BTF-LIGHTING HD-5V-WS2812E-100L-B-IP30

BTF-LIGHTING WS2812B ECO Individually Addressable RGB LED Strip User Manual

Model: HD-5V-WS2812E-100L-B-IP30

1. INTRODUCTION

The BTF-LIGHTING WS2812B ECO RGB LED Strip is an individually addressable lighting solution designed for dynamic and customizable lighting effects. Each 5050SMD LED features an embedded WS2812B IC, allowing for independent control of each pixel with 24-bit color depth and 256 brightness levels. This enables a wide range of effects such as chasing, rainbow, and meteor patterns.

This LED strip is UL-certified, ensuring safety and reliability. It is suitable for various indoor applications, including LED screens, video walls, advertising boards, commercial venues, and festive decorations. The strip comes with pre-installed 3-pin JST-SM connectors for easy integration into your projects.

Image: The BTF-LIGHTING WS2812B ECO RGB LED Strip, coiled, showcasing its vibrant, individually addressable colors.

Your browser does not support the video tag.

Video: An overview of the WS2812B individually addressable RGB LED strip, demonstrating its features and capabilities.

2. SAFETY INFORMATION

Please read all safety instructions carefully before installation and use. Failure to follow these instructions may result in electric shock, fire, or other hazards.

- **Voltage Requirement:** This LED strip operates on **DC5V ONLY**. Connecting it to a DC12V or DC24V power supply will permanently damage the strip.
- **UL Listed:** The LED strip is UL-certified, ensuring it meets recognized safety standards. This includes UL-approved wires and circuit boards.
- **Indoor Use:** This specific model (IP30) is designed for indoor use only. Avoid exposure to moisture or outdoor elements.
- **Power Supply and Controller:** A power supply and controller are **not included** and must be purchased separately. Ensure they are compatible with DC5V LED strips.
- **Installation:** Ensure proper insulation and secure connections. Avoid bending the strip sharply or
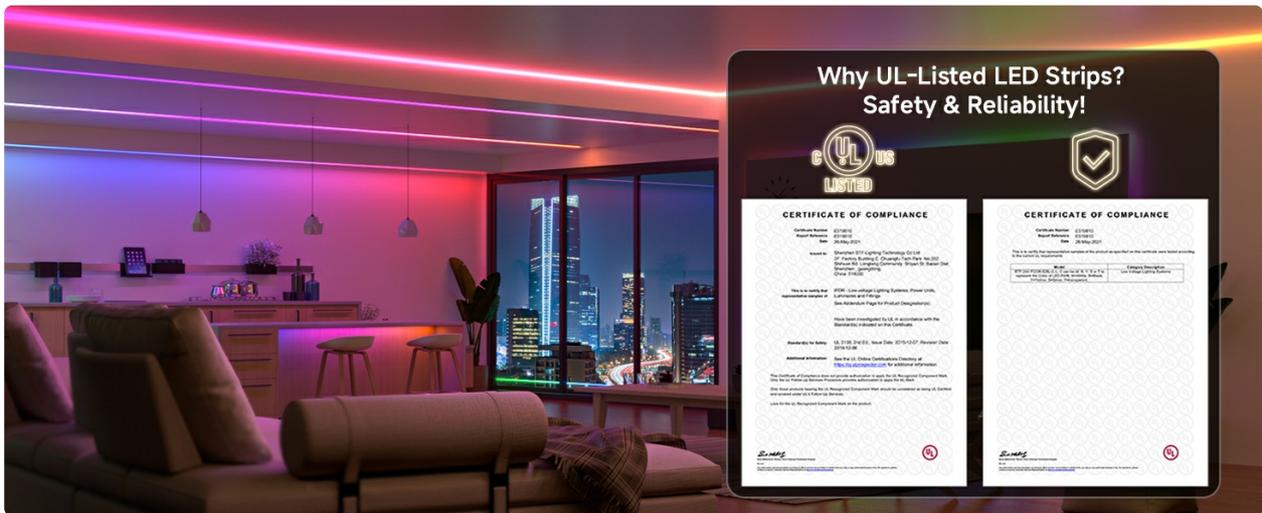
applying excessive force.

Image: Graphic highlighting the UL-Listed status of the LED strips, emphasizing safety and reliability with certificates of compliance.
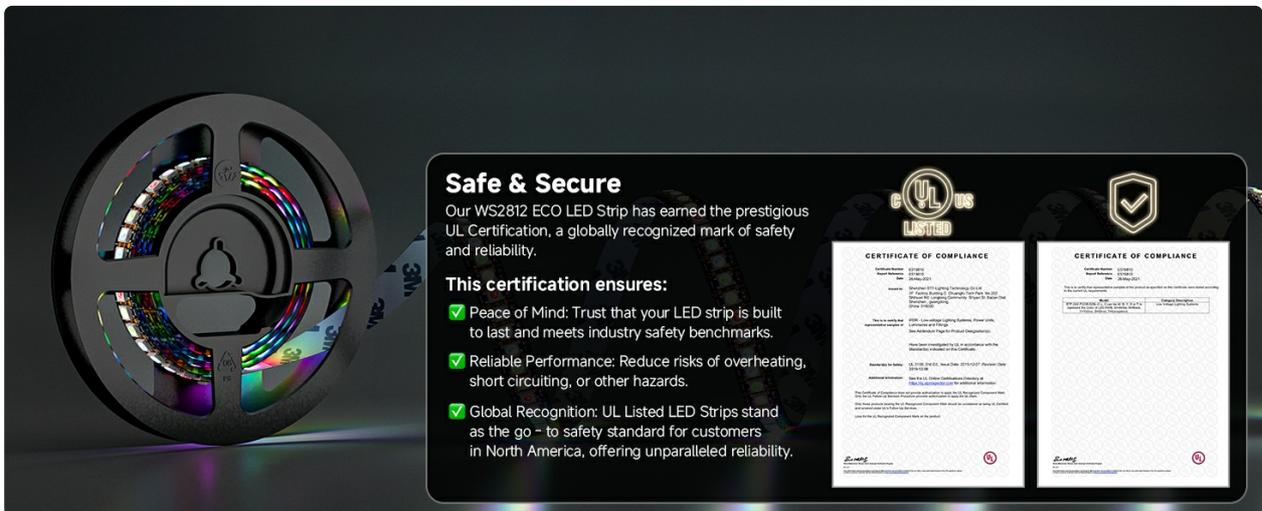

Image: Details on the benefits of UL certification, including peace of mind, reliable performance, and global recognition for safety.

3. PACKAGE CONTENTS

Verify that all items are present in the package:

- 1x WS2812 LED Strip
- 1x Voltage Compensation Wire
- 1x 3PIN Male Connector
- 1x User Manual
- 1x Upgraded Connector Instruction Card

Package Includes

Image: A visual representation of the package contents, including the LED strip, voltage compensation wire, 3-pin male connector, user manual, and instruction card.

4. SETUP

4.1. Preparation

1. **Clean Surface:** Ensure the installation surface is clean, dry, and smooth for optimal adhesion.
2. **Power Supply & Controller:** Have a compatible DC5V power supply and an appropriate controller ready. These are sold separately.

4.2. Installation

The IP30 version of this LED strip comes with 3M double-sided adhesive for easy mounting.

1. **Peel Adhesive:** Carefully peel off the protective backing from the 3M double-sided adhesive on the back of the LED strip.
2. **Attach Strip:** Press the LED strip firmly onto the desired clean surface.
3. **Cutting:** The LED strip is cuttable every 50cm at designated solder joints. Ensure to cut only at these marked points to avoid damaging the circuit.

Convenient Installation

| ① Wipe the surface | ② Tear off one side of the 3M self-adhesive double tape | ③ Tear and Attach |

IP30/IP65: Easy to install with 3M self-adhesive double tape

IP67: Fixing clips required for installation. (The IP67 package includes fixing clips and screws.)
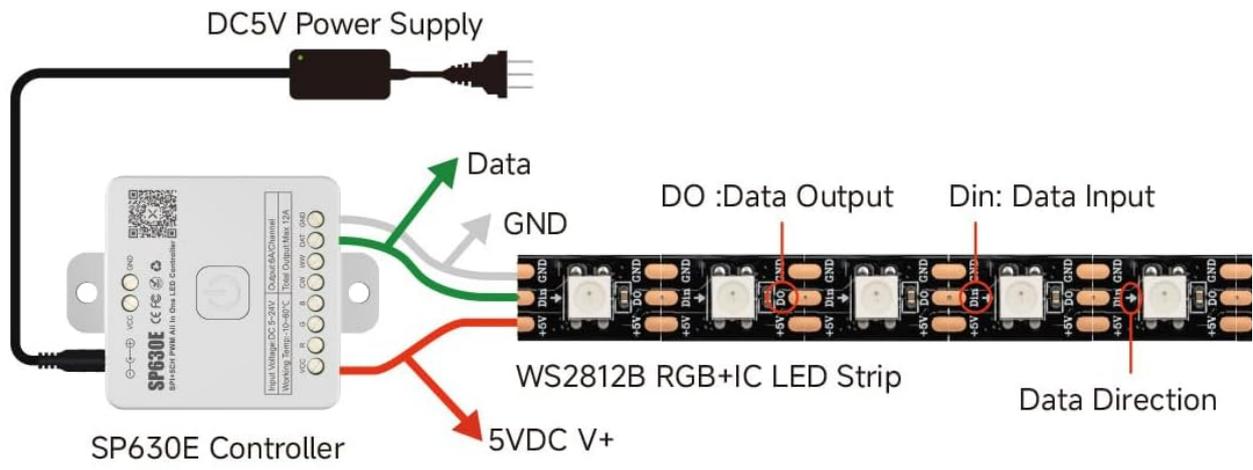
Image: Step-by-step guide for convenient installation, showing surface wiping, peeling 3M tape, and attaching the strip. Also illustrates installation with clips for IP67 versions.

4.3. Connection

The LED strip features UL-certified male and female 3-pin connectors for flexible connections.

- **Basic Connection:** Connect the 3-pin JST-SM connector of the LED strip to a compatible DC5V controller. Ensure the data direction is correct (Din for data input, DO for data output).
- **Power Supply:** Connect the DC5V power supply to the controller.
- **Series Connection:** Multiple strips can be connected in series (daisy-chain). Ensure the data direction is consistent.
- **Parallel Connection:** For longer runs or higher power demands, parallel connections with a signal amplifier and a robust power supply are recommended.
- **Voltage Compensation:** For longer strips, voltage compensation wires may be necessary to prevent voltage drop and ensure consistent brightness along the entire length.

DC5V Power Supply

Data
GND

DO :Data Output   Din: Data Input

SP630E Controller

WS2812B RGB+IC LED Strip

5VDC V+

Data Direction

Controller Sold Separately

RB3+SP630E
4 Groups BT controller

RB3+SP530E 4 Groups
WiFi Alexa controller

SP602E Trigger
RF BT Music controller

SP611E IR
BT Music controller

SP803E/SP805E
WLED ESP32 controller

DR03W Tuya
WiFi alexa controller

Image: A detailed diagram illustrating how to connect the WS2812B RGB+IC LED strip to a DC5V power supply and an SP630E controller, showing Data, GND, and 5VDC+ connections.

Series Connection Wiring Diagram

The output voltage of the power supply depends on the LED strip

(Note: Power supply and controller sold separately)

DC5V

L N   -V -V +V +V

(5m/16.4ft Roll)   (5m/16.4ft Roll)   (5m/16.4ft Roll)

DC5V   DC5V

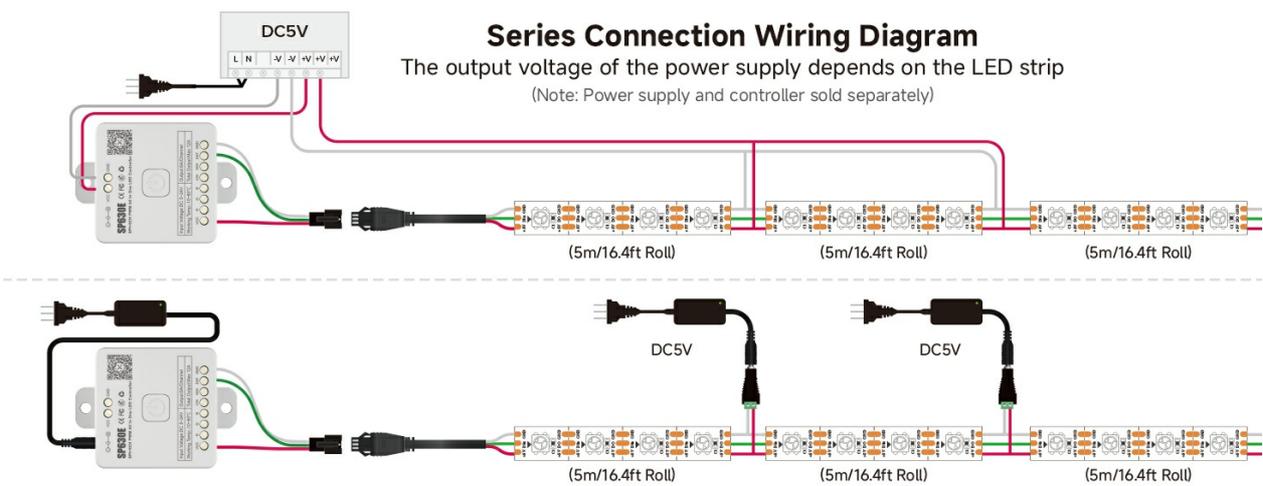(5m/16.4ft Roll)   (5m/16.4ft Roll)   (5m/16.4ft Roll)

Image: A wiring diagram demonstrating how to connect multiple LED strips in series, emphasizing that the power supply output depends on the LED strip requirements.
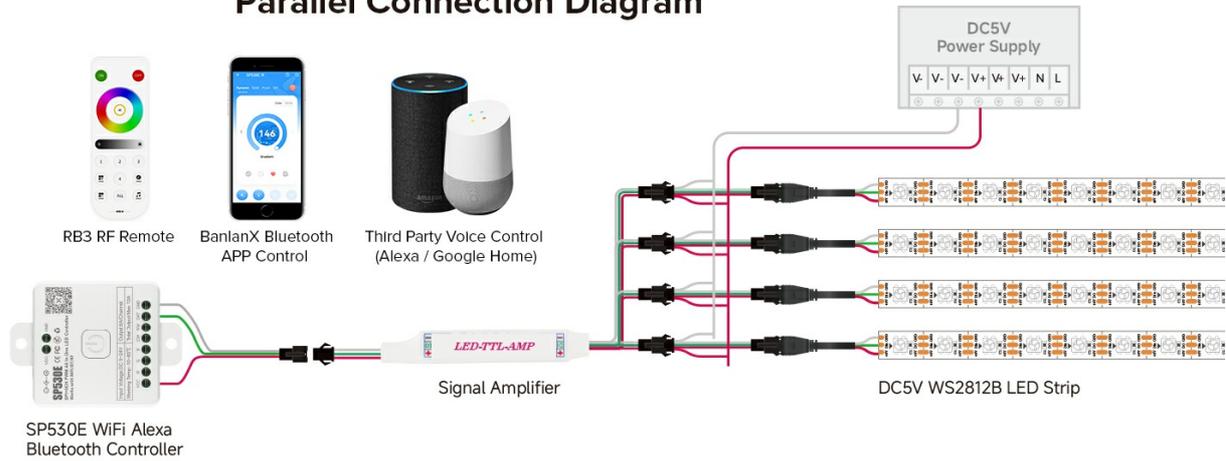
Parallel Connection Diagram

Image: A parallel connection diagram showing how to connect multiple LED strips to a single power supply and controller using a signal amplifier, compatible with various control methods.
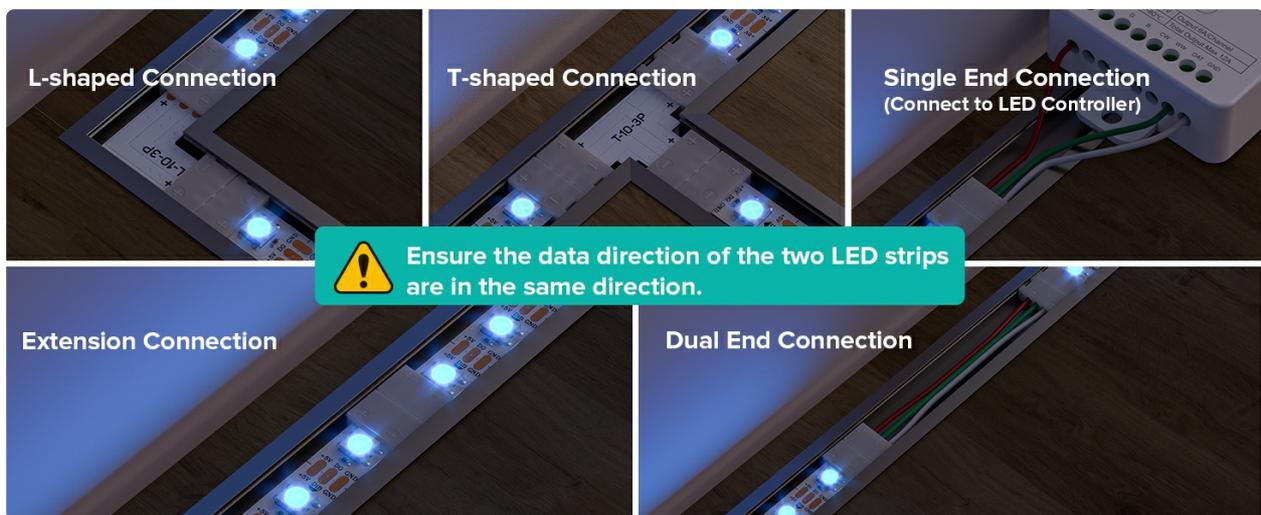

Image: Examples of different LED strip connection types, including L-shaped, T-shaped, single-end, extension, and dual-end connections, with a warning about data direction.

5. OPERATING INSTRUCTIONS

The BTF-LIGHTING WS2812B ECO LED Strip offers versatile control options to achieve various lighting effects.

- **Controller Dependent:** The functionality and available effects depend entirely on the chosen controller (sold separately).
- **Brightness Adjustment:** Most compatible controllers allow for brightness adjustment from 1% to 100%.
- **Millions of Colors:** With a suitable controller, you can access millions of colors and create custom color schemes.
- **Dynamic Effects:** Enjoy advanced dynamic effects such as chasing, rainbow, meteor, and more, thanks to the individually addressable LEDs.
- **DIY Projects:** Compatible with DIY project controllers like SP803E, SP805E, ESP32, ESP8266, WLED, Raspberry Pi, and UNO R3.
- **App Control:** Many controllers support smartphone apps like Tuya APP (DR03W) or BanlanX APP (SP630E, SP530E, SP611E, SP602E, SP608E, SP107E, SP105E) for easy control.
- **Voice Control:** With compatible controllers (e.g., SP530E), the LED strip can be integrated with third-party voice assistants like Alexa or Google Home.

Image: Comparison of RGB+IC (multiple colors at once) and standard RGB (one color at a time) lighting effects, demonstrating the dynamic capabilities of the WS2812B ECO strip.

Image: Screenshots of smartphone applications (Tuya Smart and SP630E) demonstrating simple and easy-to-use controls for dynamic/static modes and color selection.

Your browser does not support the video tag.
Video: A demonstration of the chasing color lighting effect, showcasing the dynamic capabilities of the LED strip.

Your browser does not support the video tag.
Video: A demonstration of the WS2812B ECO LED Strip in various settings, highlighting its individually addressable features and vibrant color output.

6. MAINTENANCE

To ensure the longevity and optimal performance of your LED strip, follow these maintenance guidelines:

- **Cleaning:** Gently wipe the surface of the LED strip with a soft, dry cloth to remove dust. Avoid using harsh chemicals or abrasive materials.
- **Connection Check:** Periodically inspect all connections (power supply, controller, strip connectors) to ensure they are secure and free from corrosion.
- **Avoid Physical Stress:** Do not bend, twist, or pull the LED strip excessively, especially at connection points or cut sections.

- **Storage:** If storing the LED strip, ensure it is coiled loosely and kept in a dry, cool environment away from direct sunlight.

7. TROUBLESHOOTING

If you encounter issues with your BTF-LIGHTING WS2812B ECO LED Strip, refer to the following common solutions:

- **Strip Not Lighting Up:**

  - Check if the power supply is connected and providing DC5V.
  - Verify all connections are secure, especially the 3-pin connectors.
  - Ensure the controller is powered on and functioning correctly.
  - Confirm the data input (Din) and data output (DO) connections are in the correct direction.

- **Incorrect Colors or Flickering:**

  - Check the controller settings for color mode and effects.
  - Ensure the power supply is adequate for the length of the strip. Voltage drop can cause color inconsistencies or flickering; consider adding voltage compensation.
  - Inspect the strip for any physical damage or loose solder joints.

- **Only Part of the Strip Lights Up:**

  - This often indicates a break in the data line or power line at the point where the lights stop. Inspect the strip carefully at that section.
  - If you cut the strip, ensure the connections at the cut point are properly re-soldered or connected with appropriate connectors.

- **Controller Not Responding:**

  - Ensure the controller is correctly paired with its remote or app.
  - Check the controller's power connection.

For complex issues or further assistance, please contact BTF-LIGHTING support.

8. SPECIFICATIONS

Feature	Detail
Model Number	HD-5V-WS2812E-100L-B-IP30
Brand	BTF-LIGHTING
LED Type	WS2812B ECO 5050SMD RGB IC
LEDs per Meter	100 LEDs/m
Pixels per Meter	100 Pixels/m
Length	3.28 FT (1 meter)
Voltage	DC5V

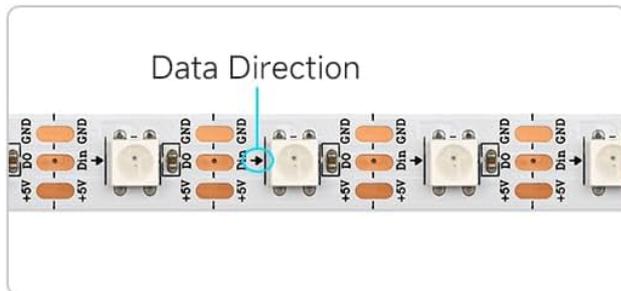| Feature	Detail
Wattage	30 watts (Max)
PCB Color	Black
Width	10mm
IP Rating	IP30 (Non-waterproof, Indoor use only)
Special Features	Individually Addressable, Chasing Colors, UL Listed
Cuttable	Every 50cm (at solder joints)
Connectors	3-pin JST-SM (pre-installed)
Material	Silicone Rubber
Item Weight	1.76 ounces (0.05 Kilograms)

High-Quality LED

9 alloy wires

WS2812B IC

Copper BracKet

Data Direction

IP30/IP65: 3M Self-Adhesive Double Tape

Data Direction
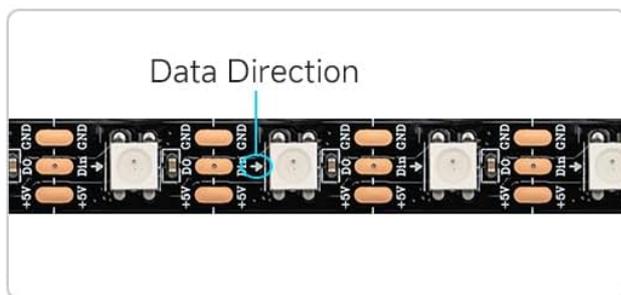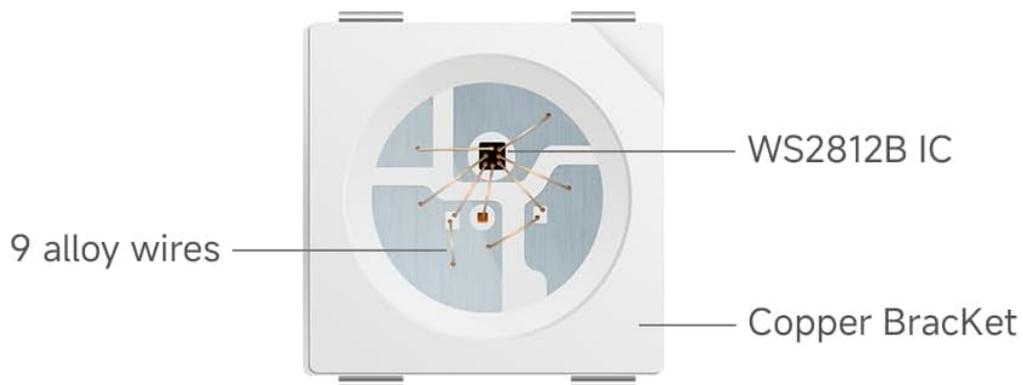
IP67: NO Double-Sided Tape

Image: Detailed view of the WS2812B IC, 9 alloy wires, copper bracket, and data direction markings on the LED strip. Also shows 3M self-adhesive tape for IP30/IP65 and lack of tape for IP67.
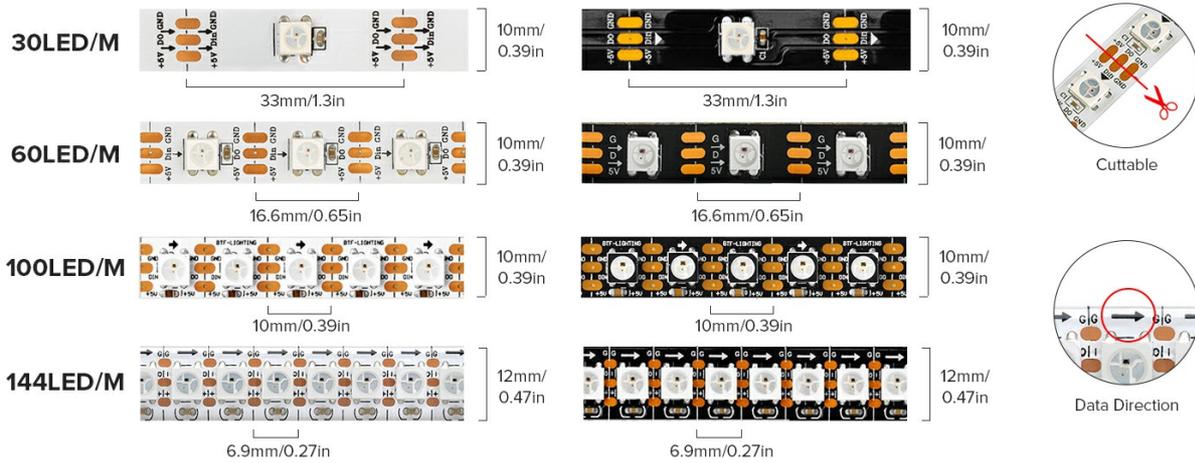
Image: Visual comparison of different LED densities (30LED/M, 60LED/M, 100LED/M, 144LED/M) and clear markings for cuttable sections and data direction.

9. WARRANTY & SUPPORT

BTF-LIGHTING is committed to providing high-quality products and customer satisfaction. For any questions regarding your product, including technical support, compatibility, or project design solutions, please contact BTF-LIGHTING support.

We offer professional design solutions, circuit layout planning, and recommendations for compatible controllers and power supplies to help ensure the success of your DIY projects. Please inquire before purchase if you have specific project requirements.

For warranty information, please refer to the terms and conditions provided at the time of purchase or contact BTF-LIGHTING customer service directly.