YOUMILE TS-YM-100

YOUMILE 100-Pack 5mm LED Assorted Kit Instruction Manual

Model: TS-YM-100

1. Introduction

This manual provides essential information for the safe and effective use of your YOUMILE 100-Pack 5mm LED Assorted Kit. This kit contains 100 individual 5mm light-emitting diodes (LEDs) in five different colors: red, yellow, green, blue, and white, with 20 pieces of each color. These LEDs are designed for various electronic projects and applications requiring visual indicators or illumination.

This image displays the YOUMILE 100-Pack of 5mm LEDs, featuring a mix of red, yellow, green, blue, and white light-emitting diodes, packaged in a clear resealable bag.

2. Safety Information

Please read and understand the following safety guidelines before using the LEDs:

- **Voltage and Current:** Each LED is rated for approximately 3V forward voltage and 20mA forward current. Exceeding these ratings can damage the LED or shorten its lifespan.
- **Current Limiting Resistor:** Always use an appropriate current-limiting resistor in series with the LED when connecting it to a power source. Failure to do so will result in immediate damage to the LED.
- **Polarity:** LEDs are polarity-sensitive. Incorrect polarity will prevent the LED from lighting up and can potentially damage it if excessive voltage is applied.
- **Heat:** While LEDs generate less heat than incandescent bulbs, prolonged operation at maximum current can still cause them to warm up. Ensure proper ventilation if used in enclosed spaces.
- **Eye Protection:** Avoid staring directly into illuminated LEDs, especially bright ones, as this may cause temporary

discomfort or eye strain.

- **Small Parts:** Keep LEDs out of reach of small children to prevent choking hazards.

3. Setup

Proper setup is crucial for the functionality and longevity of your LEDs.

3.1 Identifying LED Polarity

LEDs have two leads: an anode (+) and a cathode (-). Current flows from the anode to the cathode. Incorrect connection will prevent the LED from lighting.

- **Longer Lead:** The longer lead is typically the anode (+).
- **Shorter Lead:** The shorter lead is typically the cathode (-).
- **Flat Edge:** The cathode side of the LED's plastic casing often has a flat edge.

3.2 Connecting to a Power Source

To connect an LED to a power source, you must use a current-limiting resistor. The resistor value depends on your supply voltage and the LED's forward voltage and current.

Resistor Calculation Formula:

$$R = (V_{supply} - V_{forward}) / I_{forward}$$

- **R:** Resistor value in Ohms (Ω)
- **V_{supply}:** Your power supply voltage (e.g., 5V, 9V, 12V)
- **$V_{forward}$:** LED forward voltage (approximately 3V for these LEDs)
- **$I_{forward}$:** Desired LED forward current (e.g., 0.020A for 20mA)

Example: For a 5V supply and a 3V, 20mA LED:

$$R = (5V - 3V) / 0.020A = 2V / 0.020A = 100\ \Omega$$

Always choose a standard resistor value equal to or slightly higher than the calculated value.

4. Operating

Once properly connected with a current-limiting resistor, the LED will illuminate when power is applied. The brightness of the LED is directly related to the current flowing through it, up to its maximum rated current.

- **Color Output:** Each LED emits light in its specified color (red, yellow, green, blue, or white).
- **Forward Voltage Variation:** While typical forward voltage is 3V, there can be slight variations between colors and individual LEDs. Blue and white LEDs often have slightly higher forward voltages than red, yellow, and green LEDs.
- **Water Clear Lens:** The LEDs feature a 'water clear' lens, meaning the lens itself is transparent, allowing the emitted light color to be clearly visible.

5. Maintenance

These LEDs are generally maintenance-free, but proper handling and storage can extend their life and ensure optimal performance.

- **Storage:** Store unused LEDs in a dry, cool environment, preferably in their original packaging or an anti-static bag, to protect them from moisture and physical damage.
- **Handling:** Avoid bending the leads excessively or repeatedly, as this can cause them to break. Handle LEDs by

their plastic body rather than the leads.

- **Cleaning:** If necessary, gently wipe the LED lens with a soft, dry cloth. Avoid using harsh chemicals.

6. Troubleshooting

If an LED is not functioning as expected, consider the following troubleshooting steps:

- **LED Not Lighting Up:**
  - **Check Polarity:** Ensure the anode (+) is connected to the positive supply and the cathode (-) to the negative supply (or ground).
  - **Verify Power Supply:** Confirm that your power supply is providing the correct voltage.
  - **Resistor Value:** Double-check your resistor calculation and ensure the correct resistor is used. A resistor that is too high will result in very dim or no light.
  - **Loose Connections:** Inspect all connections for proper contact.
  - **Damaged LED:** The LED itself might be faulty. Try a different LED from the pack.
- **LED is Dim:**
  - **Resistor Value:** The current-limiting resistor might be too high, reducing the current flow.
  - **Power Supply Voltage:** The supply voltage might be lower than expected.
- **LED Burns Out Quickly:**
  - **No Resistor:** The most common cause is connecting the LED directly to a power source without a current-limiting resistor.
  - **Incorrect Resistor:** The resistor value might be too low, allowing excessive current to flow.
  - **Overvoltage:** The supply voltage is too high for the LED's rating.

7. Specifications

Feature	Specification
LED Type	Round, Water Clear Lens
LED Size	5mm
Colors Included	Red, Yellow, Green, Blue, White (20 pieces each)
Quantity	100 pieces total
Typical Forward Voltage (V_f)	~3V (varies slightly by color)
Typical Forward Current (I_f)	20mA
Product Dimensions	3.94 x 7.87 x 14.57 inches
Item Weight	7.4 ounces
Model Number	TS-YM-100
ASIN	B07PZ75N67

8. Warranty and Support

This product is an assorted component kit. While YOUMILE strives to provide high-quality components, specific technical service for individual project integration or design assistance is not available. Please refer to general electronics resources for circuit design and application guidance.
For issues related to product defects upon arrival, please contact your retailer within their specified return period.