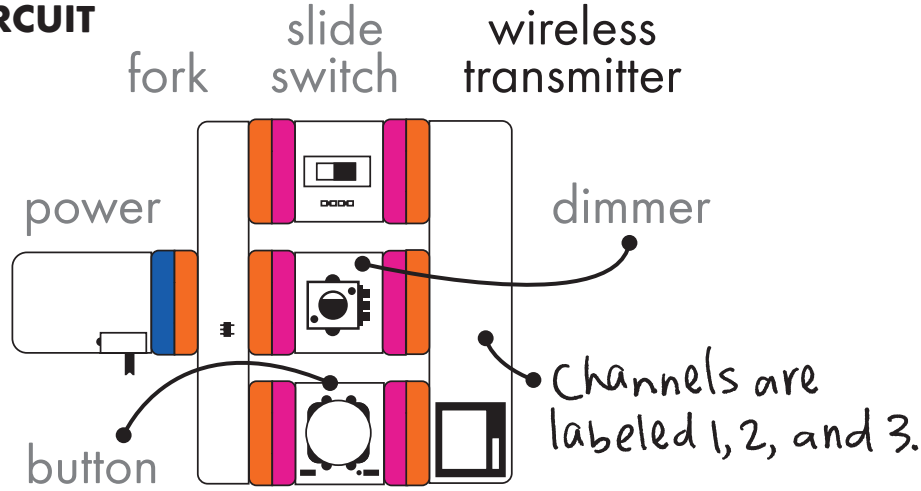
littleBits™

w12

WIRELESS TRANSMITTER

The wireless transmitter sends a signal to your wireless receiver and activates your circuit remotely! The three channels on the transmitter and receiver correspond to each other and can be used simultaneously. The module can transmit its signal to a distance of about 100' indoors. Multiple wireless receivers can be used with a single transmitter, but only one transmitter can be used in proximity to another transmitter.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Adjust the input modules.

③ See the output modules connected to the wireless receiver turn on.

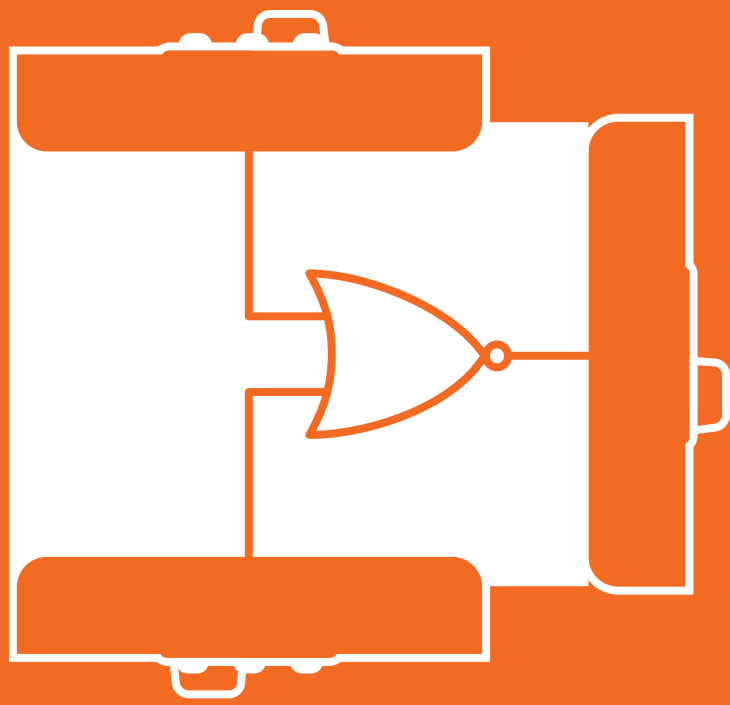
COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/wireless-transmitter Ages 8 to ∞

littleBits™

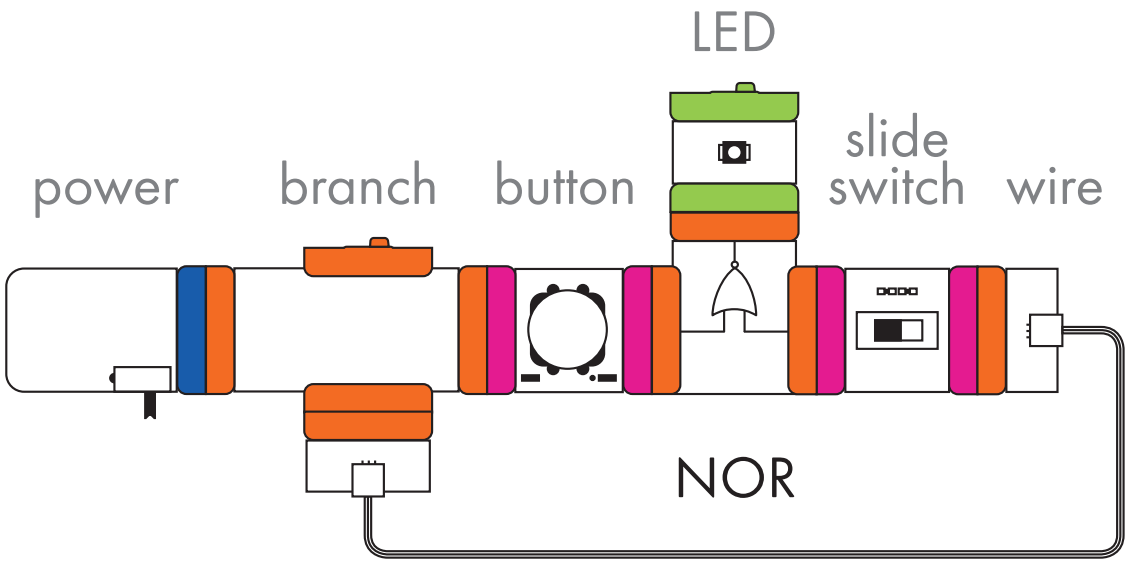


w15

NOR

The NOR module is a logic gate with two inputs. As its name suggests, it sends an *on* signal only when neither input is receiving an *on* signal. In other words, it's the exact opposite of the OR module.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Leave both input modules off.

③ Watch the NOR module affect the output module.

COLOR CODE

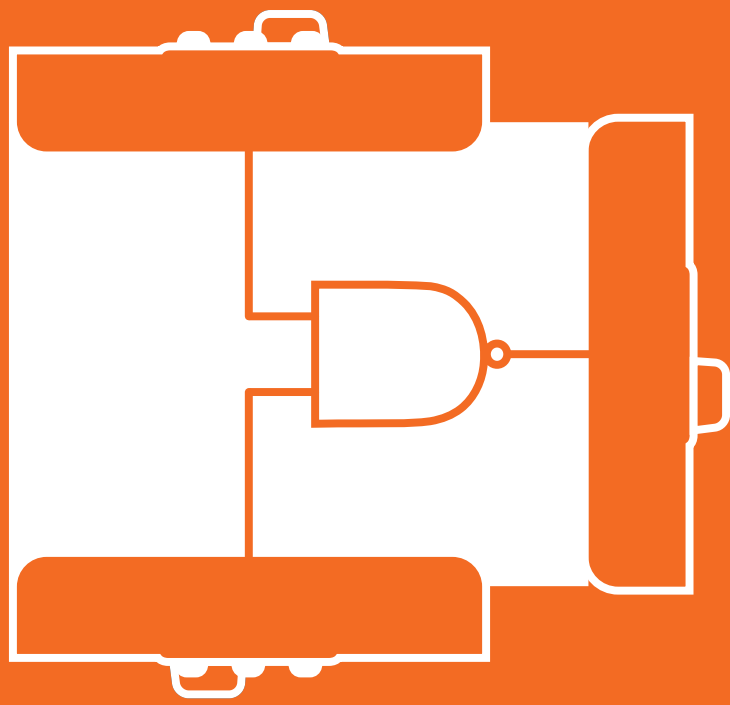
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/nor

Ages 8 to ∞

littleBits™

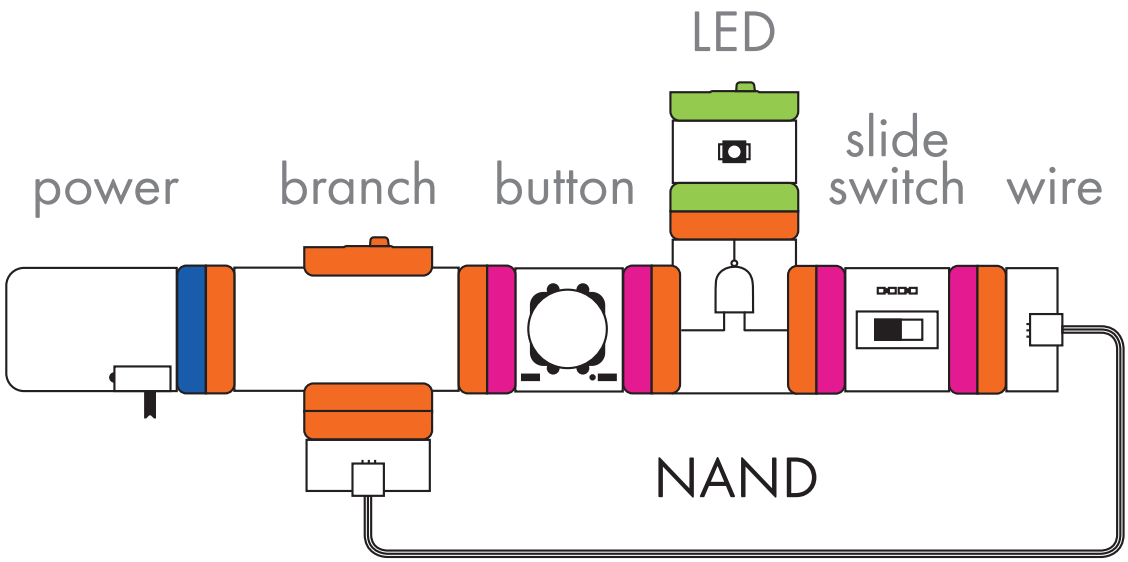


w16

NAND

The NAND module is a logic gate with two inputs. Think of it as "*not and*." The NAND module will always send an *on* signal unless both input one *and* input two are receiving an *on* signal. It's the exact opposite of the AND module.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Activate only one input module or leave both inputs off.

③ Watch the NAND module affect the output module.

COLOR CODE

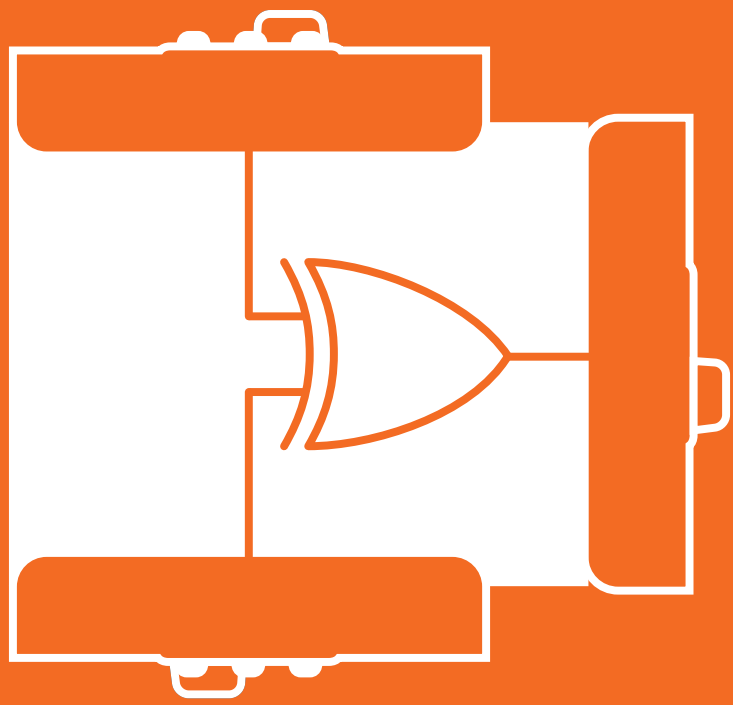
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/nand

Ages 8 to ∞

littleBits™

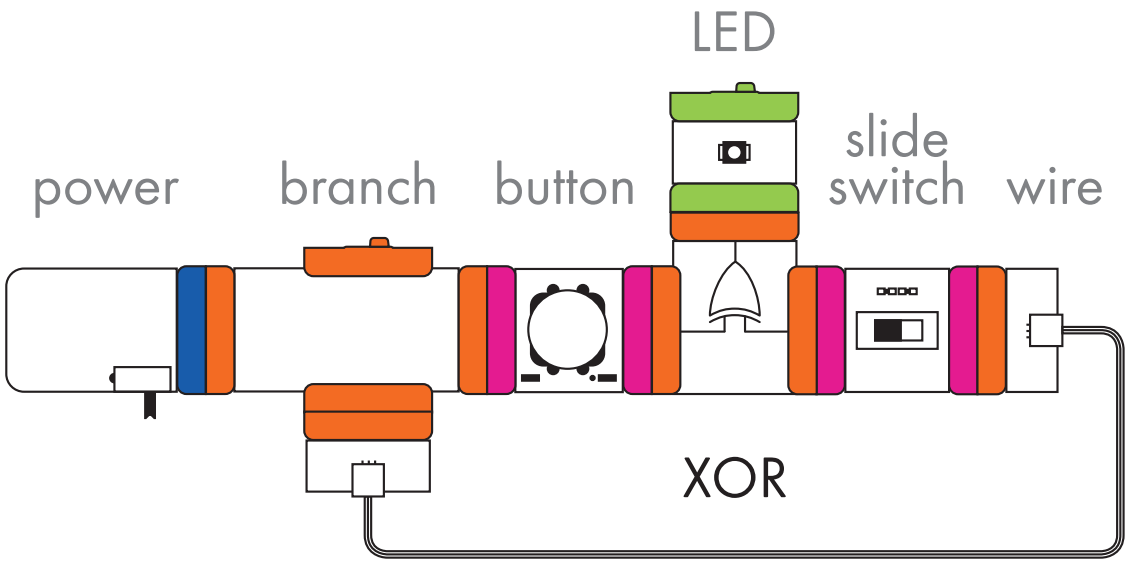


w17

XOR

The XOR module is a logic gate with two inputs. Think of it as "*exclusive or*," meaning that it sends an *on* signal when it's receiving an on signal *exclusively* from one input *or* the other, but not both.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Activate only one input module.

③ Watch the XOR module affect the output module.

COLOR CODE

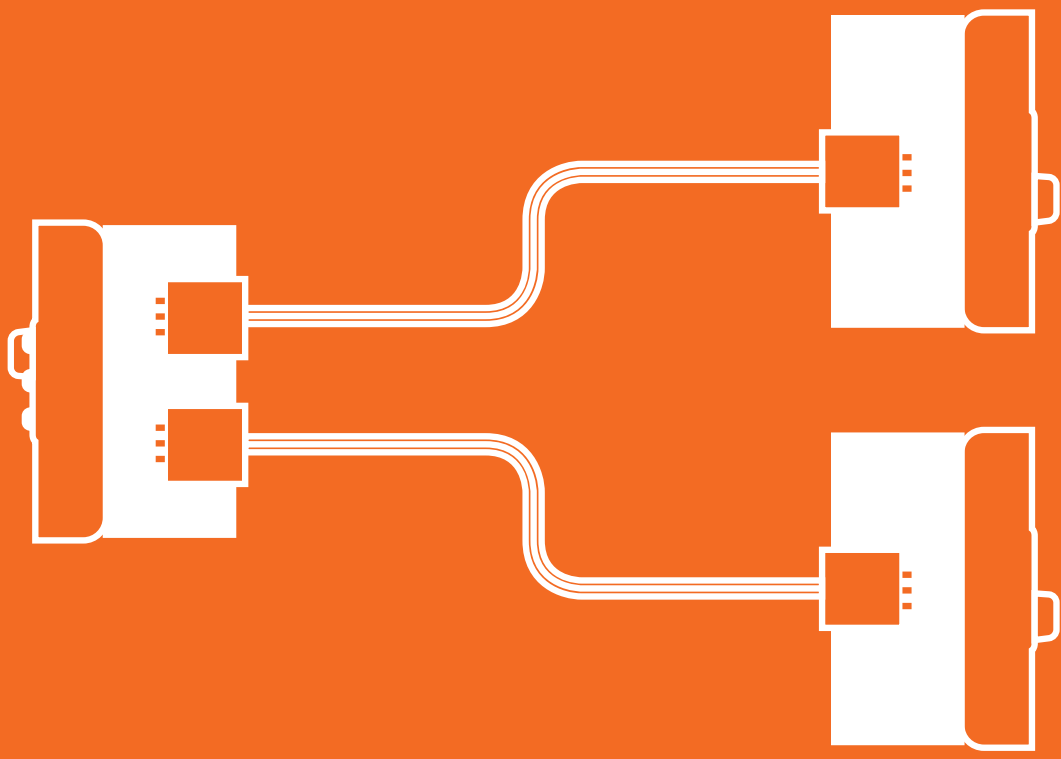
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/xor

Ages 8 to ∞

littleBits™

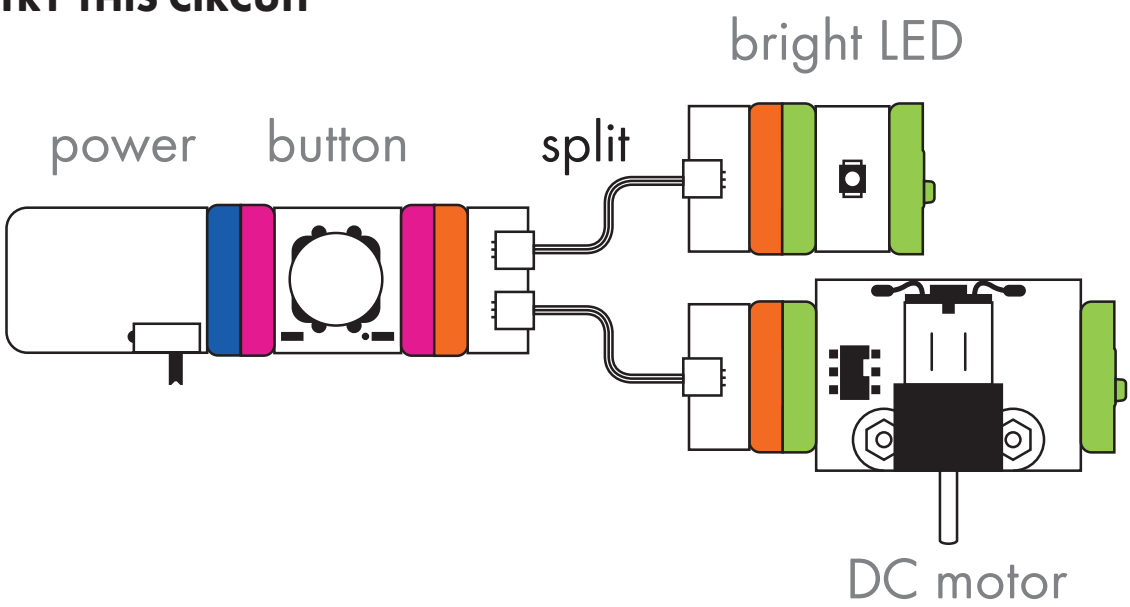


w19

SPLIT

The littleBits split module sends a single signal to two other modules. You can use it like a wire module if you ignore one of the connections.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Activate any pink input module.

③ Snap up to two output modules to the split.

COLOR CODE

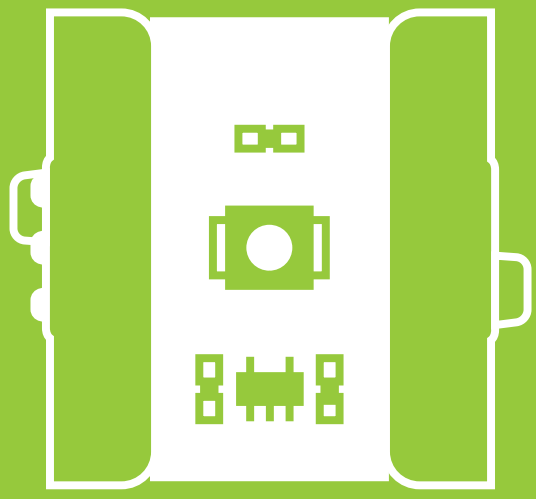
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/split

Ages 8 to ∞

littleBits™

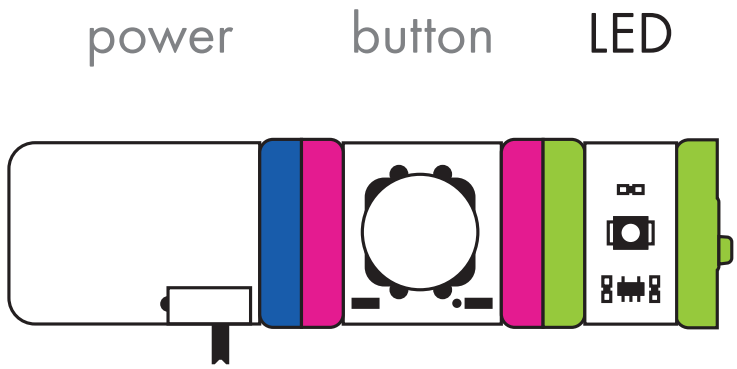


01

LED

The LED (or "light-emitting diode") module is a very small board that shines a nice green light. It's our go-to when we want to light something up.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Watch your LED light up and shine!

COLOR CODE

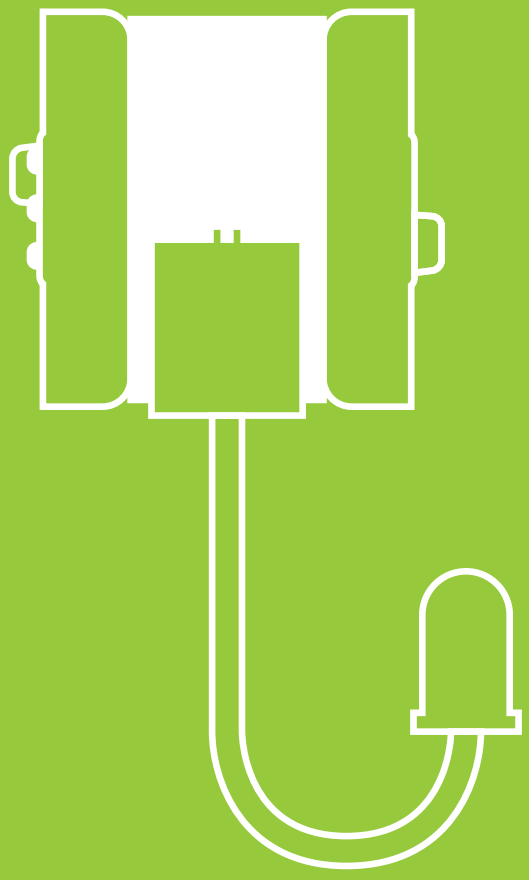
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/led

Ages 8 to ∞

littleBits™

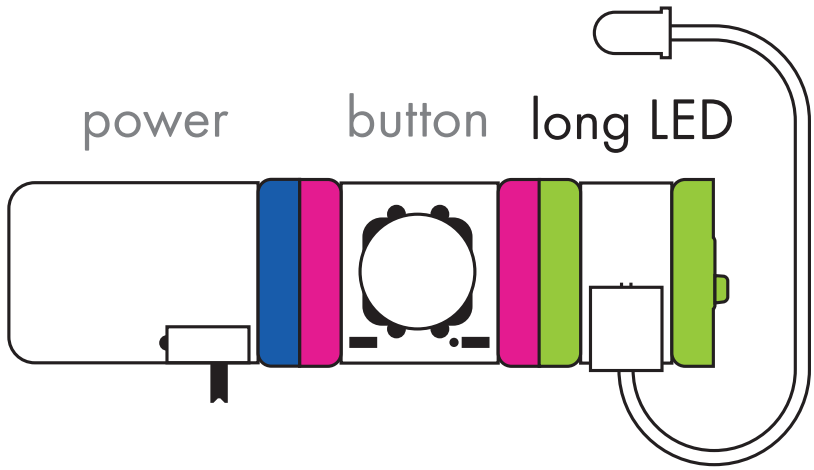


o2

LONG LED

The long LED (or "light-emitting diode") is a flexible lighting option. We call it the "long" LED because the light is connected to the board by a cable. This lets you put the light in some interesting places: one of our favorite tricks is to place the LED in the middle of a foam ball to make it glow!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Watch your long LED light the way!

COLOR CODE

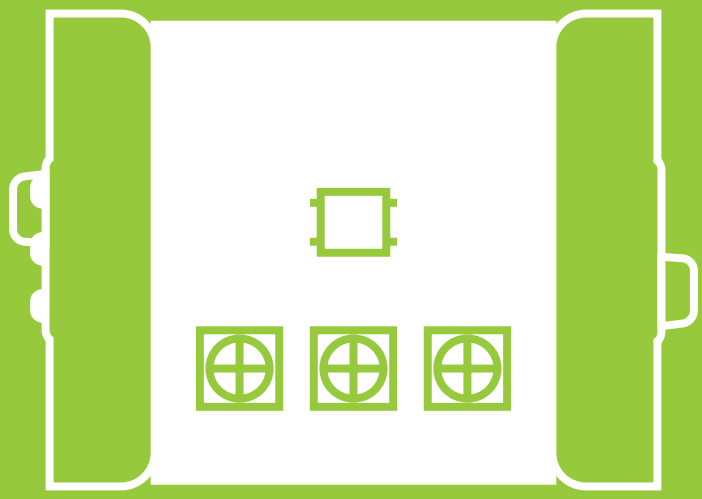
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/long-led

Ages 8 to ∞

littleBits™

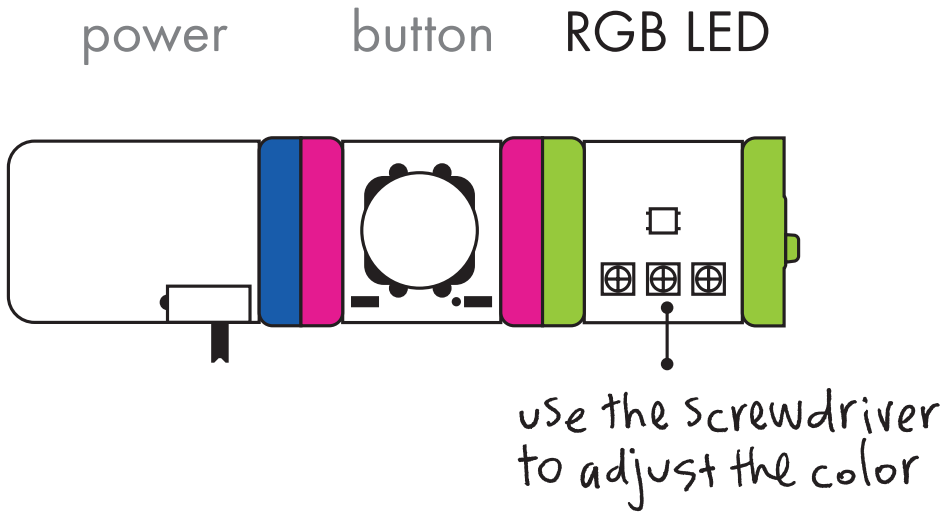


o3

RGB LED

The RGB LED (or "red-green-blue light-emitting diode") is a special light with adjustable color! Use the included screwdriver to adjust each of the color channels to create almost any color. Use the RGB LED when you want to match the light to the color of your creation!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Watch your RGB LED glow!

COLOR CODE

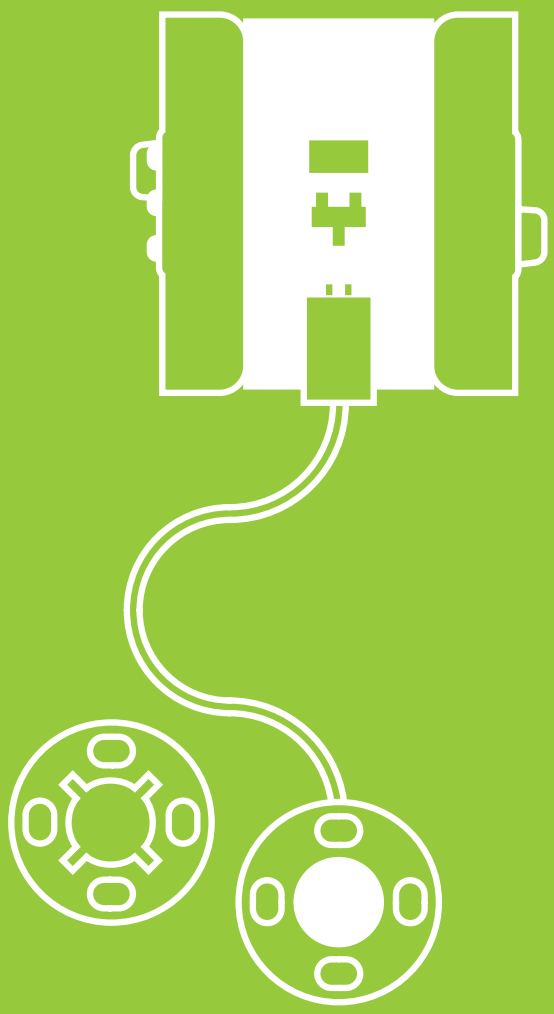
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/rgb-led

Ages 8 to ∞

littleBits™

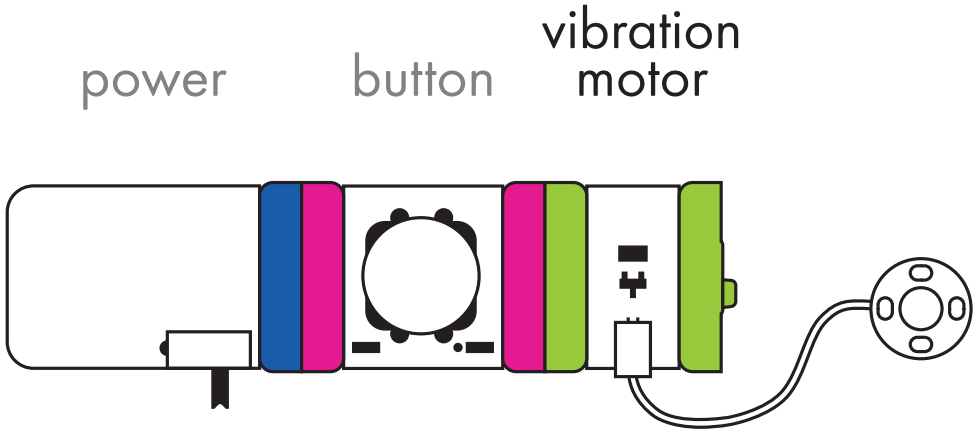


04

VIBRATION MOTOR

The vibration motor is very similar to the device that makes your cell phone shake when you get a text. With this module, you can make anything vibrate and buzz! The vibeSnap helps you attach stuff – like paper, tin foil, or a pipecleaner – to the motor.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Watch your vibration motor activate!

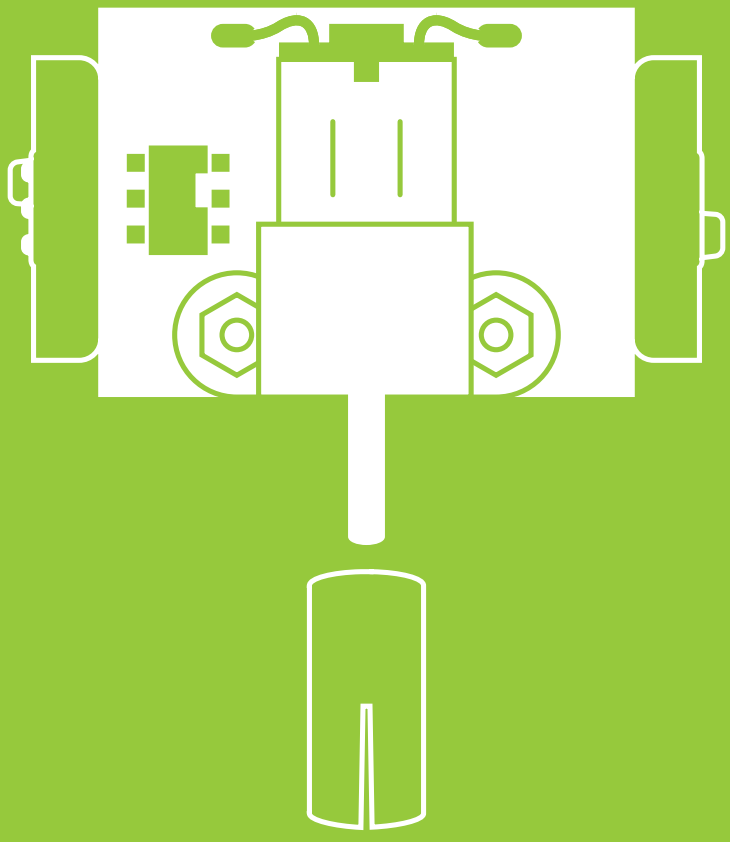
COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/vibration-motor Ages 8 to ∞

littleBits™

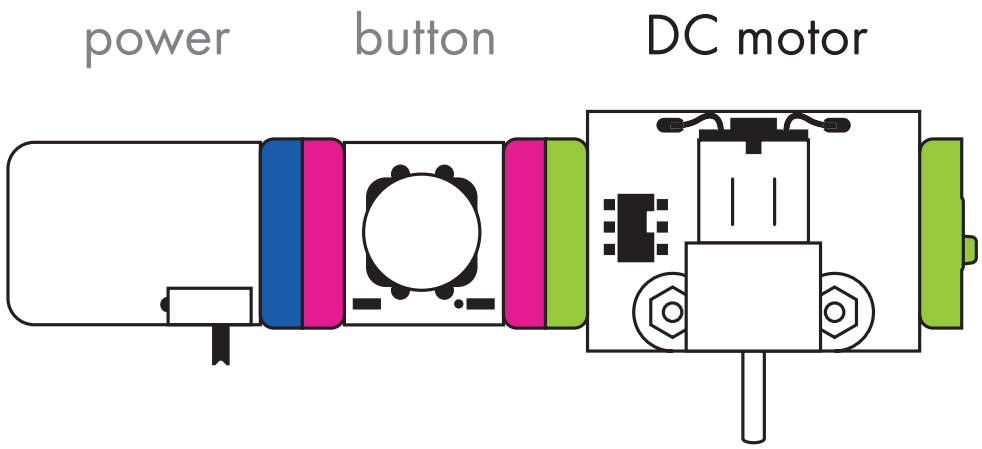


05

DC MOTOR

The DC (or "direct current") motor rotates a shaft when you send it an on signal. The "left/right" switch controls the direction of rotation. The motorMate makes it easy to attach wheels, paper, cardboard and lots of other materials to the motor. Simply slide it on the "D" shape of the shaft. A LEGO™ axle also fits in the end.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Watch your DC motor spin, spin, spin!

COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/dc-motor

Ages 8 to ∞

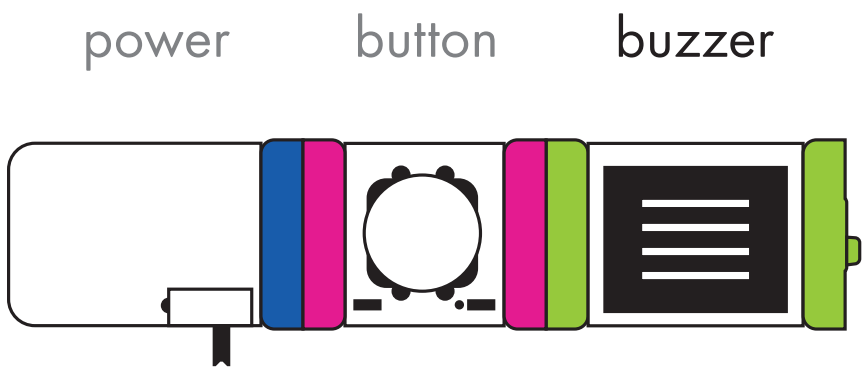
littleBits™

06

BUZZER

The buzzer sounds like an alarm clock. It makes a noise that you just can't ignore. It buzzes whenever it gets an *on* signal. Try using it to make your own doorbell or alarm!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Listen to the sweet sound of the buzzer!

COLOR CODE

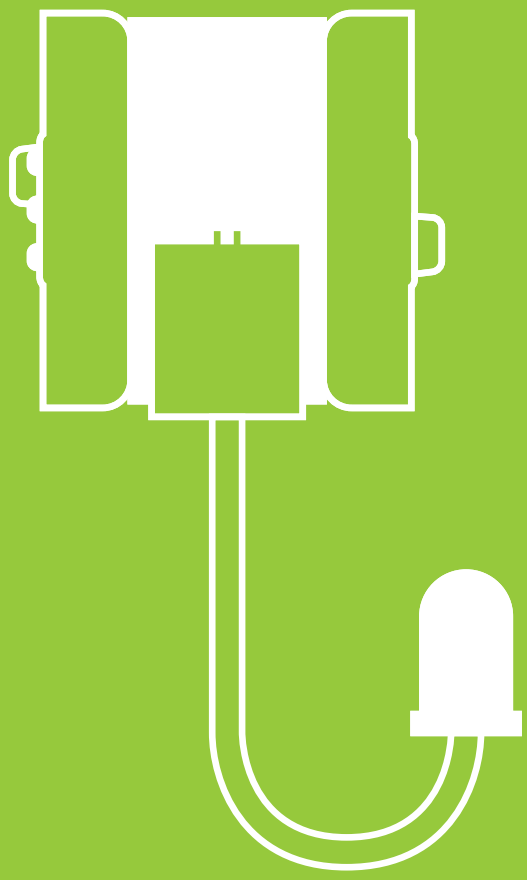
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/buzzer

Ages 8 to ∞

littleBits™

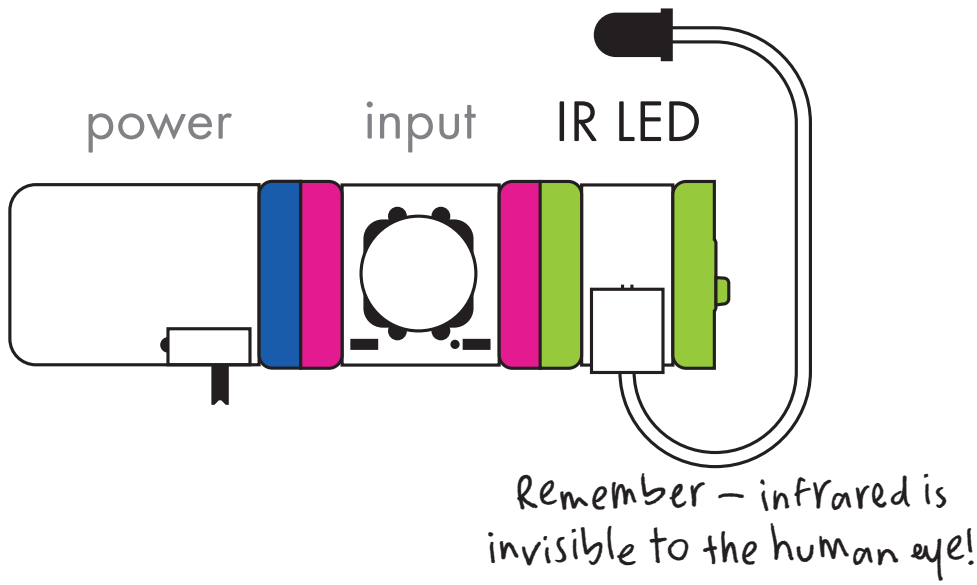


o7

IR LED

The IR LED (or infrared light-emitting diode) module sends out a special kind of light, similar to the light in your remote control. It's invisible to the eye, but many digital cameras can see it! Try using it to activate the light sensor or remote trigger.

TRY THIS CIRCUIT



1. Start with a blue power module and turn it on.
2. Snap any pink input module before the IR LED.
3. Place the IR LED after your input and see what happens!

COLOR CODE

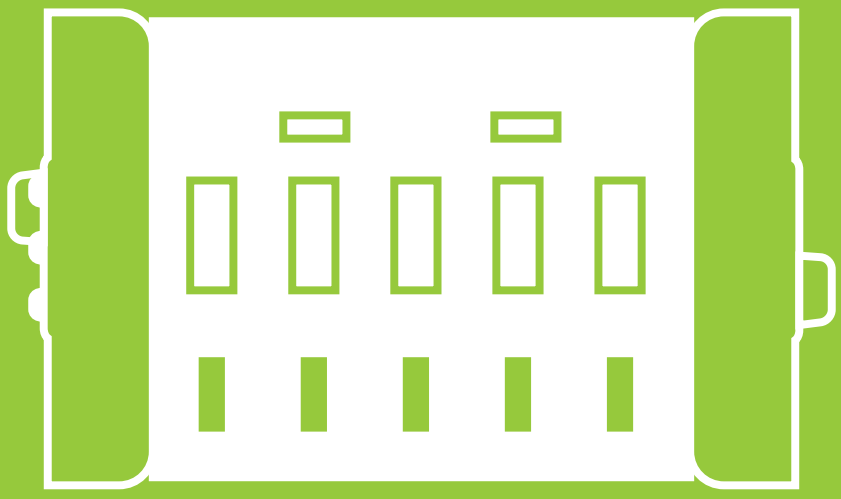
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/ir-led

Ages 8 to ∞

littleBits™

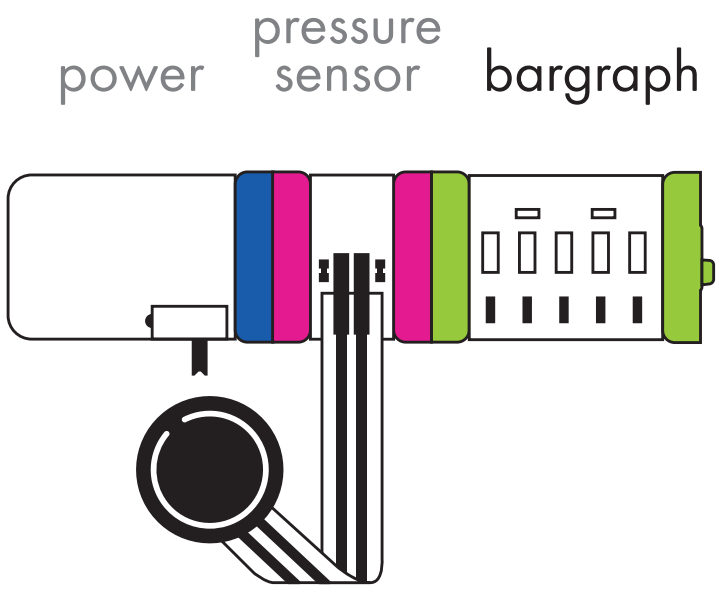


o9

BARGRAPH

The bargraph is one of our favorite modules. It has five LEDs in different colors that light up to show you how much signal the module is receiving. Try it with a pressure sensor to make your own strength-o-meter.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Watch the LEDs on your bargraph light up!

COLOR CODE

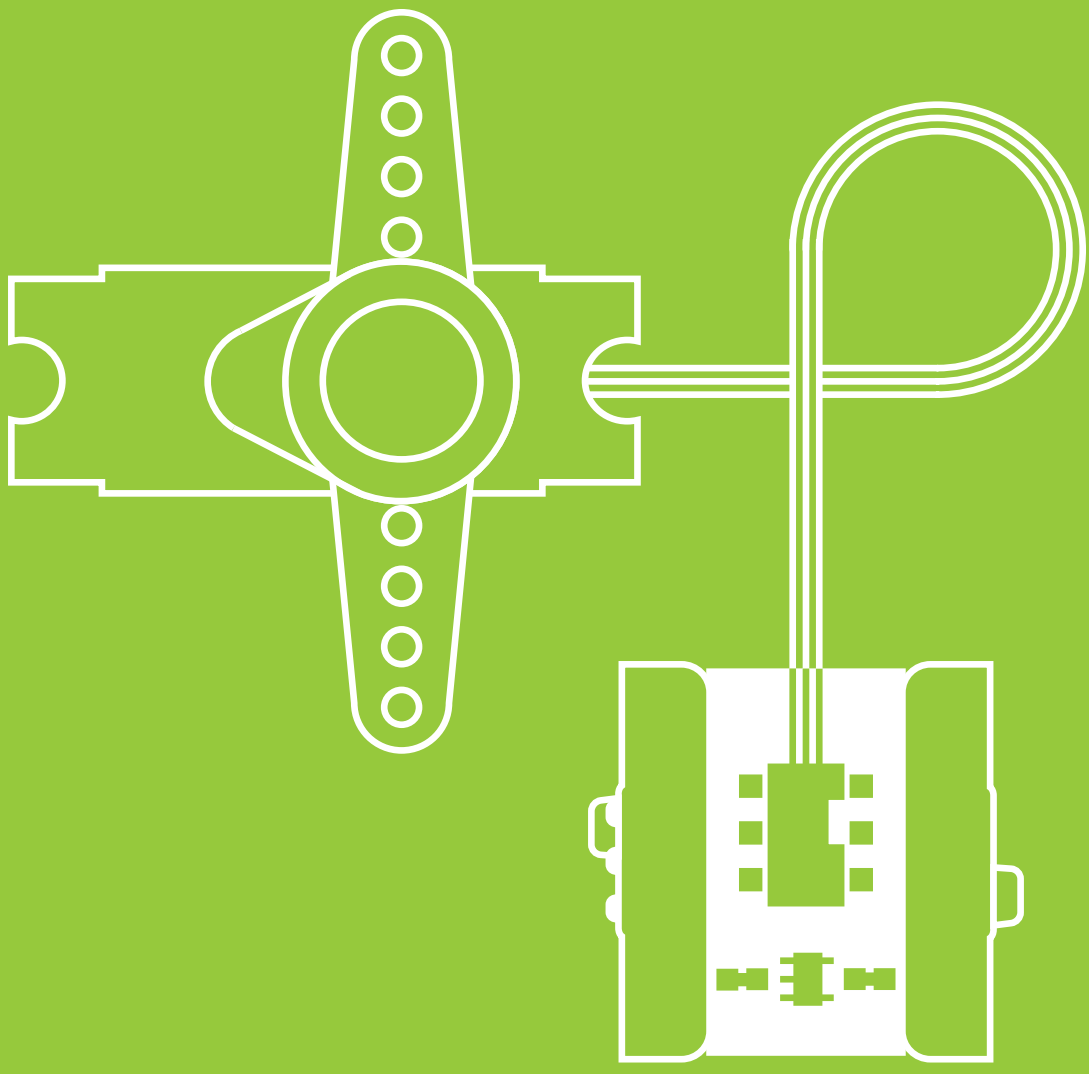
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/bargraph

Ages 8 to ∞

littleBits™

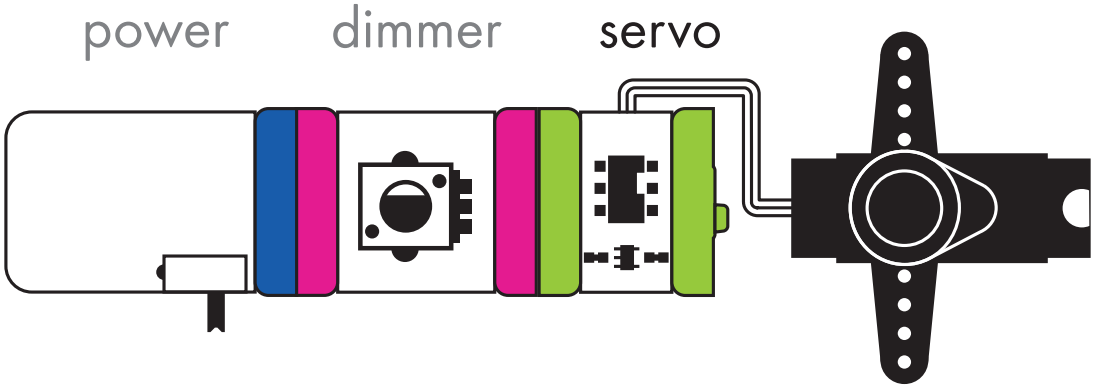


o11

SERVO

The servo is an adjustable motor that can swing back and forth! It has two modes: in "Turn" mode, the input from other modules determines the position of the arm – try using a dimmer to set the angle you want. In "Swing" mode, the servo will move back and forth on its own – the input controls the speed.

TRY THIS CIRCUIT



① Snap to any blue power module and turn on.

② Snap any pink input module before the servo.

③ Flip the switch on servo to "swing" or "turn."

COLOR CODE

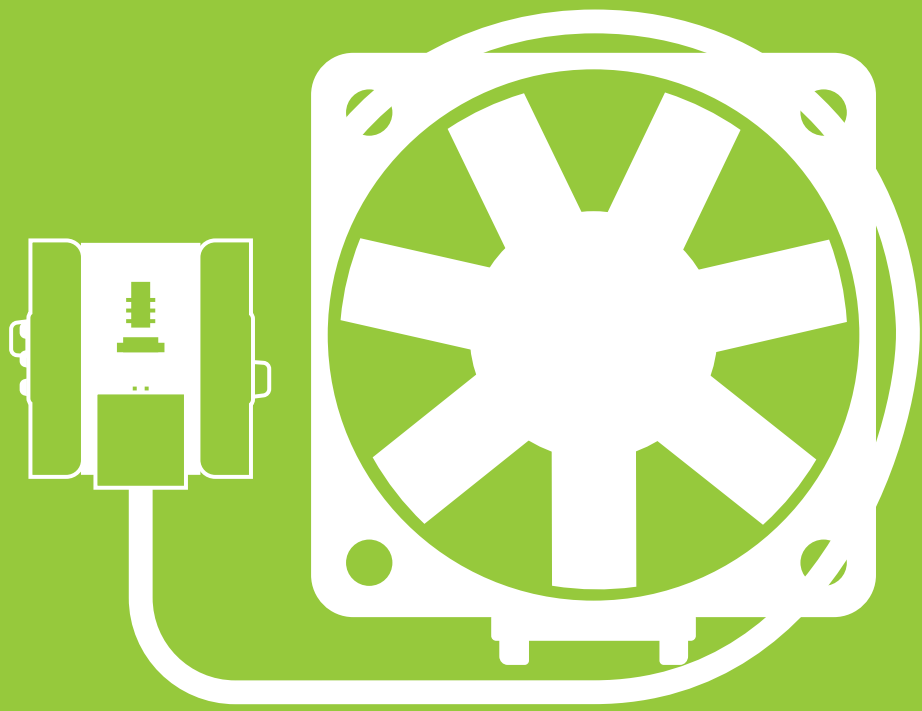
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**, **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/servo

Ages 8 to ∞

littleBits™

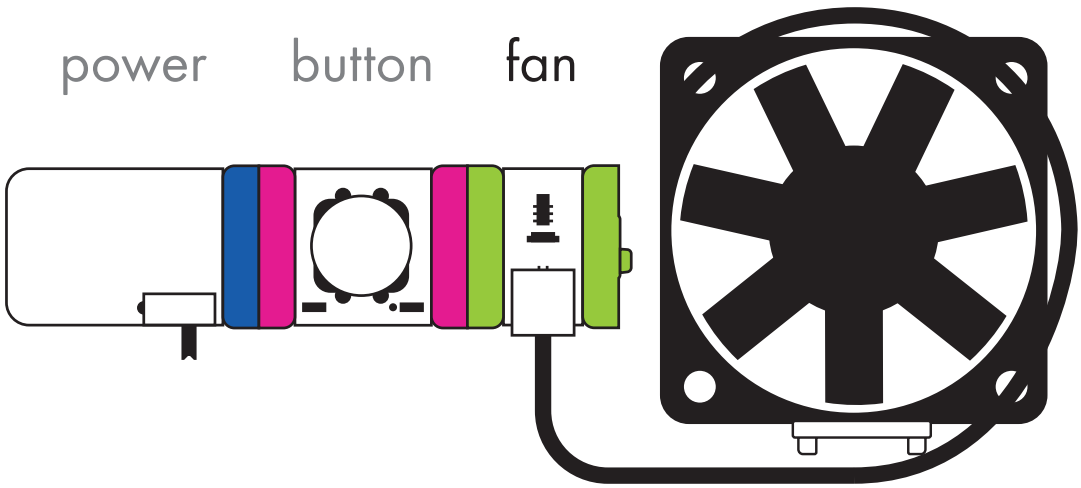


o13

FAN

The fan is just what you'd think: a small electric fan tethered to a module. It's great for those hot summer nights. Use our little fan to create fluttering movement in your creations or just to keep yourself cool.

TRY THIS CIRCUIT



1. Start with a blue power module and turn it on.
2. Snap any pink input module after it.
3. Enjoy the cool breeze from your fan!

COLOR CODE

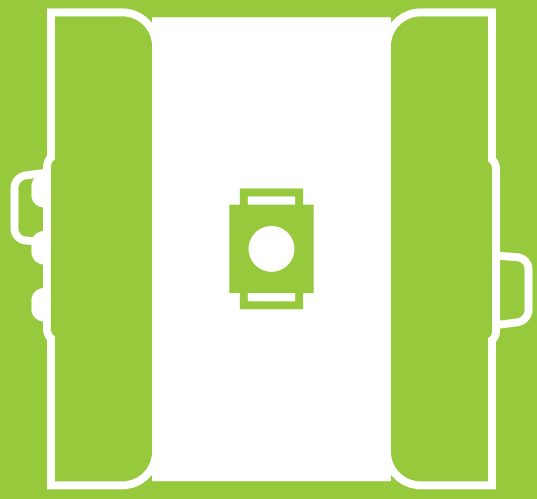
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/fan

Ages 8 to ∞

littleBits™

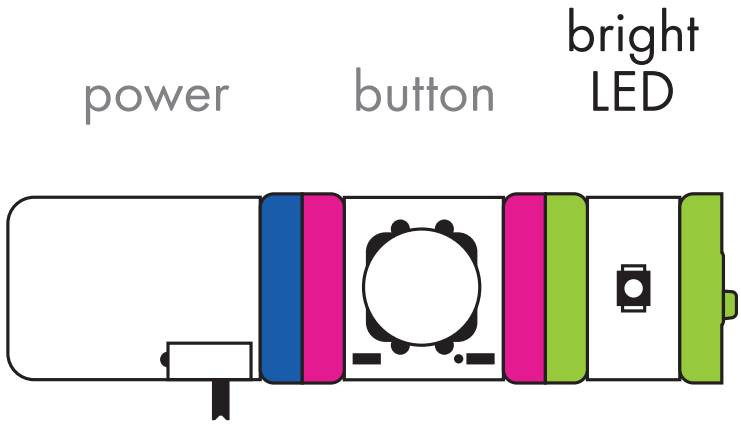


o14

BRIGHT LED

The bright LED (or "light-emitting diode") is a small module that puts out a big light. Just like our other LED modules, it's a great way to shed some light on your creations. Choose the bright LED when you want a lot of bright white light.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Watch your bright LED turn on and shine!

COLOR CODE

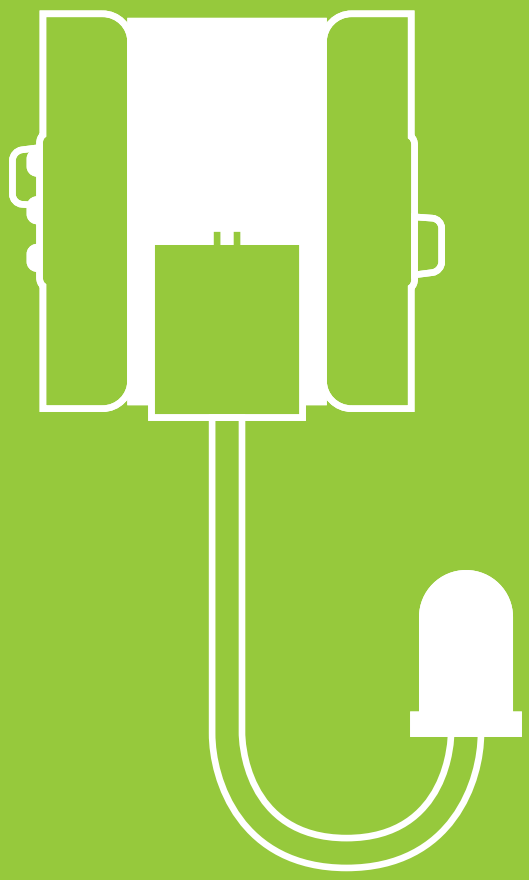
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/bright-led

Ages 8 to ∞

littleBits™

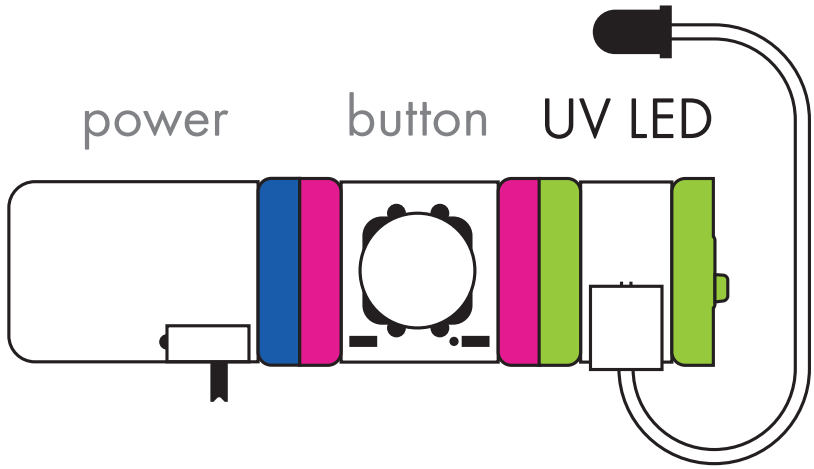


o15

UV LED

The UV LED (or "ultraviolet light-emitting diode") module sends out light with shorter wavelengths than visible light. It looks purple to the eye, but it has some special abilities, like making white fabrics and certain inks glow in the dark. If you have a pen that writes in UV-sensitive ink, you can use it to reveal secret messages.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Make something glow with your UV LED!

COLOR CODE

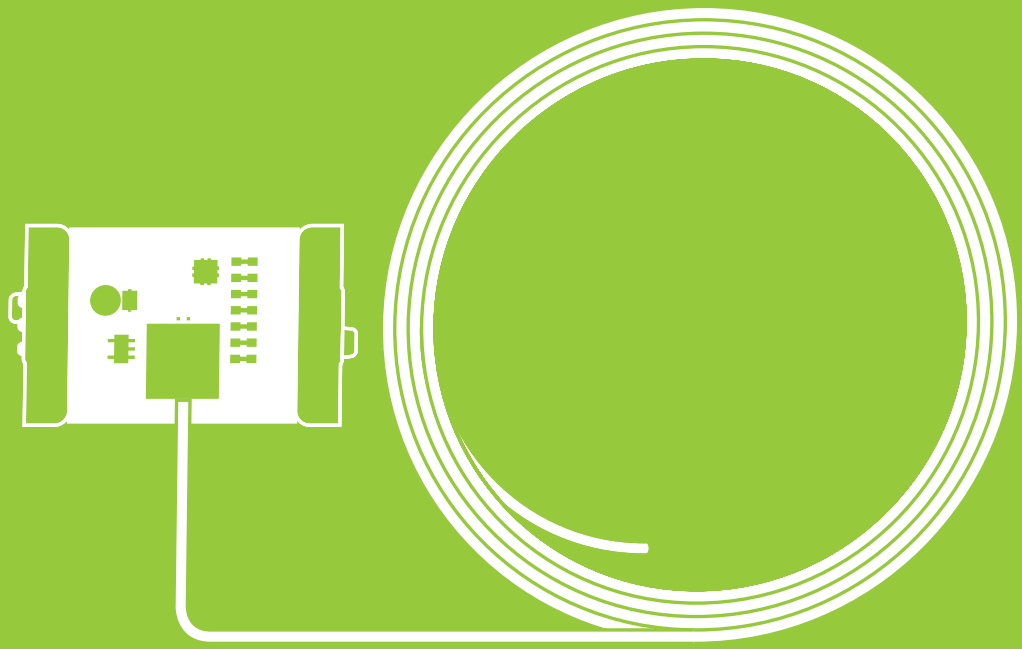
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/uv-led

Ages 8 to ∞

littleBits™

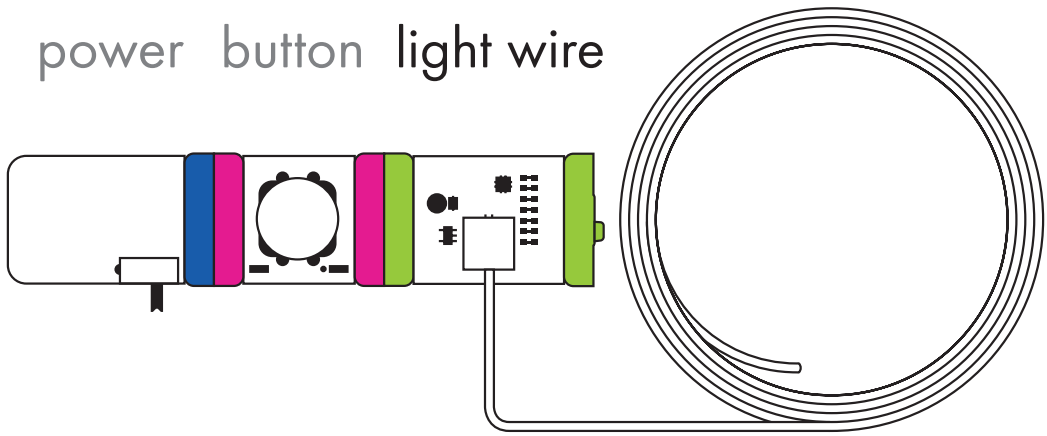


o16

LIGHT WIRE

The light wire is almost four feet long and its entire length glows a soft blue. It's made of special stuff called "electroluminescent wire," which is great to form into glowing shapes. It's best to use in the dark. We like to use it for wearable accessories when we go to parties!

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module after it.

③ Wrap your light wire around any object to make it glow!

COLOR CODE

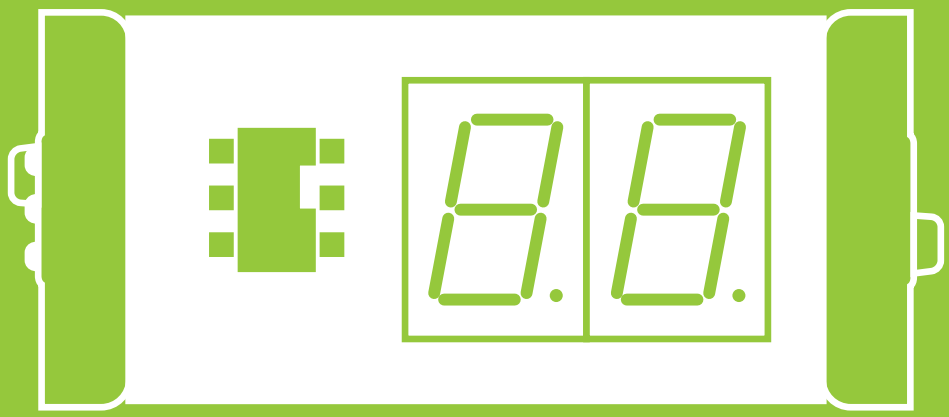
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/light-wire

Ages 8 to ∞

littleBits™

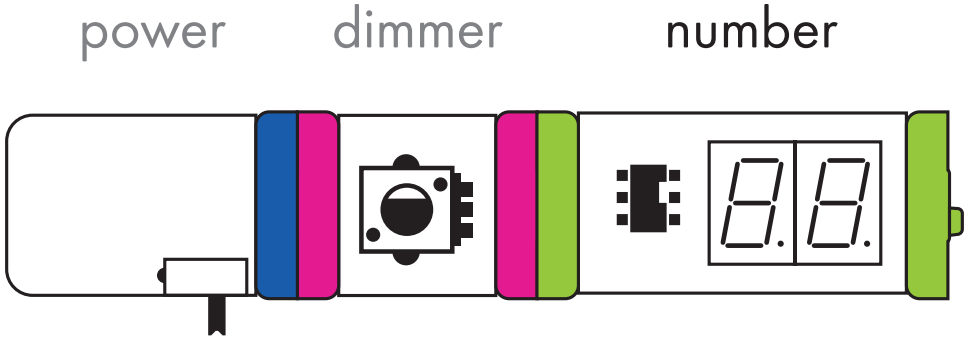


o21

NUMBER

The number module displays information about the signal it's receiving from your other modules. It has two modes: in "value" mode, it displays a number from 0 to 99 on its LED display, where 0 is totally off, and 99 is all the way on. In "volts" mode, it displays the actual voltage on the signal pin, from 0.0 to 5.0 volts. It takes the same signal it receives and sends it out to the next module.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Snap any pink input module before the number module.

③ Use the number module after your input to measure.

COLOR CODE

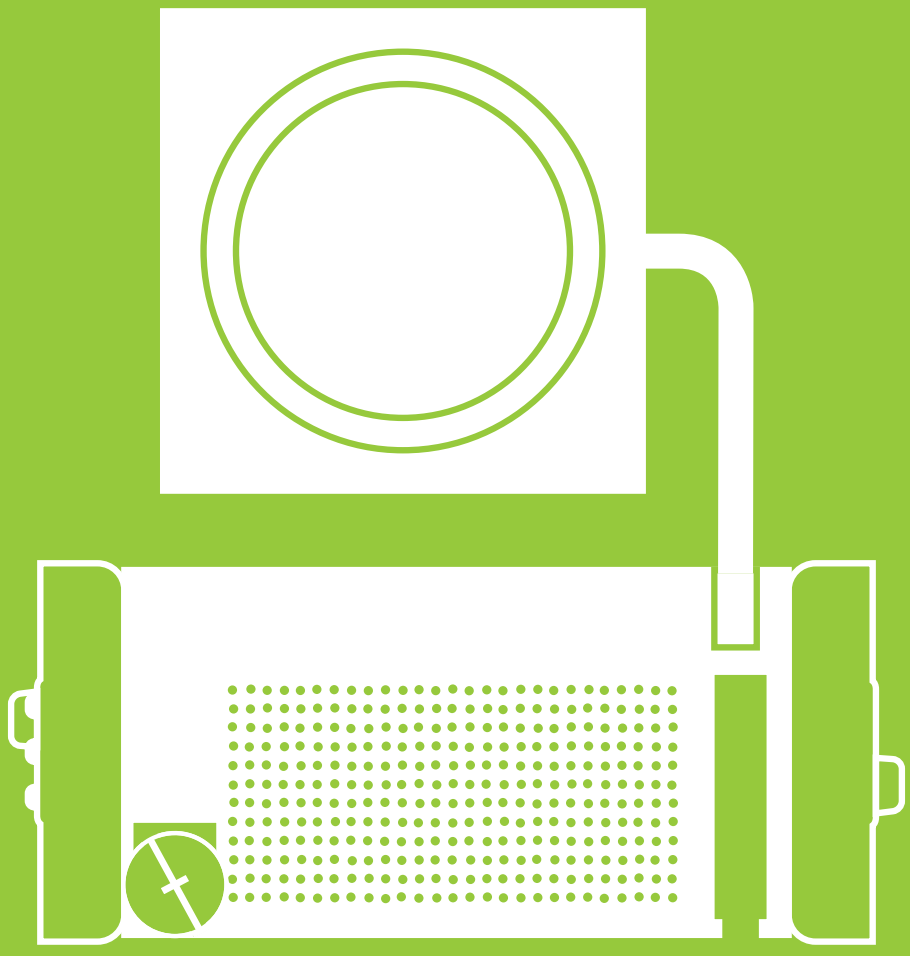
Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/number

Ages 8 to ∞

littleBits™

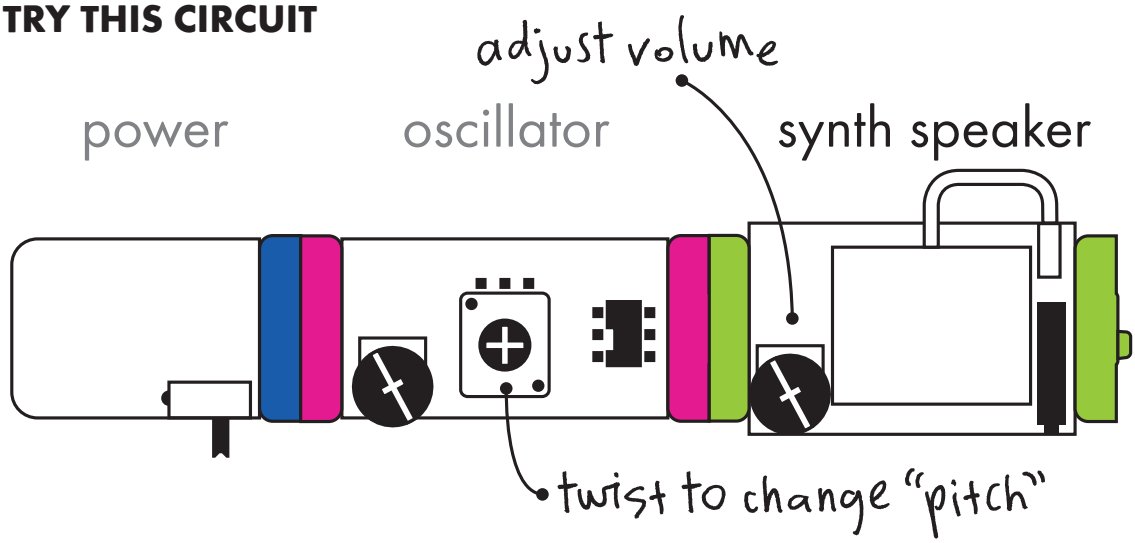


o24

SYNTH SPEAKER

The synth speaker amplifies your sonic explorations! You can control the volume with a dial at the front of the module. It also features an output jack that you can connect to headphones, an amplifier, or a computer. The speaker is connected with 3M™ Dual Lock™ so it can be removed from the circuit board. To reattach, hold module and press together firmly.

TRY THIS CIRCUIT



① Start with a blue power module and turn it on.

② Switch the "waveform" and hear the timbre change.

③ Rock out to the sweet sounds from your synth speaker!

COLOR CODE

Power – blue
Input – pink
Output – green
Wire – orange

You always need a **blue** and a **green**; **pink** and **orange** are optional, in between.

MORE INFO littleBits.cc/Bits/synth-speaker Ages 14 to ∞