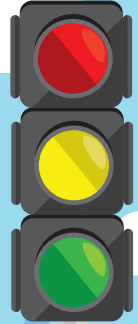


traffic light diy Kit Manual

No Prior Experience Required



DO YOU EVER WONDER HOW A TRAFFIC LIGHT WORKS AND THE SOFTWARE BEHIND IT ?

The Moonshot Jr Traffic Light kit will help you understand how traffic lights work in a fun and creative way, let us get our hands on this kit and understand how it works. We are going to have lots of fun working and learning on the traffic light kit today.

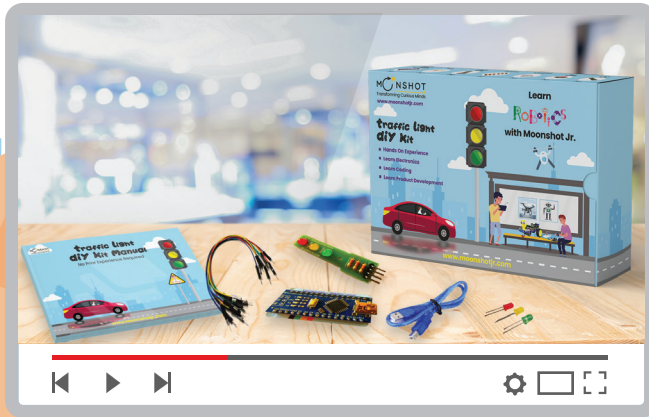


UNPACKING THE KIT

Visit our Tech Corner Blog at

<https://moonpreneur.com/tech-corner/moonshot-jr-traffic-light-kit/>

to view an online copy of this traffic light document



LIST OF ITEMS

Here is the list of items you will find as soon as you unpack the kit.



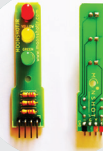
Controller Board - TL001



USB Cable - TL002



Mooncard - TL003



Traffic Light
Board x1 - TL004



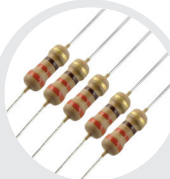
Connection
Wires - TL005



Bread Board - TL006



LEDs (3 Quantity) - TL007



Resistors 5x - TL008



Push Button - TL009



User Manual - TL010

LET'S START

Step 2

Insert the Controller Board (TL001) in the Bread Board(TL006). Ensure that the USB connector is at the edge of the Bread Board and the pins are aligning, as shown in the image below.

Step 4

Insert the Traffic Light Board (TL004) in the breadboard, as indicated.

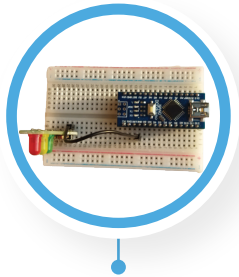
Step 1

Open the kit and find the Controller board (TL001 - It is an Arduino Nano Compatible Board) . The Controller board has the Software that will control the traffic light.

Step 3

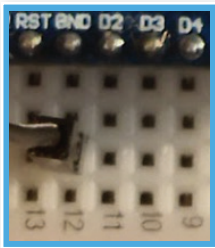
Find the Traffic Light Board (TL004) in the kit, it has 4 colored pins at one end. In the next step we will be connecting the 4 pins with the controller board using the provided wires.

Step 5



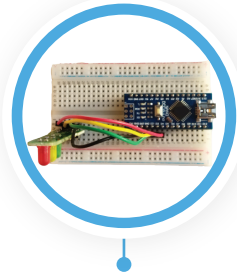
Use a black (or any other color) wire and insert one end to an empty hole in the breadboard in **front of the GND pin of the controller board.**

Insert the other end of the wire in the empty hole on the breadboard in **front of the traffic light board's black pin.**



Make sure the end of the wire is inserted in front of the GND pin of the controller board.

Step 6



Repeat the previous process for the remaining pins.

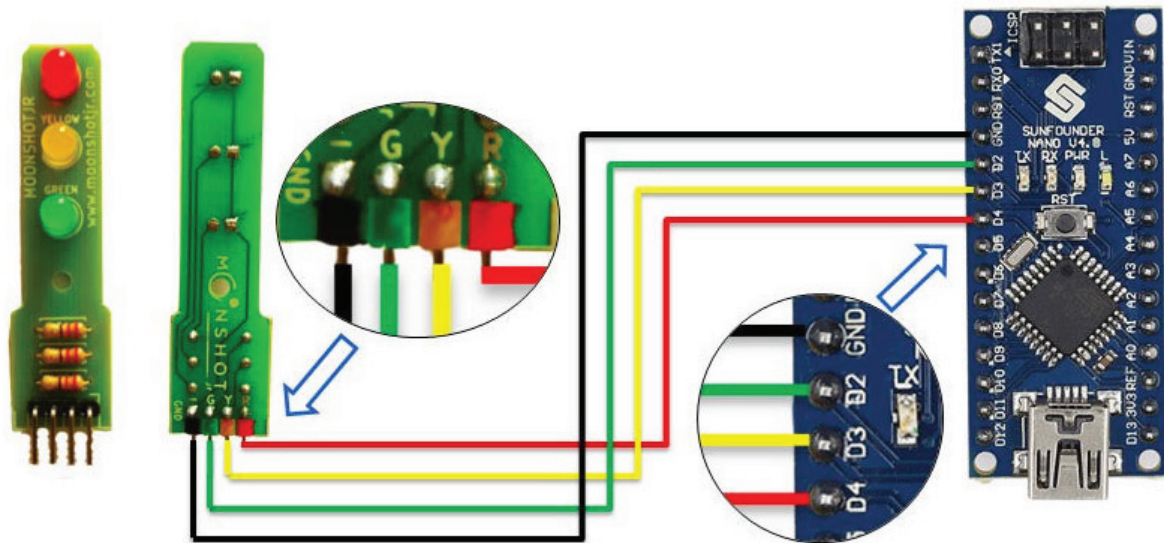
The Red wire connects to **pin D4** of the controller board.

The Yellow wire connects to **pin D3** of the controller board.

The Green wire connects to **pin D2** of the controller board.

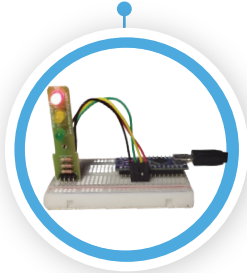
WIRE	TRAFFIC BOARD	CONTROLLER BOARD
RED	RED	D4
YELLOW	YELLOW	D3
GREEN	GREEN	D2
BLACK	BLACK	GND

This is the scheme of connection, note that the connection has to be made through the breadboard.



Step 7

Insert USB Cable into the connector of the controller board. Connect the other end of the cable in the USB Port of your computer or laptop.



Did you see the traffic lights glow in a particular order?

<https://moonpreneur.com/book-a-free-trial-m/>

Let us try to see how the software works. We will need to install the Arduino IDE first, it is a software that allows us to create, modify and upload software on the controller board. You will be able to learn the above steps and more things in great detail in our free trial class. You can sign up for the free trial class by clicking on the link given below.



Have you thought about what was inside the Controller board that made the traffic lights work?



Step 8a

Go to <https://www.arduino.cc/en/software> and download the latest version of Arduino IDE, depending on which system you use (Windows, Mac).

Downloads



Arduino IDE 1.8.19

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.

Refer to the [Getting Started](#) page for Installation instructions.

SOURCE CODE

Active development of the Arduino software is [hosted by GitHub](#). See the instructions for [building the code](#). Latest release source code archives are available [here](#). The archives are PGP-signed so they can be verified using [this](#) gpg key.

DOWNLOAD OPTIONS

Windows Win 7 and newer

Windows ZIP file

Windows app Win 8.1 or 10



Linux 32 bits

Linux 64 bits

Linux ARM 32 bits

Linux ARM 64 bits

Mac OS X 10.10 or newer

Release Notes

Checksums (sha512)

Step 8b

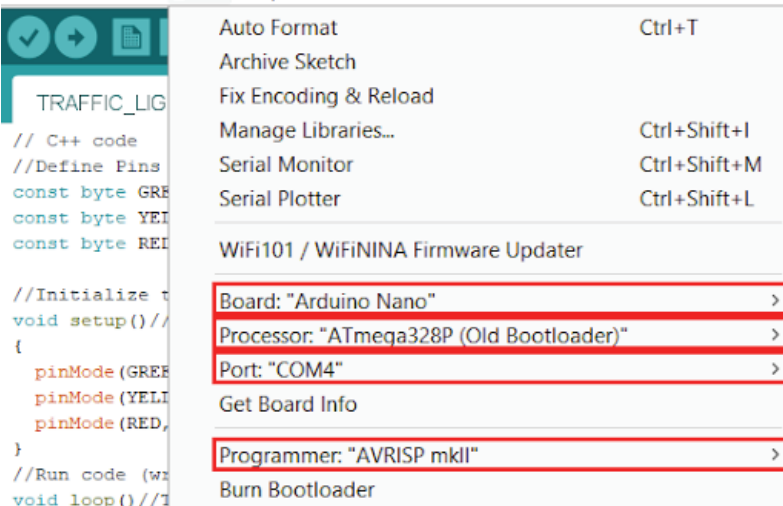
After Installing the Arduino IDE, connect the Arduino board to your computer.

After starting the Arduino IDE. Click on tools to reveal this menu:

Refer to the above picture, and follow these steps

- Hover on Board and Select **Arduino Nano**
- Select **ATmega328P** (Old Bootloader) as the Processor.
- Select the correct Port (e.g. COM4).
- Make sure the Programmer is set to **AVRISP mkII**.

File Edit Sketch Tools Help



The screenshot shows the Arduino IDE interface. On the left, a code editor displays C++ code for a traffic light kit, including pin definitions and initialization functions. On the right, the 'Tools' menu is open, showing various options. The 'Board' section is expanded, and three items are highlighted with red boxes: 'Board: "Arduino Nano"', 'Processor: "ATmega328P (Old Bootloader)"', and 'Port: "COM4"'. Below this, 'Programmer: "AVRISP mkII"' is also highlighted with a red box. Other menu items include 'Auto Format', 'Archive Sketch', 'Fix Encoding & Reload', 'Manage Libraries...', 'Serial Monitor', 'Serial Plotter', 'WiFi101 / WiFININA Firmware Updater', 'Get Board Info', and 'Burn Bootloader'. Keyboard shortcuts are listed for several items: Ctrl+T for Auto Format, Ctrl+Shift+I for Manage Libraries..., Ctrl+Shift+M for Serial Monitor, and Ctrl+Shift+L for Serial Plotter.

```
TRAFFIC_LIG
// C++ code
//Define Pins
const byte GRE
const byte YEL
const byte RED

//Initialize t
void setup()//
{
  pinMode(GRE
  pinMode(YELI
  pinMode(RED,
}
//Run code (w
void loop()//T
```

Step 8c

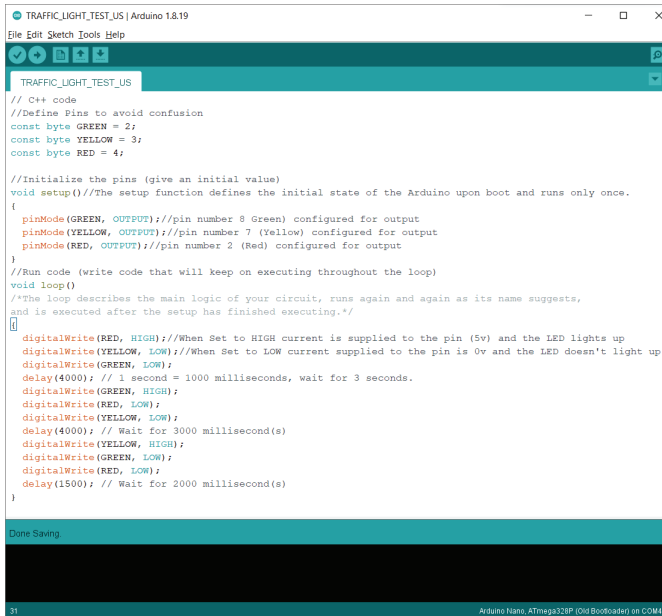
Visit <https://moonpreneur.com/tech-corner/moonshot-jr-traffic-light-kit/> to copy the working code for the traffic light.

Alternatively, you can scan the QR code given below.



Step 8d

Paste the code in the editor.



```
TRAFFIC_LIGHT_TEST_US | Arduino 1.8.19
File Edit Sketch Tools Help

TRAFFIC_LIGHT_TEST_US

// C++ code
//Define Pins to avoid confusion
const byte GREEN = 2;
const byte YELLOW = 3;
const byte RED = 4;

//Initialize the pins (give an initial value)
void setup()//The setup function defines the initial state of the Arduino upon boot and runs only once.
{
  pinMode(GREEN, OUTPUT);//pin number 8 Green) configured for output
  pinMode(YELLOW, OUTPUT);//pin number 7 (Yellow) configured for output
  pinMode(RED, OUTPUT);//pin number 2 (Red) configured for output
}
//Run code (write code that will keep on executing throughout the loop)
void loop()
/**The loop describes the main logic of your circuit, runs again and again as its name suggests,
and is executed after the setup has finished executing.**/
digitalWrite(RED, HIGH);//When Set to HIGH current is supplied to the pin (5v) and the LED lights up
digitalWrite(YELLOW, LOW)//When Set to LOW current supplied to the pin is 0v and the LED doesn't light up
digitalWrite(GREEN, LOW);
delay(4000); // 1 second = 1000 milliseconds, wait for 3 seconds.
digitalWrite(GREEN, HIGH);
digitalWrite(RED, LOW);
digitalWrite(YELLOW, LOW);
delay(4000); // Wait for 3000 millisecond(s)
digitalWrite(YELLOW, HIGH);
digitalWrite(GREEN, LOW);
digitalWrite(RED, LOW);
delay(1500); // Wait for 2000 millisecond(s)
}

Done Saving

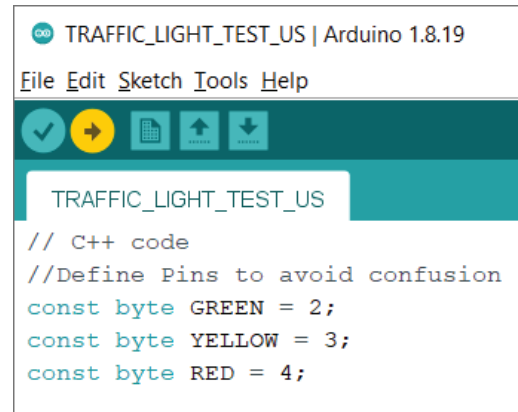
31 Arduino IDE, ATmega328P (Oliv Bootloader) on COM4
```

Step 8e

Upload it to the arduino board by clicking on the upload button highlighted in the yellow color in the image below.

The code will be compiled and uploaded on the board. After the code has been uploaded on the arduino board the traffic light starts functioning.

Did you notice the green light stays on for a longer period of time?



```
TRAFFIC_LIGHT_TEST_US | Arduino 1.8.19
File Edit Sketch Tools Help

TRAFFIC_LIGHT_TEST_US

// C++ code
//Define Pins to avoid confusion
const byte GREEN = 2;
const byte YELLOW = 3;
const byte RED = 4;
```

NEXT STEP

Do you want to learn more about automation and how you can make a smart Traffic Light and more...

Stop here and register for a free trial class to know how you could actually do that.

Visit Free trial class at

<https://moonpreneur.com/book-a-free-trial-m/>



ADDITIONAL EXERCISE

Please try the Manual for 13 to 15 Age groups.