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 lighting and automation 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!

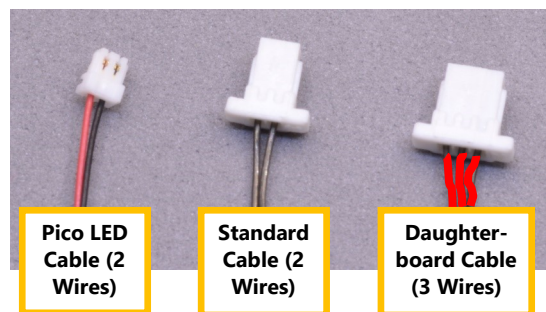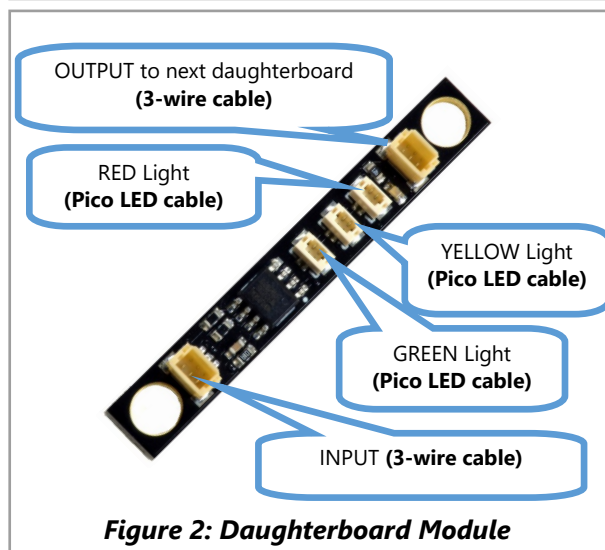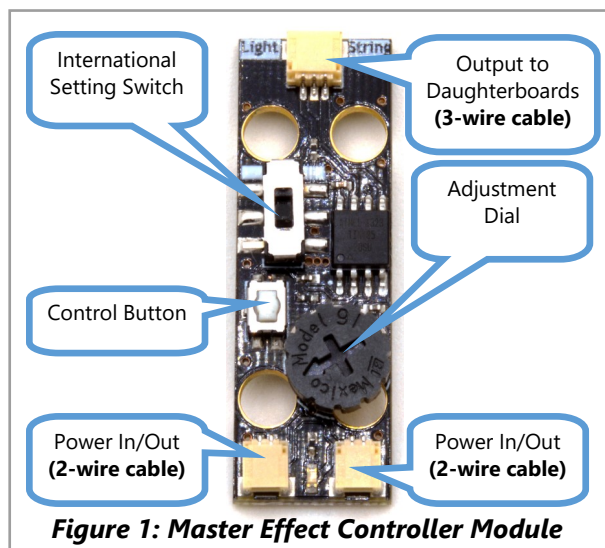**--- The Brickstuff Team**
info@brickstuff.com

Deluxe Traffic Light System

INSTRUCTIONS FOR USE

The Brickstuff traffic light system is a configurable system for building realistic traffic lights that operate in a synchronized sequence (like traffic lights in real life). There are several key parts to the system:

1. **The Master Effect Controller:** The Master Effect Controller manages all traffic lights in synchronization. The Master Controller is shown in Figure 1.
2. **Daughterboards:** these connect to the Master Controller in daisy-chain fashion using 3-wire cables. Each daughterboard manages three LEDs (one traffic light). The daughterboard is shown in Figure 2.
3. **LEDs:** Brickstuff Pico LEDs connect to the small plugs on the daughterboards. This kit includes four each of red LEDs, yellow LEDs, and green LEDs.
4. **12" 3-Wire Connecting Cables:** These are used to connect daughterboards and are **RED** in color.
5. **Power Supply:** Any standard Brickstuff power supply can be used to power the system. The Master Effect Controller has two 2-wire input plugs on its bottom side— either can be used for power input, and the other plug provides power output.

IMPORTANT: When working with the Brickstuff wiring system, please pay careful attention to the different types of cables and connectors used, as some look similar. The photo below shows the three different types of cables/connectors. While it may be physically possible to insert one type of cable into the wrong type of plug, doing so will damage the system, and possibly produce a shock. Never insert a 2-wire connector into a 3-wire plug.

International Setting Switch
Output to Daughterboards **(3-wire cable)**
Adjustment Dial
Control Button
Power In/Out **(2-wire cable)**
Power In/Out **(2-wire cable)**

Figure 1: Master Effect Controller Module

OUTPUT to next daughterboard **(3-wire cable)**
RED Light **(Pico LED cable)**
YELLOW Light **(Pico LED cable)**
GREEN Light **(Pico LED cable)**
INPUT **(3-wire cable)**

Figure 2: Daughterboard Module

Pico LED Cable (2 Wires)
Standard Cable (2 Wires)
Daughter-board Cable (3 Wires)

CONNECTING THE SYSTEM COMPONENTS

Figure 3 shows a typical setup for a 4-way intersection: one Master Effect Controller, four daughterboards, four 3-wire connecting cables, and 12 LEDs. The traffic lights are numbered 1-4 in the figure— their connection sequence is critical, since the first daughterboard connected to the Master Controller is traffic light #1, and so forth.

The Master Effect Controller allows three main configuration items to be set:

1. Individual brightness for red, yellow, and green LEDs (one brightness level for each color across all traffic lights).
2. Green-Yellow-Red timing for the traffic signals (timing can be 10, 20, 30, 40, 50, or 60 seconds). Timing is the length of the GREEN signal, before the Yellow-Red sequence begins.

Figure 3: 4-Way Intersection Setup

3. Using the "International Setting" switch, the international mode of transitioning from Red to Green (where both Red and Yellow are lit before switching to Green) can be set. To activate this mode, turn the switch into the UP position **BEFORE** turning on power. Once power is on, moving the switch has no effect (the international mode is only set at power-on time).
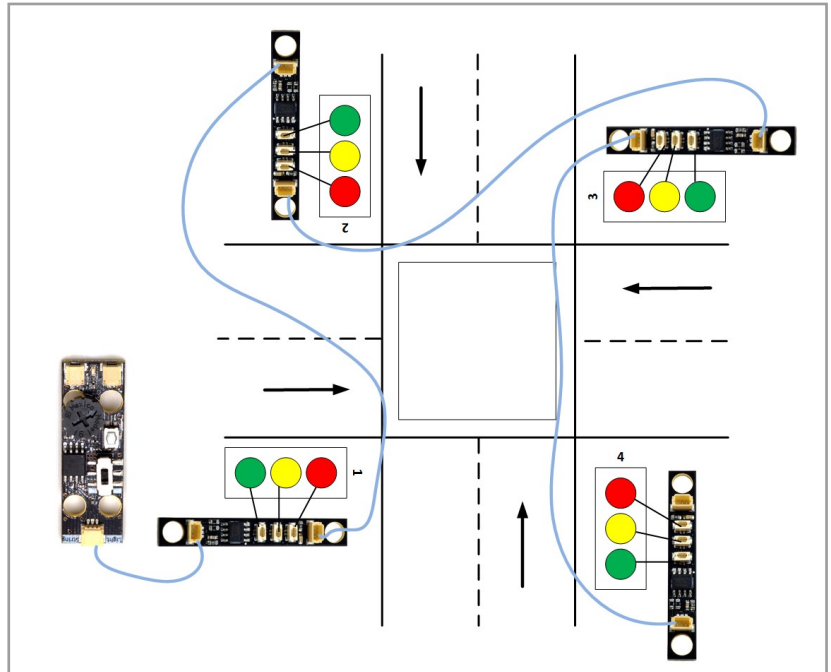
Setting Brightness and Delay Time

Individual brightness can be set for all green LEDs, all yellow LEDs, and all red LEDs (three different brightness levels in total). Brightness settings are maintained even when the Master Effect Controller is powered off.

Brightness is set in a sequence: first the brightness for red LEDs is set, then brightness for yellow LEDs, and finally brightness for green LEDs. **The factory-default setting for red and yellow LEDs is maximum brightness; the factory-default setting for green LEDs is lower because green light appears brighter to the human eye than red or yellow.**

Brightness is set by entering Configuration Mode at power-up. To enter Configuration Mode, hold down the Control Button on the Master Effect Controller (see Figure 1) while power is off, then turn power on *while continuing to hold the Control Button down*. Wait several seconds, then release the Control Button. **All LEDs will flash three times to confirm you have entered Configuration Mode.**

Once in the Configuration Mode, you will set LED brightness first. Turn the Adjustment Dial to set brightness for the red LEDs. Once the desired brightness has been reached, press the Control Button for two seconds, then release. The new brightness for the red LEDs will be entered into memory, and brightness adjustment will move to the yellow LEDs. Follow the same procedure to set brightness for the yellow LEDs and then the green LEDs.

Once you have set brightness for all LEDs, the setup sequence will move to setting Delay Time. Timing for the Green-Yellow-Red sequence can be set all traffic lights. Timing can be set in 10-, 20-, 30-, 40-, 50-, or 60-second durations. Timing settings are maintained even when the Master Controller is powered off. **The factory-default delay setting for all traffic lights is 10 seconds.**

Setting Delay Timing *(continued)*

Once the timing setting sequence has begun, traffic lights will light up indicating the current delay value.

Figure 4 shows the delay values that are indicated by different combinations of green/yellow/red LEDs.

To adjust the delay, turn the Adjustment Dial. The delay value will change and the illuminated LED pattern will also change to indicate the delay value selected.

Figure 4: Timing Delay Indicators

Once you have reached the desired delay value, press the Control Button for several seconds, then release. The delay value will be written to memory and saved even when power is off.

All LEDs will flash three times to confirm the timing setting sequence has ended. Normal operation will resume.
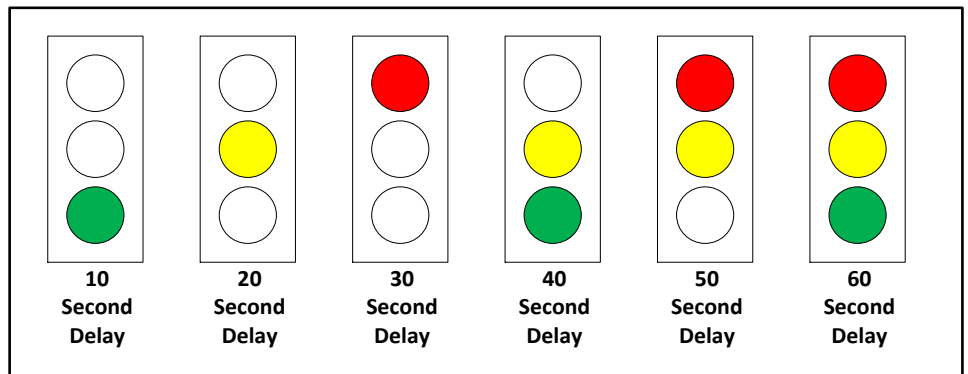
Because of the way the Configuration Mode sequence works, the only way to change Delay Time value is to first step through the brightness setting sequence.

ADVANCED CONFIGURATIONS

Advanced configurations, such as double-headed traffic lights at each intersection, are possible using the BRANCH05/A5 "Y" adapter board. These adapter boards, as well as additional 3-wire connecting cables, can be obtained by contacting the Brickstuff team at support@brickstuff.com.

As shown in Figure 5, the Brickstuff lighting system uses three adapters that look very similar. Because the traffic light system uses 3-wire connecting cables for the Master Effect Controller and daughterboards, only the BRANCH05 adapter can be used to "split" the signal coming from the Master Effect Controller. The BRANCH05 adapter is also the only adapter with 3-wire plugs. **Never insert a 2-wire connector into a 3-wire plug.**

Using one BRANCH05 adapter, the control signal from the Master Effect Controller can be split into two parallel signals. This can be used to drive double
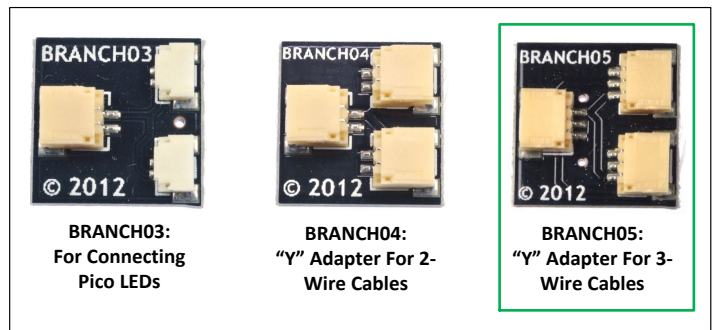

Figure 5: Three Similar Adapter Boards

-headed traffic signals, or by using multiple BRANCH05 adapters, to increase the number of traffic signals controlled by a single Master Effect Controller by a factor of 2, 3, or 4.

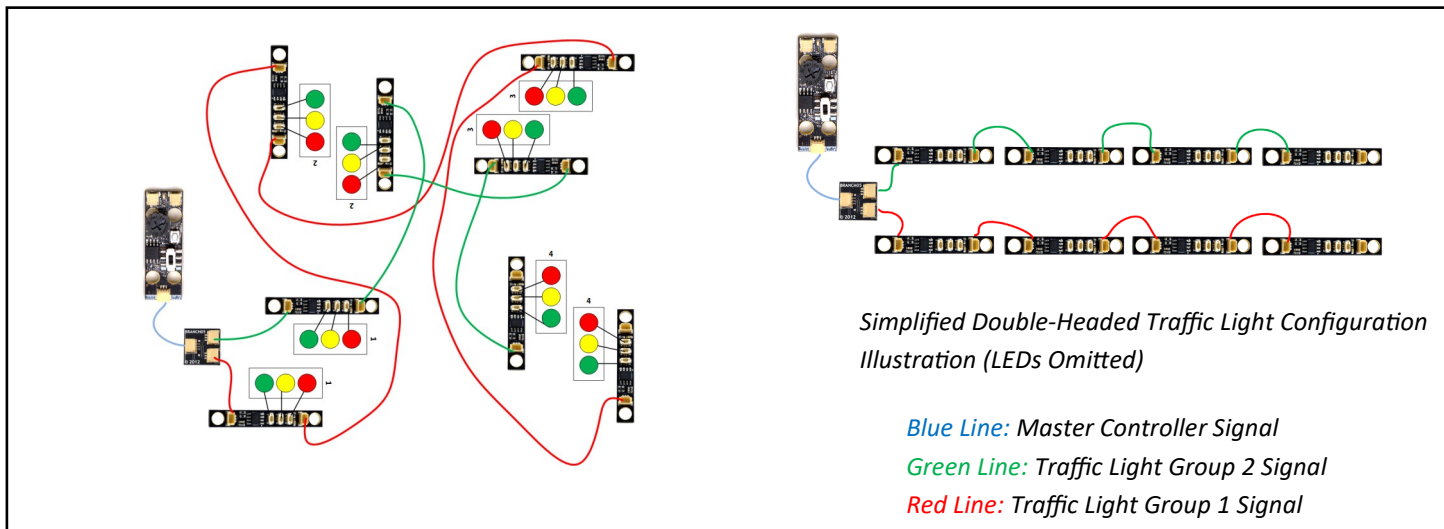The illustrations on the following page show these advanced configurations.

Simplified Double-Headed Traffic Light Configuration Illustration (LEDs Omitted)

Blue Line: Master Controller Signal
Green Line: Traffic Light Group 2 Signal
Red Line: Traffic Light Group 1 Signal

Figure 6: Using One BRANCH05 "Y" Adapter to Drive Double-Headed Traffic Lights

Blue Line: Master Controller Signal
Green Line: Intersection #1 Signal
Red Line: Intersection #2 Signal
Purple Line: Intersection #3 Signal
Black Line: Intersection #4 Signal

Note: Timing for all intersections will be identical and cannot be set individually, since all intersections operate using a single, split/duplicated control signal.
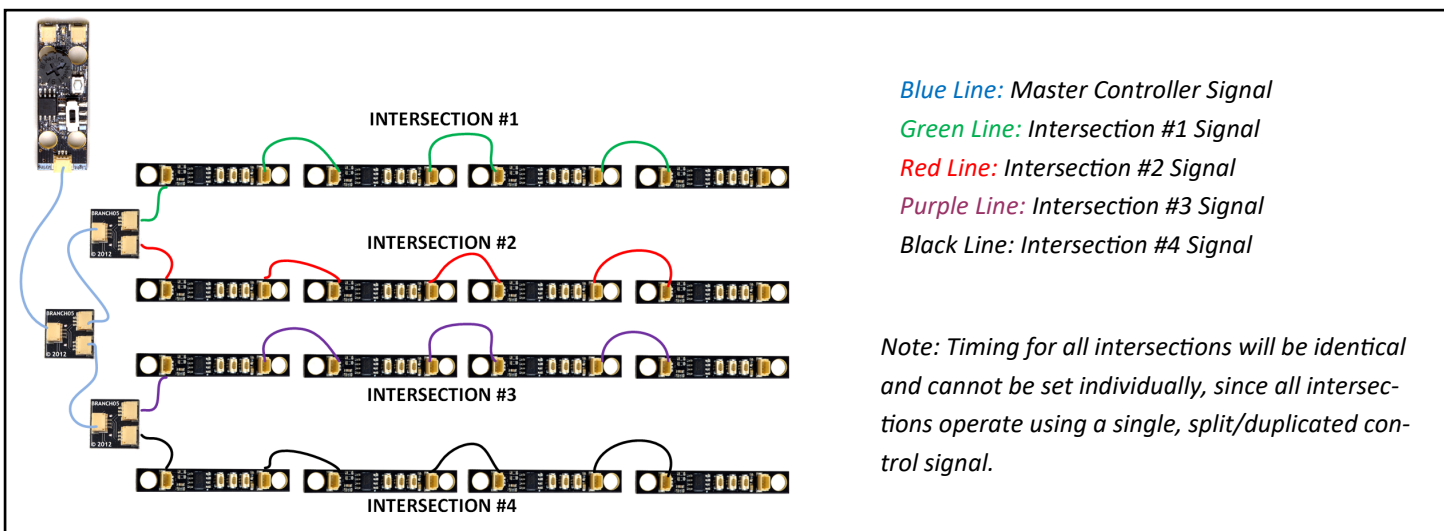
Figure 7: Using Three BRANCH05 Adapters to Drive Four 4-Way Intersections (16 Traffic Lights Total)

Figure 6 above shows how one BRANCH05 adapter board can be used to split the signal coming from the Master Effect Controller into two channels, which can then be used with a parallel set of daughterboards and 3-wire connecting cables to create double-headed traffic lights.

Figure 7 shows how multiple BRANCH05 adapter boards can be used to split the control signal into more than one channel. This can be used in combination with our longest 3-wire connecting cables (24") to create traffic light setups at multiple intersections that are controlled from a single Master Effect controller.

To help create the setups above, red/yellow/green LED packs, BRANCH05 adapter boards, additional daughterboards, and additional 3-wire connecting cables in lengths of 1.5", 12", or 24" can be purchased directly from Brickstuff by sending an e-mail to us at support@brickstuff.com. We can work with you to determine the optimal configuration for your setup and issue a PayPal invoice for purchase (you do not need a PayPal account to pay).