haraqi ESH-ED-02

haraqi 5mm LED Light Emitting Diode Assortment Kit User Manual

Model: ESH-ED-02

1. Introduction

This manual provides essential information for the safe and effective use of the haraqi 5mm LED Light Emitting Diode Assortment Kit. This kit is designed for various electronic projects, including DIY PCB circuits and indicator lights. It contains a selection of 5mm diffused LEDs in multiple colors, suitable for low voltage applications.

2. Product Overview and Features

The haraqi 5mm LED Assortment Kit offers a versatile collection of light-emitting diodes for hobbyists and professionals. Key features include:

- **Bright LED Light:** Equipped with high-quality LED chips to ensure sufficient brightness for each lamp.
- **High Quality Construction:** Oxygen resin is used in the entire structure, providing resistance to high temperatures.
- **Wide Application:** Ideal for indicator lights, DIY LED projects, PCB circuits, and Arduino-compatible items. Suitable for home, office, and industrial electrical equipment and appliances.
- **Assorted Colors:** Includes 5 distinct colors (White, Yellow, Green, Red, Blue) for diverse project needs.

3. Package Contents

The haraqi 5mm LED Light Emitting Diode Assortment Kit includes:

- 500 x 5mm LED Diodes (100 pieces of each color: White, Yellow, Green, Red, Blue)

- 1 x Storage Box with Dividers

Image: The haraqi 5mm LED Assortment Kit, neatly organized in a clear plastic box with separate compartments for each of the five colors.

Image: The product box for the haraqi 5mm LED Assortment Kit, displaying the product label with key information.

4. Specifications

Parameter	Value
Head Diameter	5mm
Pin Length	18mm
Voltage (Red/Yellow)	1.8V-2.3V
Voltage (Blue/Green/White)	2.8V-3.6V
Electric Current	20mA
Light Type	LED
Material Type	Oxygen Resin
Model Number	ESH-ED-02

Image: Detailed dimensions and electrical specifications for the 5mm LED diodes included in the kit.

5. Setup and Connection

LEDs are polarized components, meaning they must be connected in the correct orientation to function. The longer lead (anode) is typically positive, and the shorter lead (cathode) is negative. Always use a current-limiting resistor in series with an LED to prevent damage.

5.1 Basic Breadboard Connection

1. Identify the anode (longer lead) and cathode (shorter lead) of the LED.
2. Insert the LED into a breadboard, ensuring the leads are in separate rows.
3. Connect a current-limiting resistor (e.g., 220-ohm to 1k-ohm, depending on voltage) in series with the anode or cathode.
4. Connect the positive voltage source to the resistor (if connected to anode) or directly to the anode (if resistor is on cathode side).
5. Connect the negative voltage source (ground) to the cathode (if resistor is on anode side) or to the resistor (if connected to cathode).

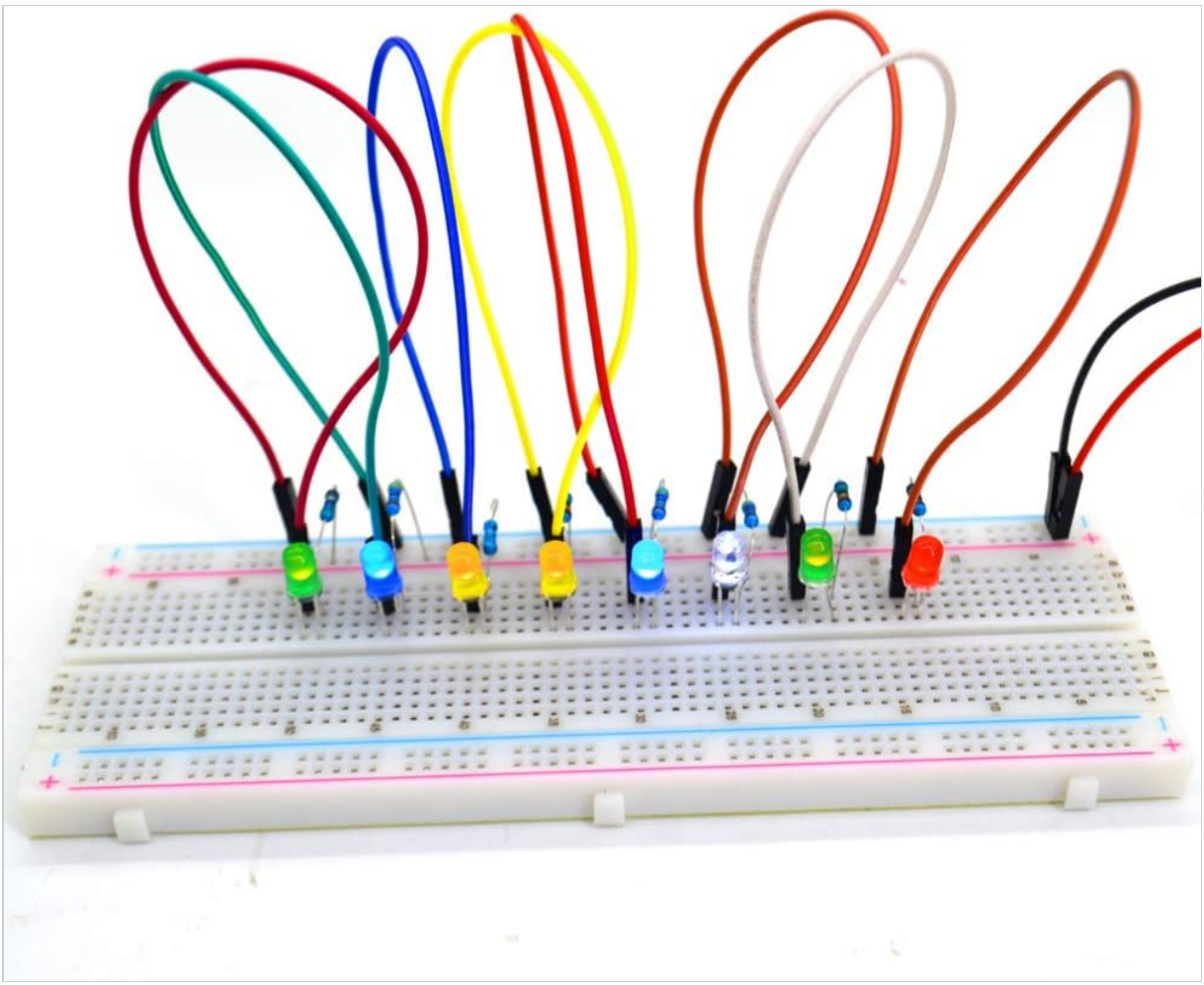

Image: A breadboard setup showing various colored LEDs connected with jumper wires and resistors, illustrating a typical circuit for testing and use.

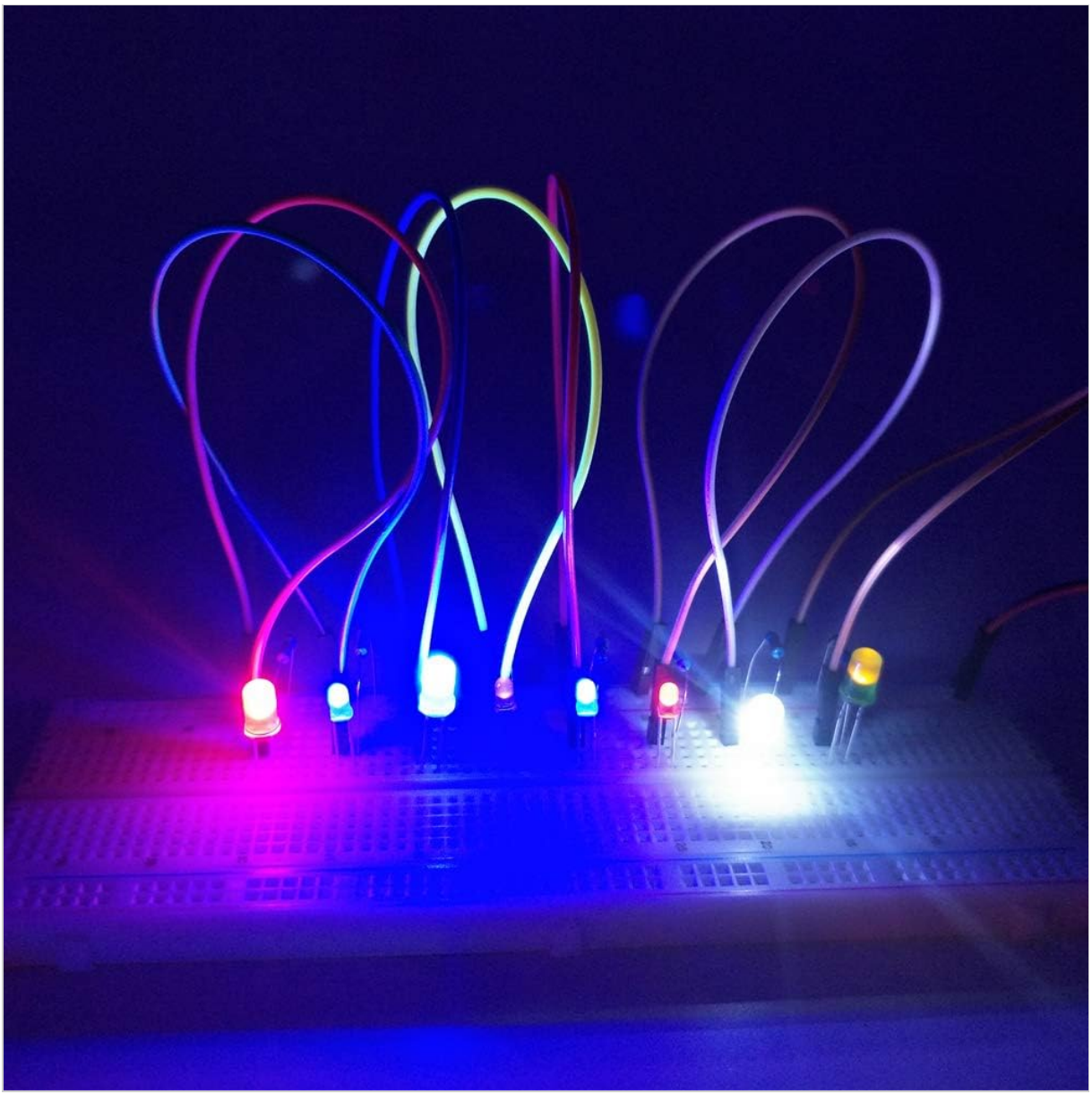

Image: Illuminated LEDs on a breadboard, demonstrating their light output in a low-light setting.

6. Operating Instructions

Once properly connected to a power source with an appropriate current-limiting resistor, the LEDs will illuminate. Ensure the voltage and current supplied are within the specified ranges for each LED color to prevent damage and ensure optimal performance.

6.1 Testing with a Coin Cell Battery

For quick testing, an LED can be briefly connected to a coin cell battery (e.g., CR2032). Connect the longer lead (anode) to the positive terminal of the battery and the shorter lead (cathode) to the negative terminal. Note that this is for brief testing only; for continuous operation, a resistor is crucial.

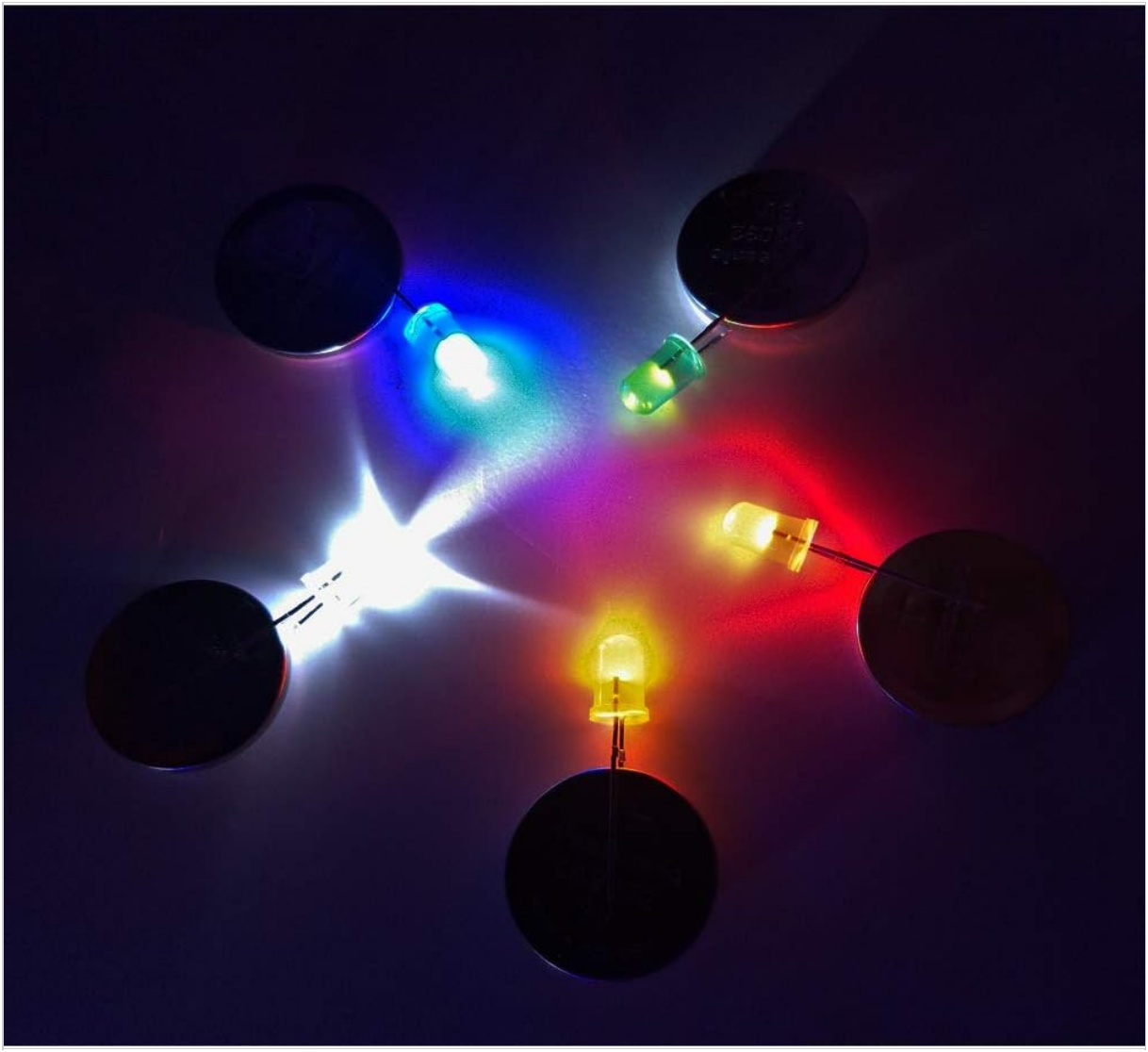

Image: Various colored LEDs powered by individual coin cell batteries, illustrating a direct connection for testing purposes.

6.2 Product Demonstration Video

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Video: A demonstration of the haraqi 5mm LED Light Emitting Diode Assortment Kit, showing the contents, connection to a breadboard, and testing individual LEDs with a coin cell battery.

7. Maintenance

These LEDs are passive electronic components and require minimal maintenance. Store them in their original packaging or a similar anti-static container to prevent damage to the leads and protect them from dust and moisture. Avoid bending the leads excessively, as this can cause them to break.

8. Troubleshooting

- **LED does not light up:**
  - Check the polarity: Ensure the anode (longer lead) is connected to the positive voltage and the cathode (shorter lead) to the negative/ground.
  - Verify power supply: Confirm that the power source is providing the correct voltage.
  - Check the resistor: Ensure a current-limiting resistor is used and its value is appropriate for the voltage supplied. Too high a resistance might make the LED too dim, too low or no resistance can burn it out.

- Inspect for damage: Check the LED leads for bends or breaks.

- **LED is too dim or too bright:**
  - Adjust the resistor value: A higher resistance will decrease brightness, a lower resistance will increase it. Always stay within the LED's maximum current rating (20mA).
  - Check voltage: Ensure the supply voltage matches the LED's forward voltage requirements.
- **LED burns out quickly:**
  - Insufficient current limiting: A resistor is likely too small or missing, causing excessive current to flow through the LED.
  - Overvoltage: The supply voltage might be too high for the LED.

9. Warranty and Support

For any questions or support regarding your haraqi 5mm LED Light Emitting Diode Assortment Kit, please contact the manufacturer or seller. While specific warranty details are not provided in this manual, standard consumer rights apply. Always refer to your purchase documentation for specific warranty terms.
Manufacturer: Smart Eagle Tech