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# **2.4G Transceiver nRF24L01 Module**



## **User's Manual V2.0**

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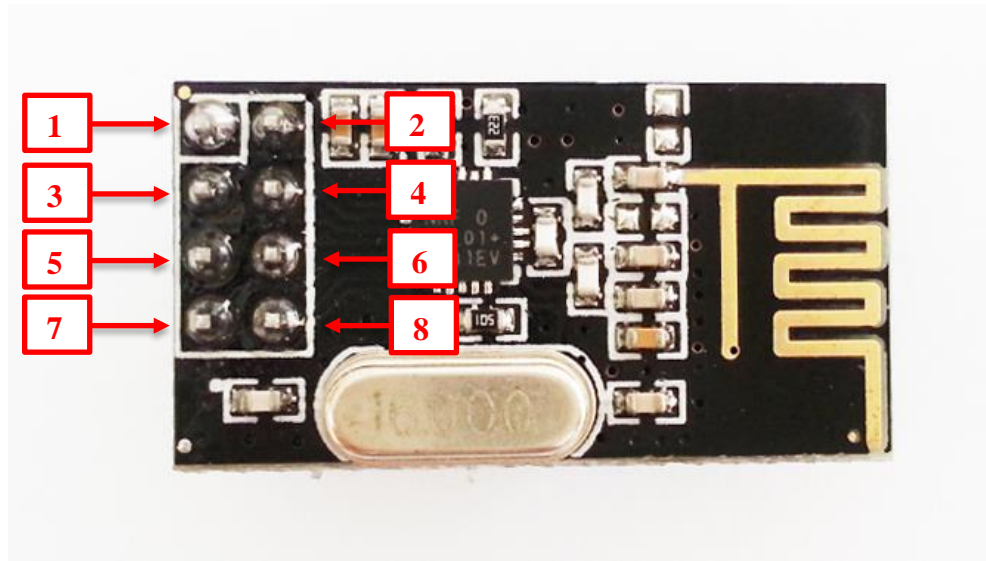
## 1. Introduction

This is the latest 2.4GHz wireless transceiver module, the nRF24L01+ which is a single chip radio transceiver for the worldwide 2.4 - 2.5 GHz ISM band. The transceiver consists of a fully integrated frequency synthesizer, a power amplifier, a crystal oscillator, a demodulator, modulator and Enhanced ShockBurst protocol engine. Output power, frequency channels, and protocol setup are easily programmable through a SPI interface. Current consumption is very low, only 9.0mA at an output power of -6dBm and 12.3mA in RX mode. Built-in Power Down and Standby modes makes power saving easily realizable.

### **Specification:**

- Power Supply: External 3.3V
- Ultra low power operation
- Transceiver IC operates in the 2.4GHz band and has many new features
- Receive Mode Current(peak): 45mA

## 2. Pin Definition



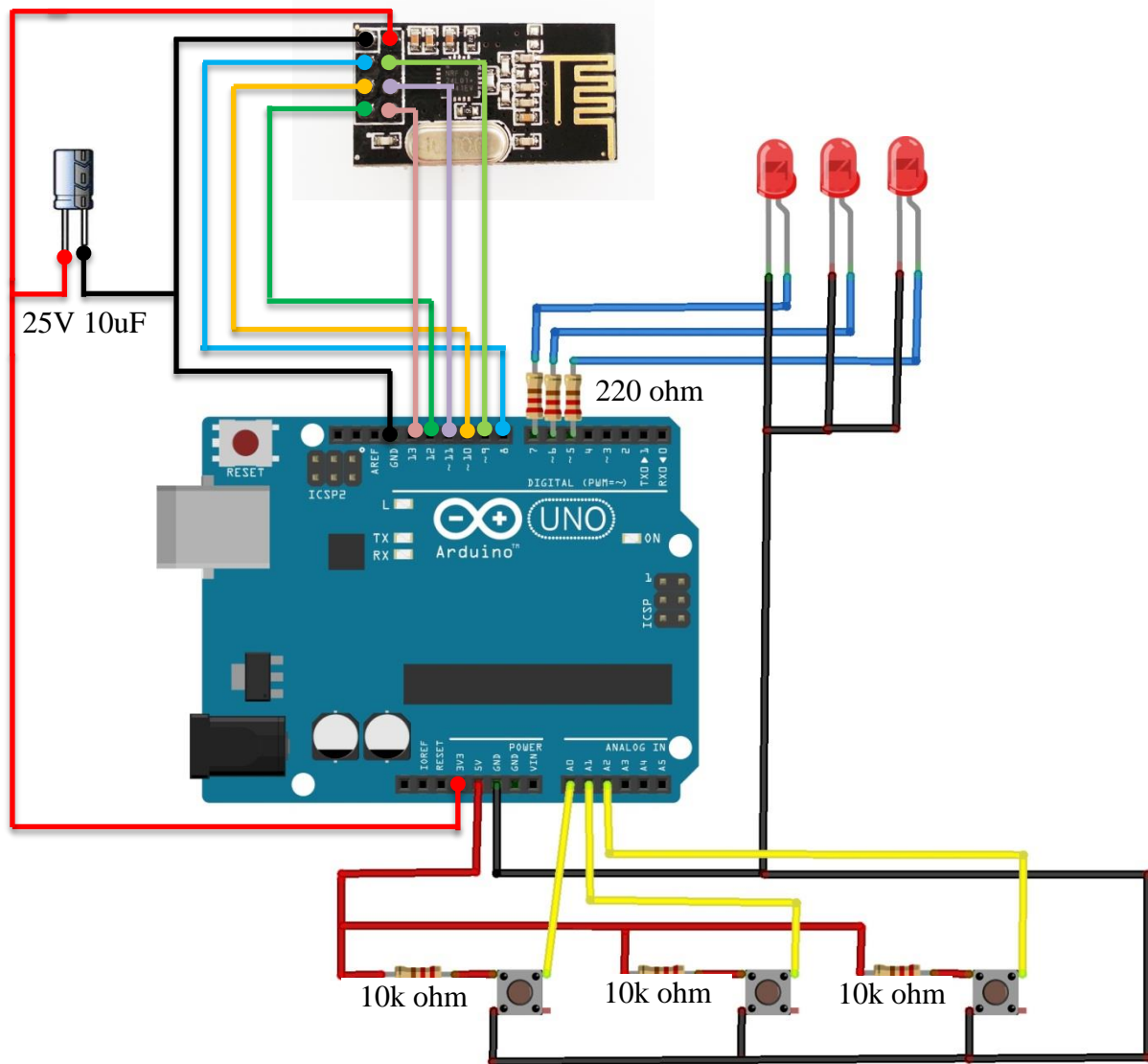
Pin	Description	Function
1	Ground	Connect to Ground
2	Vcc	Connect to 3.3V <i>*Note: 5V will burn the module</i>
3	CE	Activates RX or TX mode
4	CSN	SPI Chip Select
5	SCK	SPI Clock
6	MOSI	SPI Slave Data Input
7	MISO	SPI Slave Data Output, with tri-state option
8	IRQ	Mask able interrupt pin

*\*Note: Please refer to the datasheet for theory operation.*

### 3. Sample Hardware Installation and Sample Source Code

Diagram below shows the hardware connection between 2.4G Transceiver nRF24L01 Module and Arduino UNO. Besides Arduino UNO, it may interface with any microcontroller such as PIC and etc. **In order to communicate through RF module, construct 2 sets of hardware below.**

- **GND (1) → Arduino GND pin**
- **VCC (2) → Arduino 3.3V pin**
- **CE (3) → Arduino Pin 8**
- **CSN (4) → Arduino Pin 9**
- **SCK (5) → Arduino Pin 10**
- **MOSI (6) → Arduino Pin 11**
- **MISO (7) → Arduino Pin 12**
- **IRQ (8) → Arduino Pin 13**

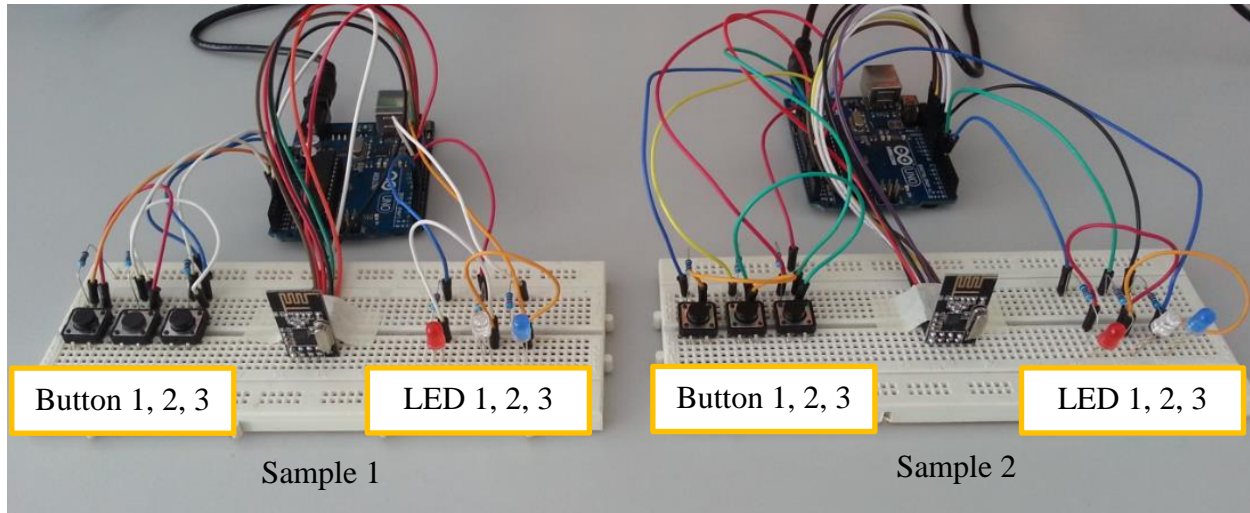


After completing 2 sets of sample hardware, please get the [sample source code](#) and burn it into these Arduino UNOs.

In this sample source code, it contains 2 Arduino's header files (*NRF24L01.h* and *API.h*). Please refer to "[How to Install Arduino Library User's Manual v1.0](#)" in order to put Arduino's header file to correct location. Otherwise, the program will compile fail.

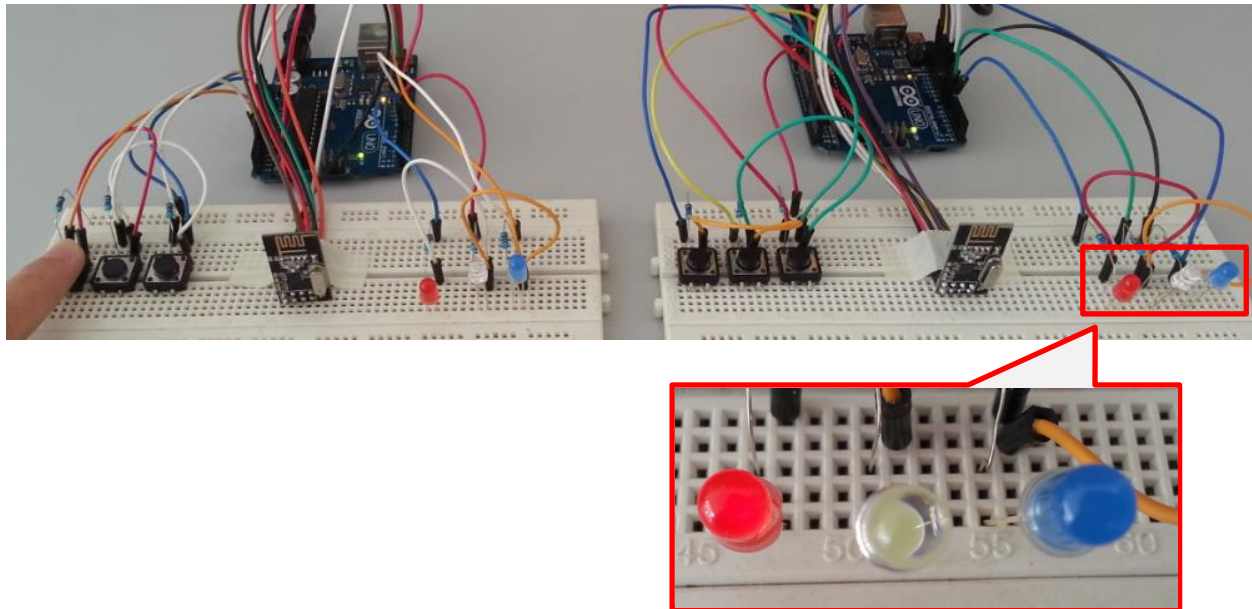
## 4. Result

In this example, 2 sets of sample hardware are prepared as below.

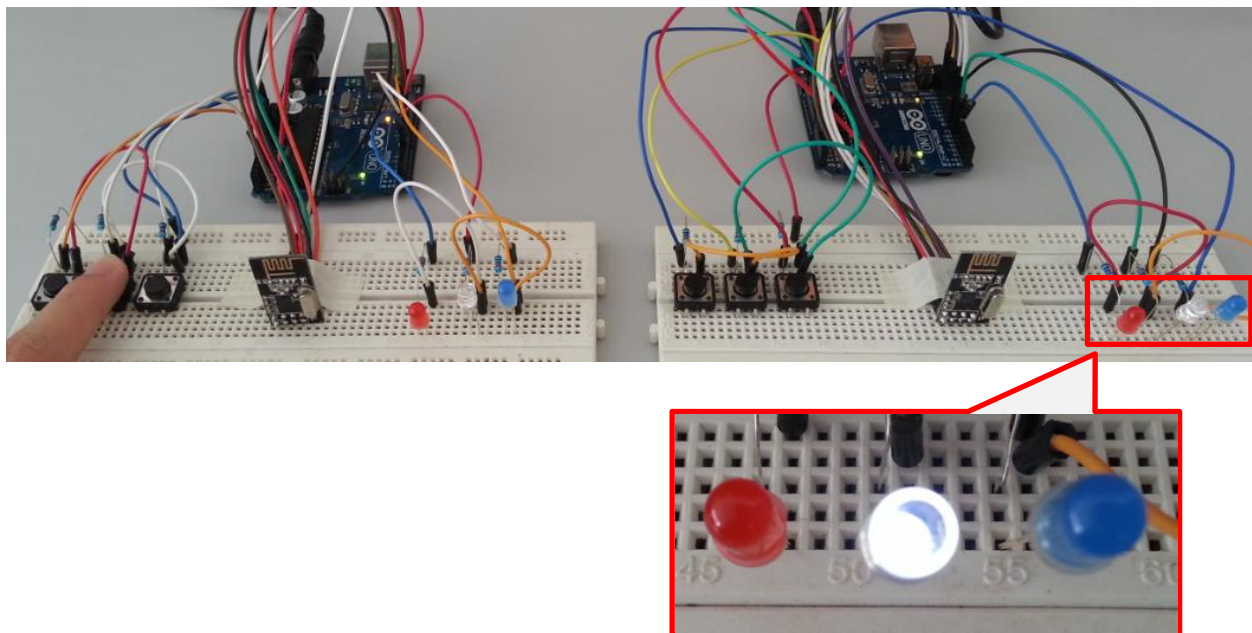


When **Button** on **Sample 1** is pressed, the **Sample 1** will send data ('1', '2', or '3' which are written in sample source code, please review) to **Sample 2** through RF Module. At the same time, the **Sample 2** receives the data from **Sample 1** and then turns on **LED** on **Sample 2**. This logic is same goes for **Sample 2** sending data to **Sample 1**.

**Button 1 on Sample 1 is pressed → LED 1 on Sample 2 turns on.**

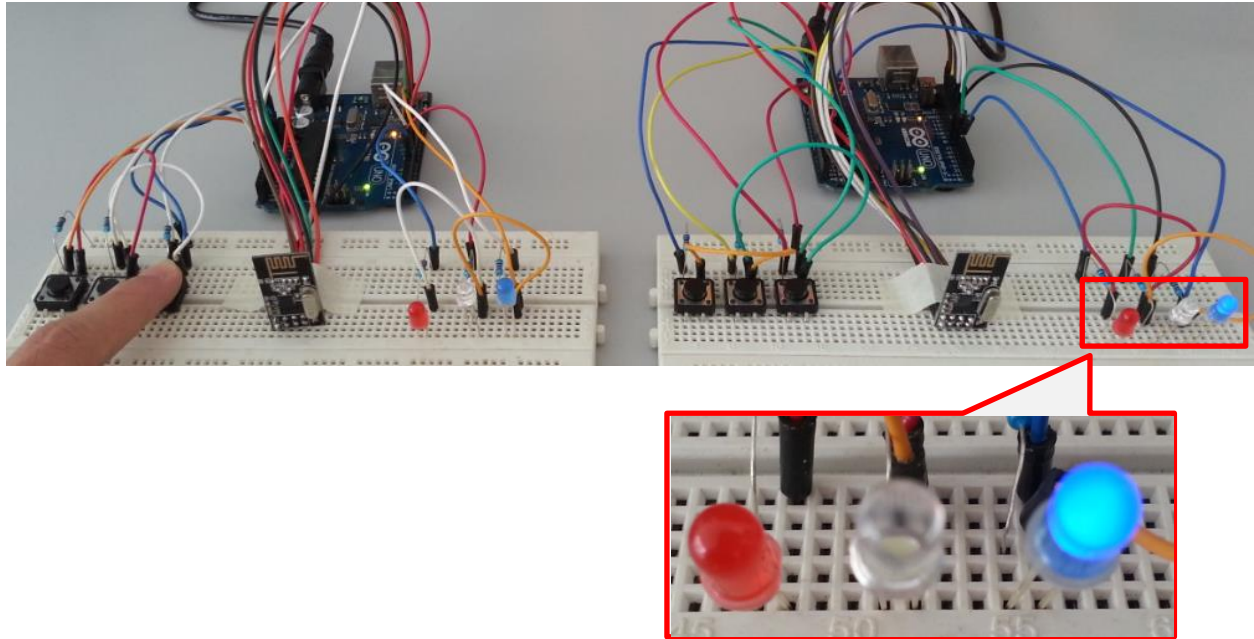


**Button 2 on Sample 1 is pressed → LED 2 on Sample 2 turns on.**

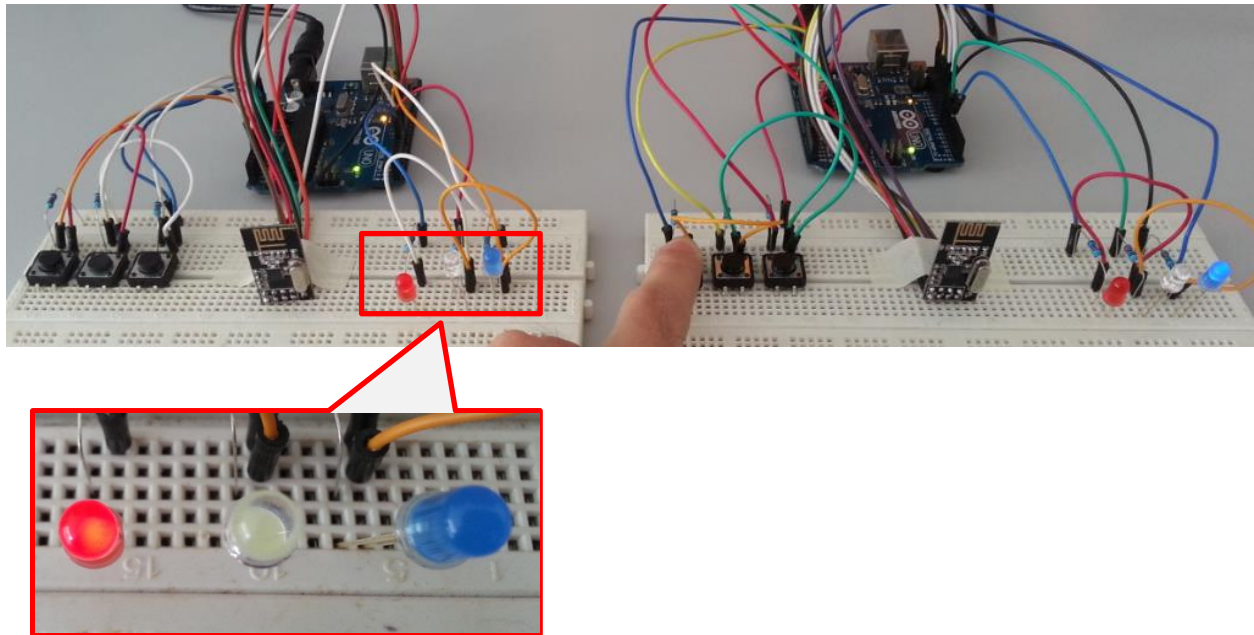




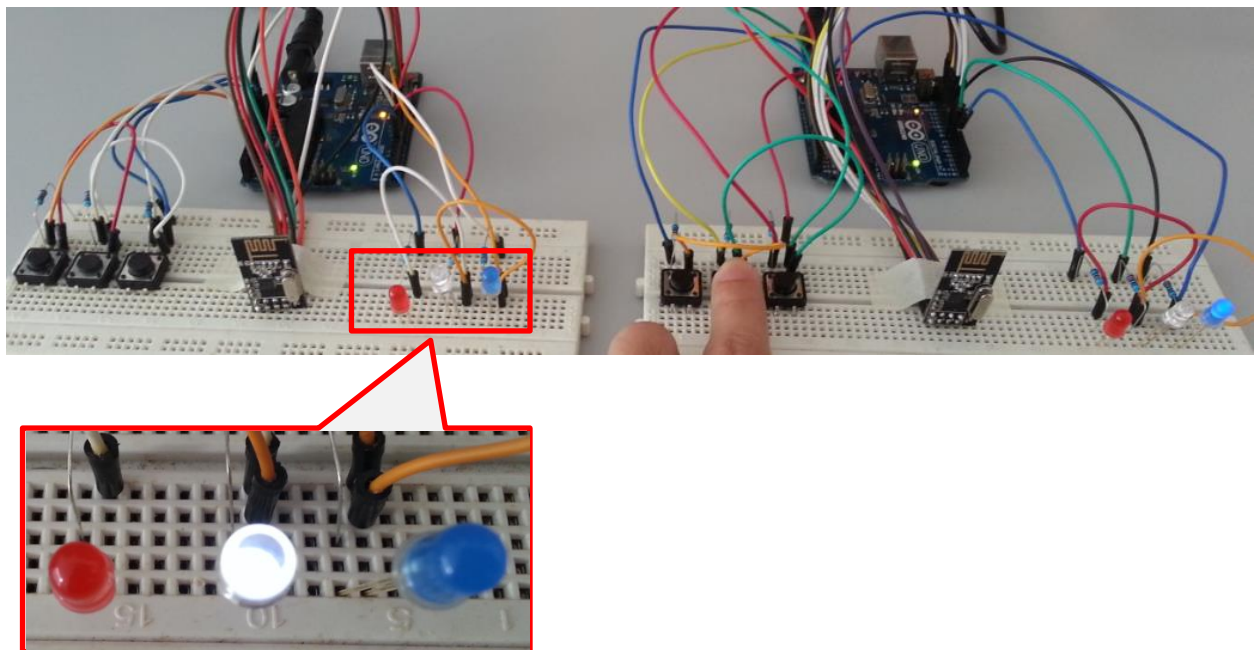
**Button 3 on Sample 1 is pressed → LED 3 on Sample 2 turns on.**



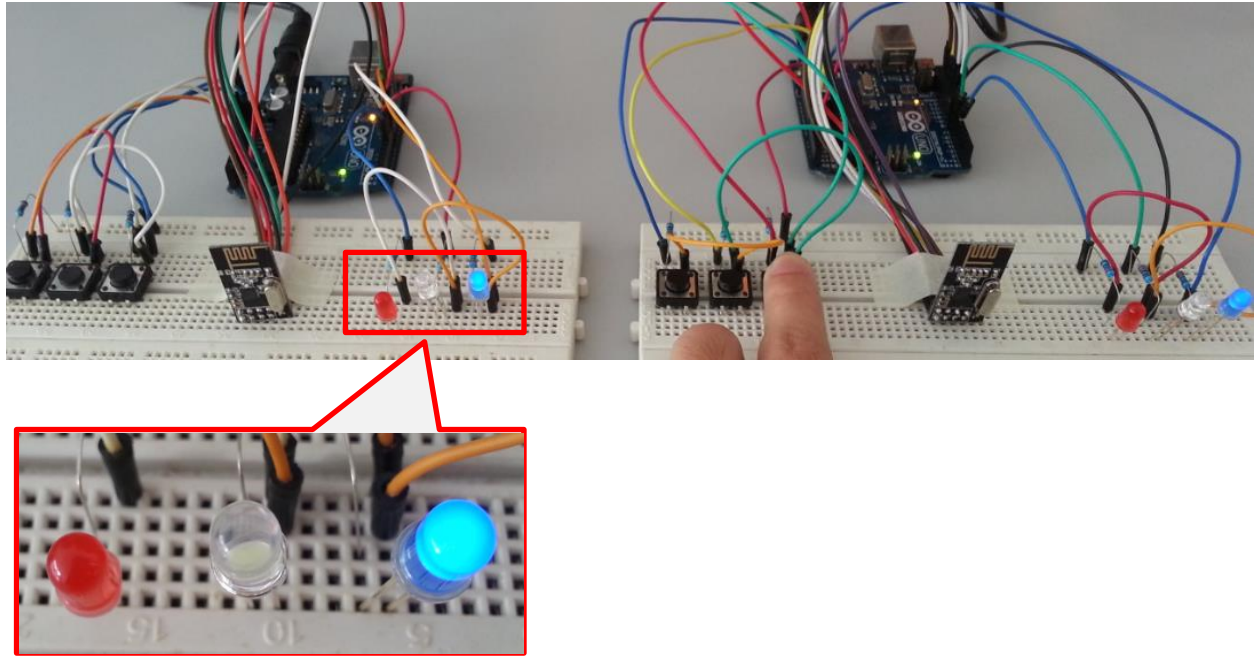
**Button 1 on Sample 2 is pressed → LED 1 on Sample 1 turns on.**



**Button 2 on Sample 2 is pressed → LED 2 on Sample 1 turns on.**



**Button 3 on Sample 2 is pressed → LED 3 on Sample 1 turns on.**



## 5. Warranty

- Product warranty is valid for 2 months.
- Warranty only applies to manufacturing defect.
- Damaged caused by misuse is not covered under warranty.
- Warranty does not cover shipping cost for both ways.

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