WS2812B Basics

# Materials

* AmebaD [AMB21 / AMB22 / AMB23 / BW16] x1
* WS2812B LED Strip / Ring / Stick / Board x1

# Example

**Introduction**

In this example, we will be using the AmebaD board to control the WS2812B RGB LED, using the SPI peripheral to create the waveform necessary for the LEDs.

WS2812B basics allows you to control a single LED with a color or fill all the LED with the same color.

**Procedure**

Firstly, connect the WS2812B to the Ameba board as shown in the following diagrams.

**AMB21/AMB22 Wiring Diagram:**

**Graphical user interface

Description automatically generated**

**AMB23 Wiring Diagram:**

**Graphical user interface, application

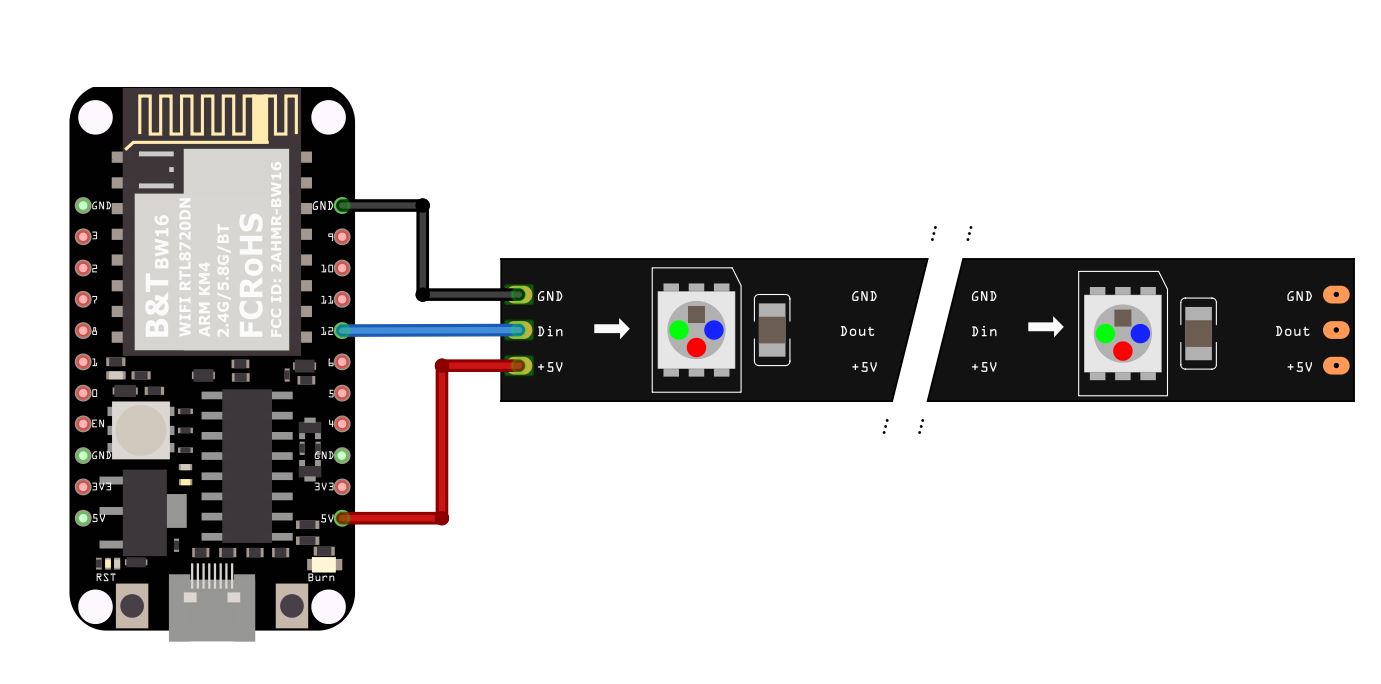
Description automatically generated**

**BW16 Wiring Diagram:**

**A screenshot of a computer

Description automatically generated with medium confidence**

**BW16-TypeC Wiring Diagram:**

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To light up one individual LED or multiple LEDs with the same color, use **WS2812B\_Basics**.

Open the example in “File” → “Example” → “AmebaWS2812B” → “WS2812B\_Basics”

**Graphical user interface, application

Description automatically generated**

In the sample code, modify **NUM\_OF\_LEDS** to be the number of LEDs that you have connected.

Graphical user interface, text, application

Description automatically generated

Next, compile and upload to Ameba, then press the reset button. You will see the first 3 LED light up with red, green, and blue light color individually and after a while all the LED will be filled with a color.

A picture containing electronics, control panel

Description automatically generated

Graphical user interface

Description automatically generated

# Code Reference

[1] WS2812B Datasheet:

<https://cdn-shop.adafruit.com/datasheets/WS2812B.pdf>