BTF-LIGHTING SK6812

BTF-LIGHTING SK6812 RGBW Individually Addressable LED Strip User Manual

Model: SK68121M144RGBNWW65

1. Safety Instructions

Please read and understand all safety instructions before installing or operating this product. Failure to follow these instructions may result in electric shock, fire, or other hazards.

- Ensure the power supply voltage (DC5V) matches the LED strip requirements. Using an incorrect voltage can damage the strip.
- Do not connect the LED strip directly to AC power. A DC5V power adapter is required.
- Avoid bending the LED strip sharply, especially at the LED components, as this can damage the circuit.
- Do not immerse non-waterproof (IP30) LED strips in water. IP65 strips are splash-proof, and IP67 strips are suitable for outdoor use but should not be submerged for extended periods.
- Disconnect power before making any connections or performing maintenance.
- Keep out of reach of children.

2. Product Overview

The BTF-LIGHTING SK6812 RGBW LED Strip is an individually addressable lighting solution, offering a wide spectrum of colors including a dedicated Natural White channel. Each LED can be controlled independently, allowing for dynamic lighting effects and precise color customization. This model features 144 LEDs per meter and is IP65 waterproof, making it suitable for various indoor and outdoor applications.

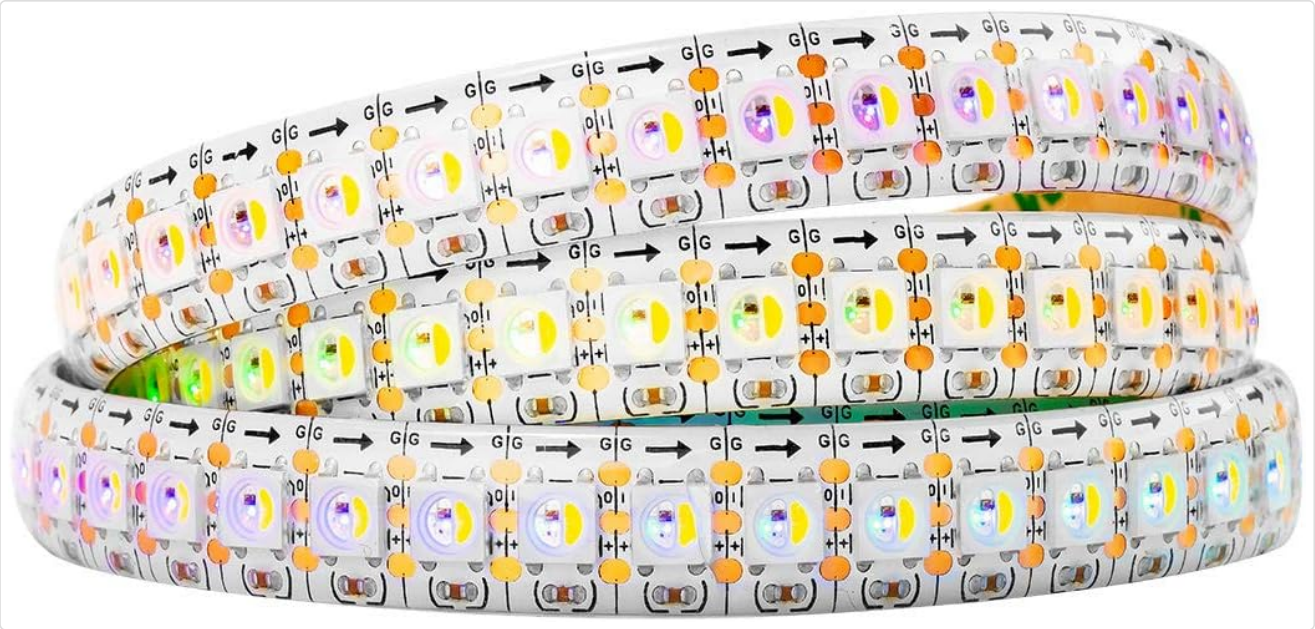

Image: Coiled BTF-LIGHTING SK6812 RGBW LED Strip, showing the individual LEDs and flexible PCB.

Image: The LED strip illuminated with a vibrant array of colors, demonstrating its individually addressable capabilities.

3. Features

- **Individually Addressable RGB+Pure White:** Each SK6812 LED integrates RGB and a dedicated Natural White (4000K-5000K) chip, allowing for precise control over color and brightness for each individual LED. This offers richer color combinations and dynamic effects compared to standard RGB strips.
- **Enhanced Energy Efficiency:** The dedicated pure white LED allows for more energy-efficient white light illumination. Pure White consumes approximately 0.1W/LED, while mixed white (R+G+B) consumes 0.3W/LED.
- **Wide Controller Compatibility:** Compatible with various programmable controllers such as K-1000C, SP630E, SP639E, SP617E, SP803E, WLED, and SP530E DR04W. These controllers enable diverse lighting effects like chasing, flowing water, and flashing. (Controller and power adapter sold separately).
- **Chainable and Cuttable Design:** Equipped with 3-pin JST-SM connectors on both ends for easy extension. The strip can be cut at designated points, typically every LED, to customize length.
- **Waterproof Ratings:** Available in different ingress protection (IP) ratings:
  - IP30: Non-waterproof, for indoor use only, with adhesive tape on the back.
  - IP65: Silicone coating waterproof, suitable for indoor use and areas with splashes, with adhesive tape on the back.
  - IP67: Silicone sheathing waterproof, suitable for outdoor use, fixed with screws and clips (no double-sided tape).
- **Versatile Applications:** Ideal for LED screens, LED walls, advertising boards, and decorative lighting in hotels, KTVs, bars, and for festive occasions like Christmas or wedding parties.

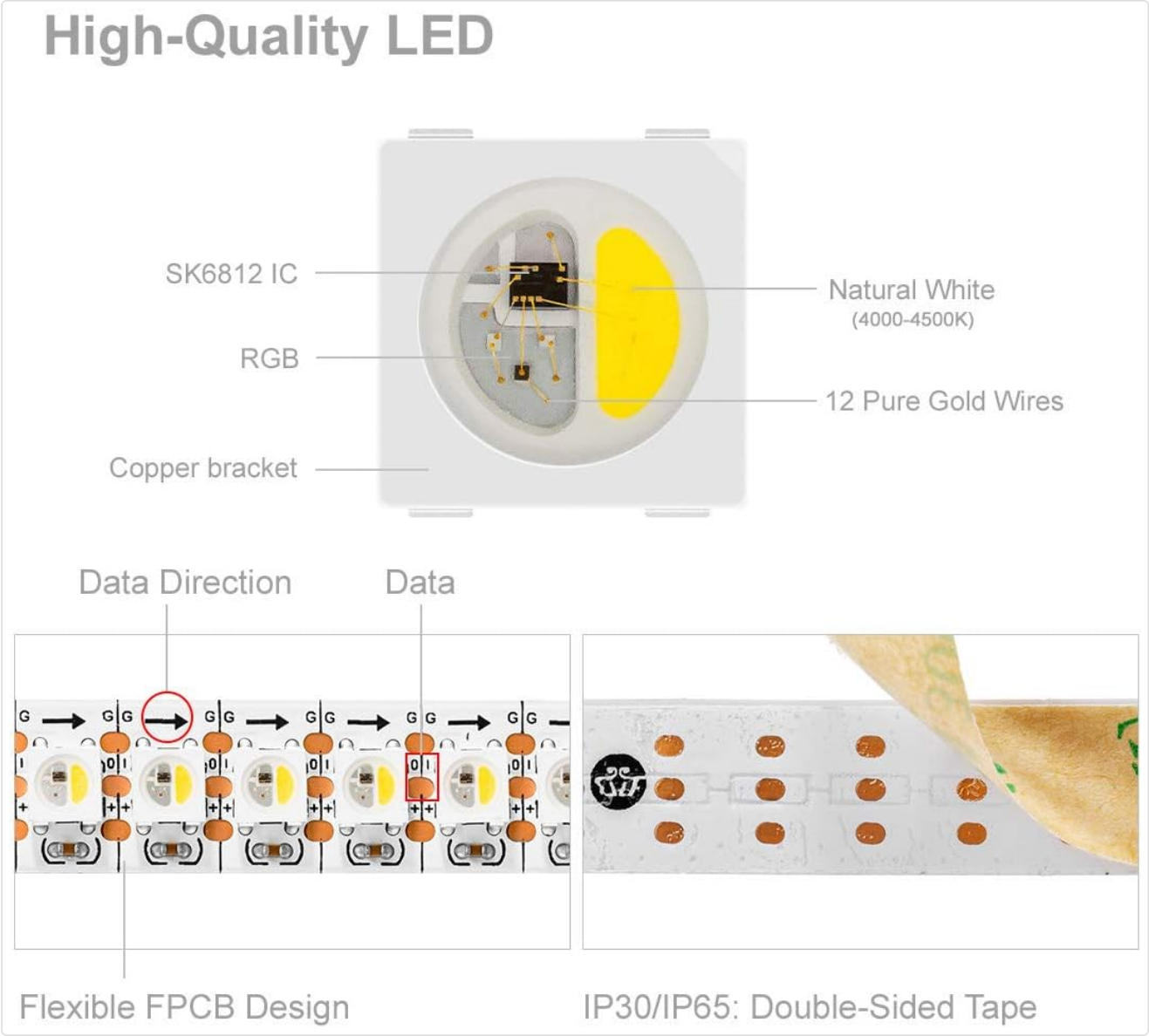

Image: Detailed diagram illustrating the internal structure of an SK6812 LED, showing RGB and Natural White components, and the flexible PCB design with data direction indicators.

Image: Visual representation of the SK6812 IC, showing where the strip can be cut, and a comparison of IP30, IP65, and IP67 waterproof ratings with their respective thicknesses.

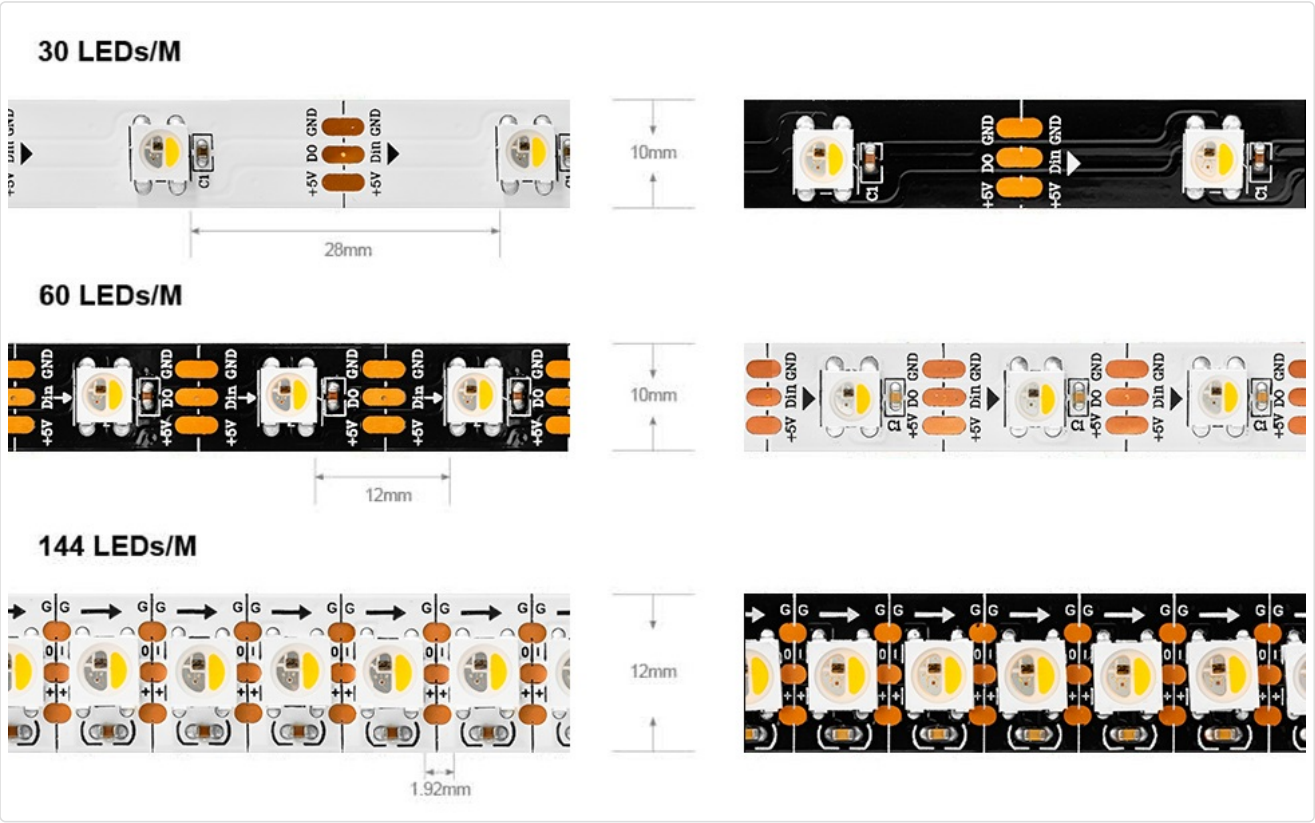

Image: Comparison of LED densities, showing the spacing for 30, 60, and 144 LEDs per meter on the strip.

4. Package Contents

The package typically includes the following items:

- 1x BTF-LIGHTING SK6812 RGBW LED Strip (1 meter, 144 LEDs/m, White PCB, IP65)
- 1x 3-pin JST-SM male connector
- User Manual (this document)

Note: Power supply and controller are not included and must be purchased separately.

Image: A coiled LED strip with a 3-pin JST-SM male connector and a female connector with voltage-adding wires, illustrating typical package contents.

5. Setup

5.1 Power Supply Requirements

The LED strip operates on DC5V. For optimal performance and to prevent voltage drop, a DC5V 10A (50W) power supply is recommended for a 1-meter strip with 144 LEDs/m. Ensure your power supply can provide sufficient current for the total length of your LED strip.

5.2 Controller Connection

Connect the 3-pin JST-SM connector from the LED strip to a compatible individually addressable LED controller. The pins are typically labeled +5V (Power), Din (Data Input), and GND (Ground). Ensure correct polarity and data direction.

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Video: An overview of the SK6812RGBW LED Strip, demonstrating its features and connection points. This video highlights the RGB+Pure White capabilities and individual addressability.

5.3 Installation

- **IP30/IP65 Strips:** These versions come with adhesive tape on the back. Clean the installation surface thoroughly to ensure it is dry and free of dust or grease. Peel off the protective backing and firmly press the strip onto the desired surface.
- **IP67 Strips:** These strips do not have adhesive tape. Use mounting clips and screws (not included) to secure the strip to the surface. Ensure clips are evenly spaced for stable installation.
- Observe the data direction arrows on the strip to ensure proper signal flow when connecting multiple segments.

6. Operating

Operation of the LED strip is dependent on the compatible controller used. Most controllers offer the following functionalities:

- **Color Selection:** Choose from millions of colors using a color wheel or predefined color options.
- **Brightness Adjustment:** Adjust the light intensity from 1% to 100%.
- **Dynamic Effects:** Select from various pre-programmed lighting modes such as chasing, fading, flashing, and flowing patterns.
- **Music Synchronization:** Some advanced controllers allow the lights to react to music or sound.
- **App Control:** Many modern controllers offer smartphone app control for convenient management of lighting effects.

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Video: Demonstration of the SP617E controller with an SK6812RGBW LED strip, showcasing various color changes, brightness adjustments, and dynamic lighting effects controlled via a smartphone application.

7. Maintenance

Proper maintenance ensures the longevity and optimal performance of your LED strip.

- **Cleaning:** For IP30 and IP65 strips, gently wipe the surface with a soft, dry cloth. For IP65 and IP67 strips, a damp cloth can be used, but ensure no water enters the connectors or non-waterproof components. Do not use harsh chemicals or abrasive cleaners.
- **Inspection:** Periodically check for any signs of damage, loose connections, or wear and tear. Address any issues promptly to prevent further damage.
- **Storage:** If storing the LED strip, ensure it is clean, dry, and coiled loosely to prevent damage to the circuit or LEDs. Store in a cool, dry place away from direct sunlight.

8. Troubleshooting

If you encounter issues with your LED strip, refer to the following common troubleshooting steps:

- **No Light:**
  - Check if the power supply is correctly connected and providing DC5V.
  - Ensure the controller is powered on and correctly connected to the LED strip (Power, Data, Ground).
  - Verify the data input direction. The signal flows in one direction, indicated by arrows on the strip.
  - Test with a different power supply or controller if available to isolate the issue.
- **Incorrect Colors or Flickering:**
  - Confirm that the controller is configured for SK6812 RGBW LEDs. Incorrect IC type selection can cause color issues.
  - Check for loose or damaged data connections.
  - Ensure the power supply is adequate. Voltage drop over long runs can cause color distortion or flickering. Consider injecting power at multiple points for longer strips.
  - Reduce the brightness setting on the controller to see if flickering subsides, indicating a potential power issue.
- **Partial Strip Not Lighting:**
  - This often indicates a break in the data line or power line at the point where the lights stop. Inspect the strip for physical damage or faulty solder joints.
  - If multiple strips are chained, check the connection between the working and non-working segments.

9. Specifications

Parameter	Value
Model	SK68121M144RGBNWW65
LED Type	SK6812 RGBW (5050 SMD)
LED Quantity	144 LEDs per meter
Color Order	G R B W (not RGBW)
Input Voltage	DC5V
Power Consumption	43W/m (0.3W per LED for RGB, 0.1W per LED for Pure White)
Recommended Power Supply	DC5V 10A (50W)
FPCB Width	12.0mm
Color Depth	32-bit (8bit each channel)
View Angle	120°
Operating Temperature	-20°C to +50°C
Waterproof Level	IP65 (Silicone coating waterproof)
Light Color	RGB + Natural White (4000K-5000K)
Item Length	3.3 feet (1 meter)

10. Warranty and Support

BTF-LIGHTING products are manufactured to high-quality standards. For warranty information, technical support, or any inquiries regarding your product, please refer to the contact information provided with your purchase or visit the official BTF-LIGHTING website. Please retain your proof of purchase for warranty claims.

11. Additional Resources

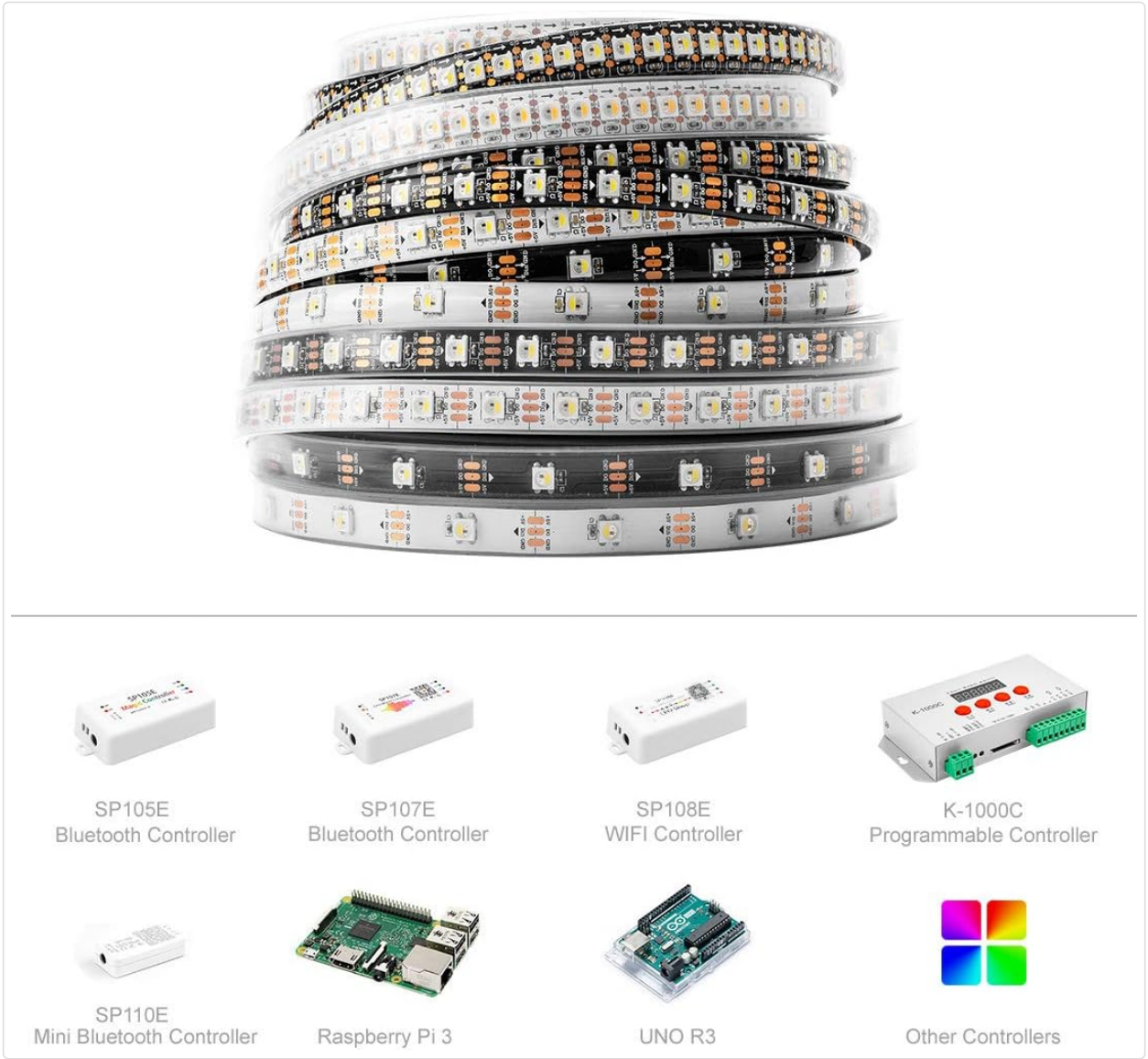

Image: A selection of compatible controllers including Bluetooth, WiFi, and programmable options, suitable for use with SK6812 RGBW LED strips.

Image: Examples of the LED strip installed in different environments, showcasing its versatility in home and commercial lighting applications.