Welcome, and Thank You!

Thank you for purchasing this Brickstuff product. We hope you enjoy using it as much as we enjoyed creating it. The parts in this box are only part of our story, only part of what we're working hard to develop. Our goal is to create the most flexible and exciting line of hobby electronics products for you to use in all of your fantastic creations. All of these products will work together, and you won't need to be an electronics expert to use them. So keep building amazing things—we'll help you bring them to life.

Thanks again for supporting us. We couldn't do this without you!

--- The Brickstuff Team
support@brickstuff.com

Arduino Shield

INSTRUCTIONS FOR USE

The shield included with this kit is compatible with any Arduino Uno form factor microcontroller. You can attach it on top of the standard headers of your microcontroller board and connect Brickstuff-compatible lights, remote controls, sound modules, and other accessories directly into its ports.

The shield has the following features:

- Pre-soldered header pins, so your shield is ready to plug in.

- Six high-current output ports, each capable of driving a large number of lights using pulse-width modulation (PWM) brightness control.

- One input and power port for the 4-channel Brickstuff RF remote control accessory (sold separately). Using this remote and our sample code available at https://bit.ly/brickstuff-arduino, you can add up to four channels of remote control to your projects.

- Two sensor inputs, each providing 5 volt power (+ and -) along with an analog input line. You can use these inputs to connect a huge array of sensors and add their control input to your projects. An area is also provided on the shield itself for pullup resistors (sold separately, 10k resistor value recommended) if your sensors require this.

- One main power input compatible with many of the Brickstuff power supplies. Note that this input can also power your Arduino board itself, so you can use a Brickstuff power supply to create a fully self-contained installation. See later in this document for some notes about which power supplies are recommended. **Do not connect the Brickstuff power input and the USB Arduino power input at the same time— doing so will damage your board!**

- One I2C output that will work with any I2C-compatible peripheral. This plug is also used by the Brickstuff Intelligent Sound Module (sold separately), so you can use our sample code to add sound to your projects as well. An area is also provided on the shield itself for pullup resistors (sold separately, 4.7k resistor value recommended), which may be required by your I2C peripheral device.

- Two BrickPixel™ outputs. These can be used to provide control of NeoPixel-type LED lights or light strings, as well as a growing number of Brickstuff-made lights. The Brickstuff BrickPixel™ system and adapters can be used to create chains of hundreds of Pico LEDs and similar lights, which you can then program and control using any of the standard NeoPixel libraries from adafruit.com and others.

- An onboard power indicator and Arduino reset button.

Use of this shield assumes that you are familiar with the Arduino programming environment and coding. We will be doing our best to post and share code samples on our User Forum at this location:

https://bit.ly/brickstuff-arduino

If you are looking for examples of how best to integrate or control lights, the User Forum is the best place to begin. Note that we are not able to provide help about the overall Arduino environment or coding in general.

If you need resistors or would like cables with connectors that fit the plugs on your shield, check our website for the Arduino Shield Accessory Add-on Pack.
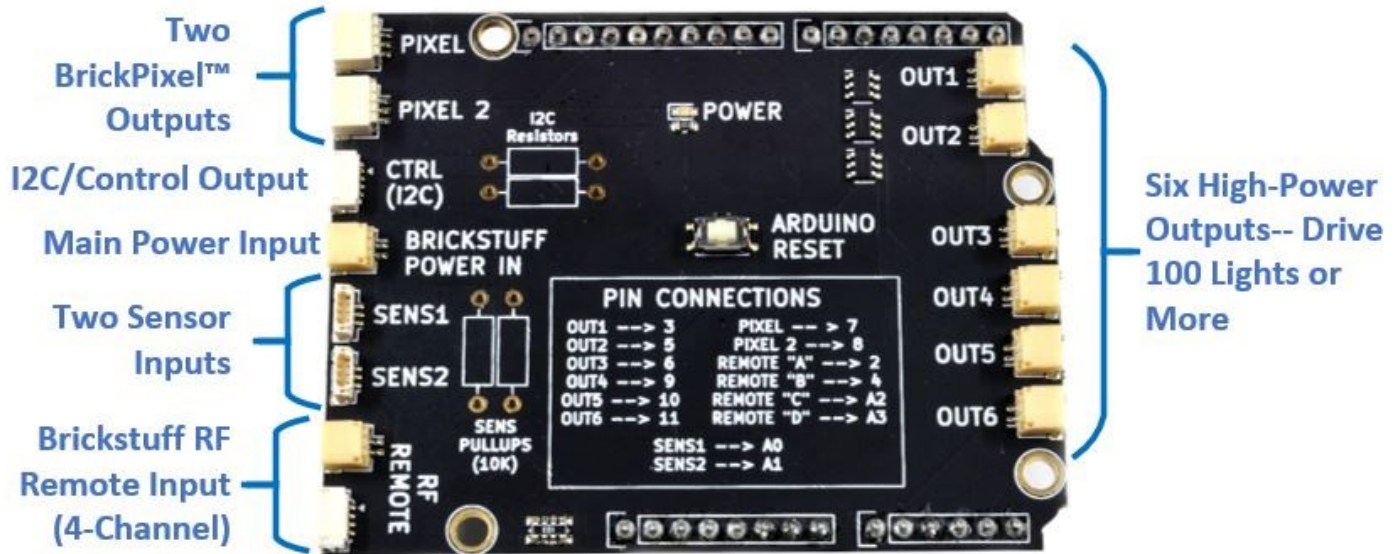
SHIELD LAYOUT

FIGURE 1: The Brickstuff Arduino Shield with Connectors.

BEST PRACTICES / PRECAUTIONS

To get the most out of your shield, we recommend the following best practices and precautions:

1. Always power your Arduino board and the Brickstuff shield with a single power source: either the onboard USB power input on the Arduino board or the Brickstuff power input on the shield. **Never apply power to both inputs at the same time— doing so will damage your board and the shield!**

2. When using the USB power input on the Arduino board to supply power, keep in mind the total power being consumed by the lights and accessories connected to your shield. The onboard voltage regulator of most Arduino boards can only provide 500 milliamps (500mA) of power, which is only about 25 Brickstuff light strips. If you have more lights connected, or if you have additional accessories such as the RF remote, Intelligent Sound Module, or other I2C accessories or sensors connected, you run the risk of damaging your Arduino board. Use a high-output Brickstuff power supply instead, and disconnect the power input USB cable from your Arduino board.

3. Never power a large number of lights using your computer's USB power output. USB outputs on computers were not designed to provide enough power for large lighting installations. You could damage your computer if you try to power too many lights or accessories. Use a high-output Brickstuff power supply instead, and disconnect the power input USB cable from your Arduino board.

4. When selecting a Brickstuff power supply to use with your shield, we do not recommend using any of our coin cell battery packs, our single-cell AAA battery power supply, or our 9V battery power sources. These may not be able to provide enough power for even a small setup. Instead, we recommend using one of the following Brickstuff power supplies: Our USB power cable with iPhone or iPad-type mains adapter connected (or high-capacity USB battery bank), our 3x AA battery power source with on/off switch, our Power Functions power source, or our LiPo battery power source with on/off switch.