

# Case 11:Rainbow LED

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## 13.1. Introduction

The 8 RGB Rainbow LED Ring is based on ws2812b lamp beads. Its biggest feature is single IO control and infinite cascade. In this lesson, we will use [Pico:ed](#) to drive an LED colorful light ring to achieve colorful effects.

## 13.2. Products Link

[ELECFREAKS Pico:ed Starter Kit](#)

## 13.3. Component List

### Hardware:

1 × [Pico:ed](#)

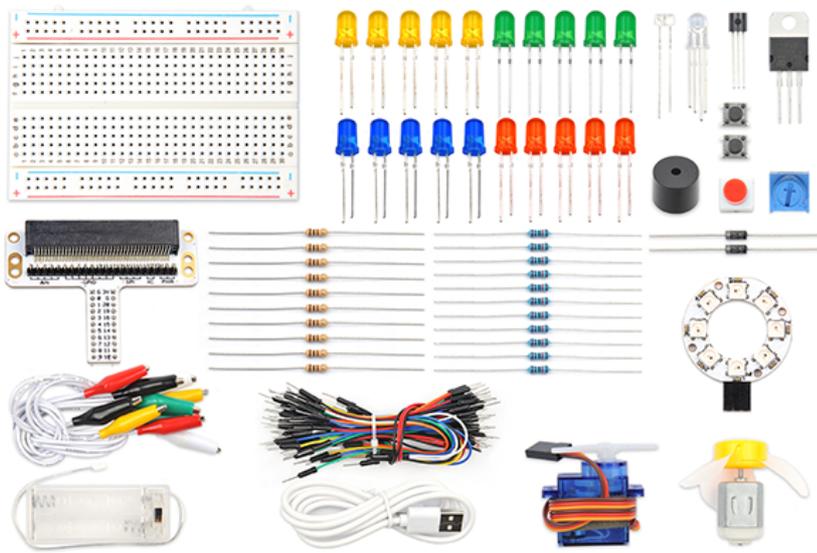
1 × USB Cable

1 × Breadboard Adapter

1 × Transparent Breadboard - 83 \* 55 mm

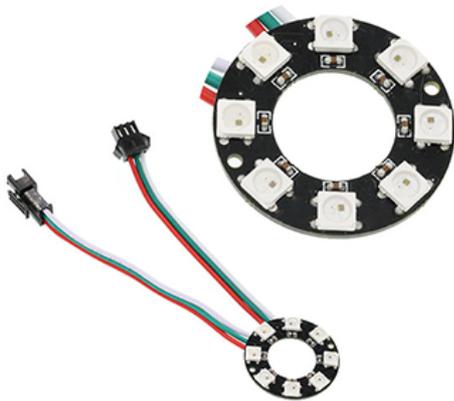
1 x 8 RGB Rainbow LED Ring

n x Breadboard Jumper Wire 65pcs Pack



## 13.4. Major Component Introduction

### 8 RGB Rainbow LED Ring



8 RGB Rainbow LED Ring is an LED ring made of 8 ws2812b beads in cascade connection. Ws2812b is an intelligent outer control LED source, which has integrated control circuit and light emitting circuit. It has same appearance with 5050LED bead.

The digital protocol adopts communication method of single line goes to zero. After pixel point restoration, DIN will receive the data sent from the controller. Once the first 24-bit data received was extracted by the first pixel point, it will be sent to the internal digital lock storage device of pixel point and the rest data amplified through the inner transformation processing circuit will be sent to the next pixel point from DO port. Every time it passes through a pixel point transmission, the signal will decrease 24bit. The pixel point uses automatic transformation forwarding technique, thus the pixel cascade connection quantity do not limited by signal transmission but the speed of transmission only.

LED has advantages of low voltage drive, energy-saving and environment protect, wide scattering angle, good consistency, ultra-long life, etc.. To integrate control circuit onto LED, the circuit will become more simple, easier to install and have smaller volume.

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## 13.5. Experimental Procedure

### Hardware Connection

Connect your components according to the picture below:

1. Connect the signal wire of the LED ring to the P0 port of the breadboard adapter.





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By ELECFREAKS Team

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