Hilitand 738586662755

Hilitand NE555+CD4017 LED Chaser Running Light Module Instruction Manual

Model: 738586662755

1. Introduction

The Hilitand NE555+CD4017 LED Chaser Running Light Module is an electronic circuit designed to create a sequential 'flowing' or 'chasing' light effect using 10 LEDs. This module is suitable for various electronic projects, educational purposes, and decorative applications. It integrates a NE555 timer IC for clock generation and a CD4017 decade counter IC for sequential LED illumination, offering adjustable speed control.

Image 1.1: Two Hilitand NE555+CD4017 LED Chaser Modules.

2. Features

- **10 LED Sequential Illumination:** Features ten LEDs connected to the CD4017 outputs, creating a dynamic water-flowing light effect.
- **NE555 Timer Core:** Utilizes the NE555 IC as a self-excited multivibrator for precise clock signal generation.
- **CD4017 Decade Counter:** Employs the CD4017 IC to sequentially activate the 10 LEDs based on the clock input.
- **Adjustable Speed:** Equipped with a potentiometer (R4) to control the output frequency of the oscillator, allowing adjustment of the LED chasing speed.
- **Compact Design:** The module is designed for ease of integration into various projects.

3. Package Contents

Each package typically includes:

- Hilitand NE555+CD4017 LED Chaser Running Light Module (quantity as specified in purchase, e.g., 2 pieces)

4. Setup and Connection

This module is designed for straightforward integration. Follow these steps for proper setup:

1. **Power Supply Connection:** Connect a DC power supply within the range of 2.5V to 14.5V (typically 3-5V) to the designated power input pins. Ensure correct polarity: the '+' pin connects to the positive terminal of your power supply, and the '-' pin connects to the negative (ground) terminal. Incorrect polarity can damage the module.
2. **Component Identification:** Familiarize yourself with the key components on the board. The NE555 IC generates the clock signal, and the CD4017 IC controls the sequential lighting of the 10 LEDs. The potentiometer labeled R4 is used for speed adjustment.

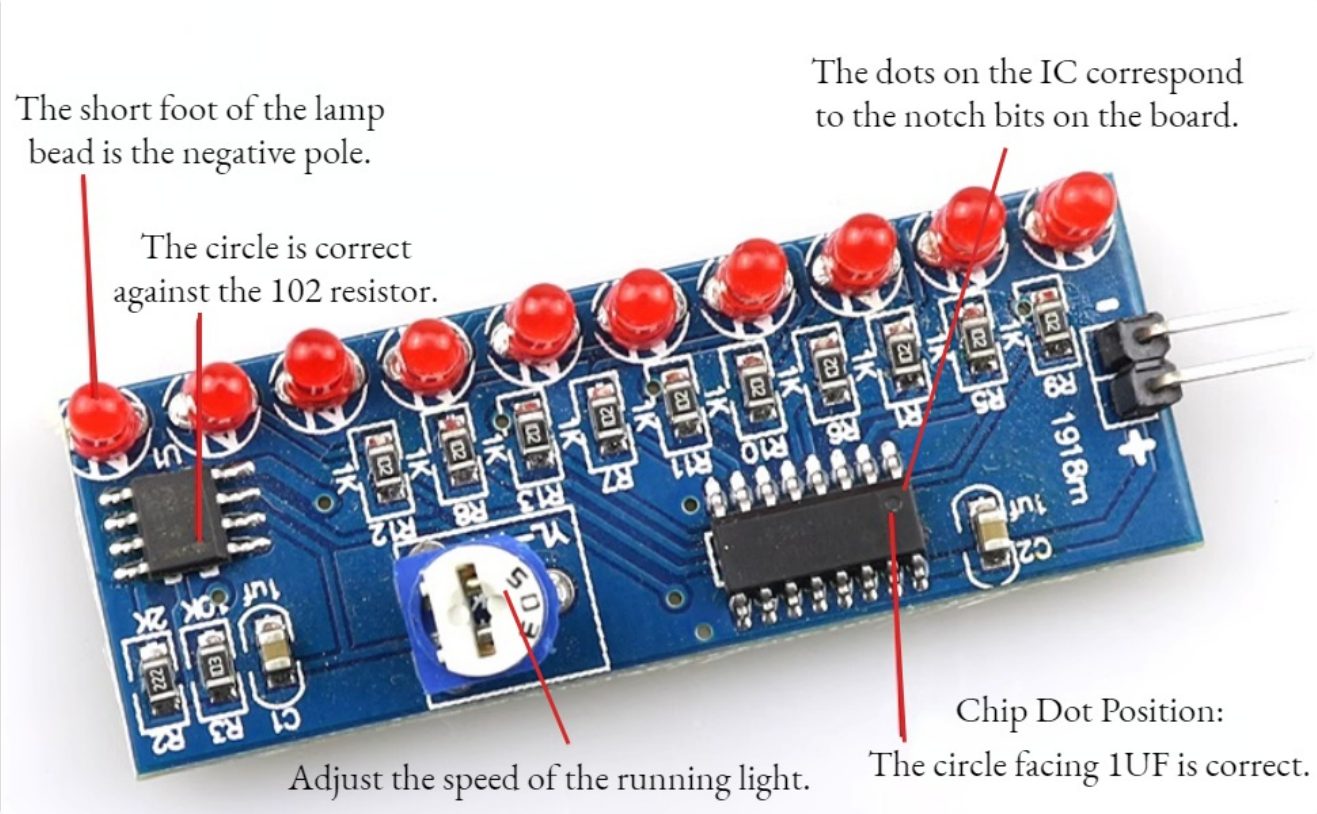

Image 4.1: Labeled components and connection points on the module.

Working Principle:

- The NE555 IC operates as a self-excited multivibrator. The power supply charges capacitor C1 through resistors R2, R3, and R4.
- When C1 begins charging, the NE555's pin 2 is at a low level, resulting in a high level output at pin 3.
- As C1 charges to approximately 2/3 of the supply voltage, the output at pin 3 transitions from high to low. The NE555's internal discharge tube activates.
- Capacitor C1 then discharges through R4, R3, and NE555's pin 7 until its voltage drops below 1/3 of the supply voltage. The NE555's pin 3 output then changes back from low to high, and C1 begins charging again, completing an oscillation cycle.
- The clock oscillation signal from the NE555 is continuously fed to pin 14 of the CD4017.
- The CD4017's 10 outputs (Q0-Q9) sequentially generate a high level under the action of this clock signal. This causes LEDs D1 through D10 to illuminate in sequence, creating the flowing light effect.

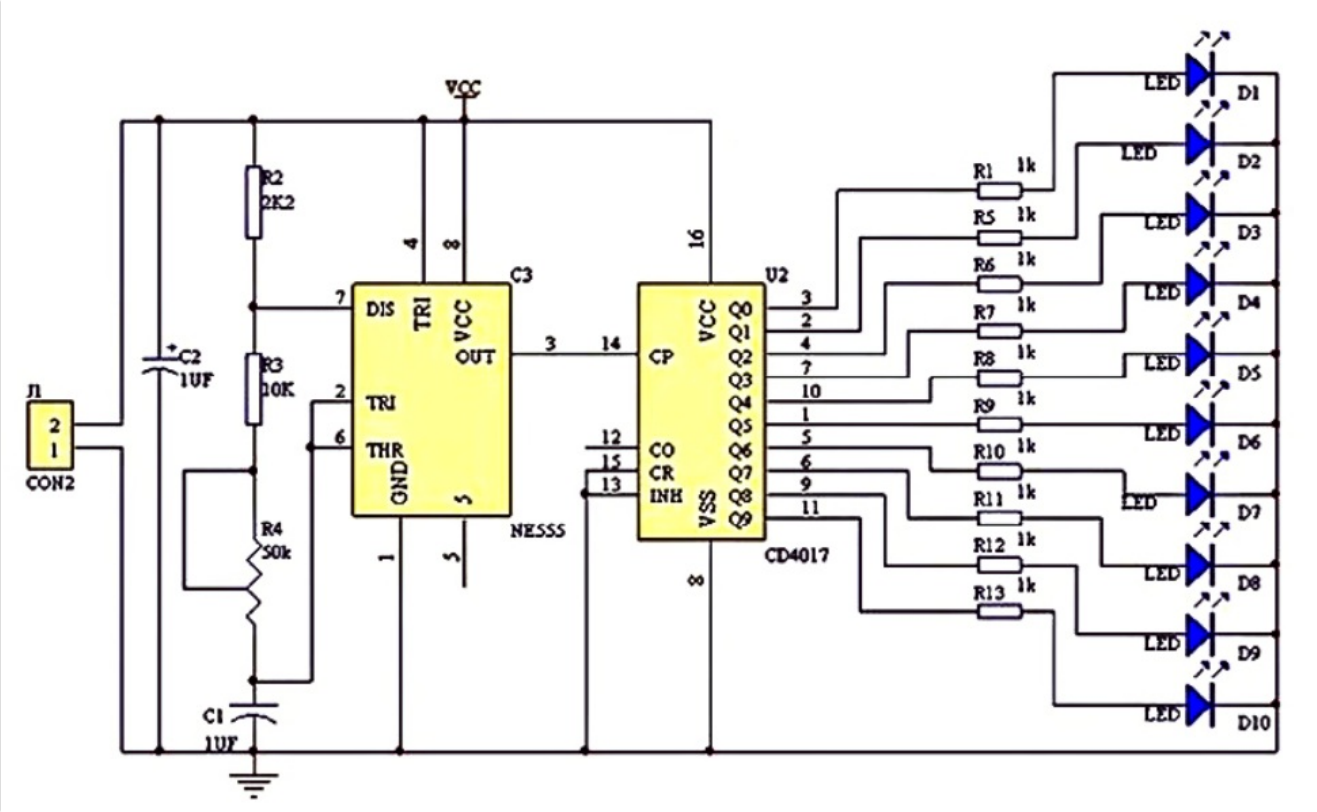

Image 4.2: Detailed circuit diagram of the module.

5. Operation

Once the module is powered correctly, the LEDs will begin to light up in a sequential pattern. The speed of this 'flowing' effect can be adjusted:

1. **Adjusting Speed:** Locate the potentiometer labeled R4 on the module. Use a small screwdriver to carefully turn the potentiometer. Turning R4 adjusts the output frequency of the NE555 oscillator, which in turn controls the speed at which the LEDs light up sequentially.

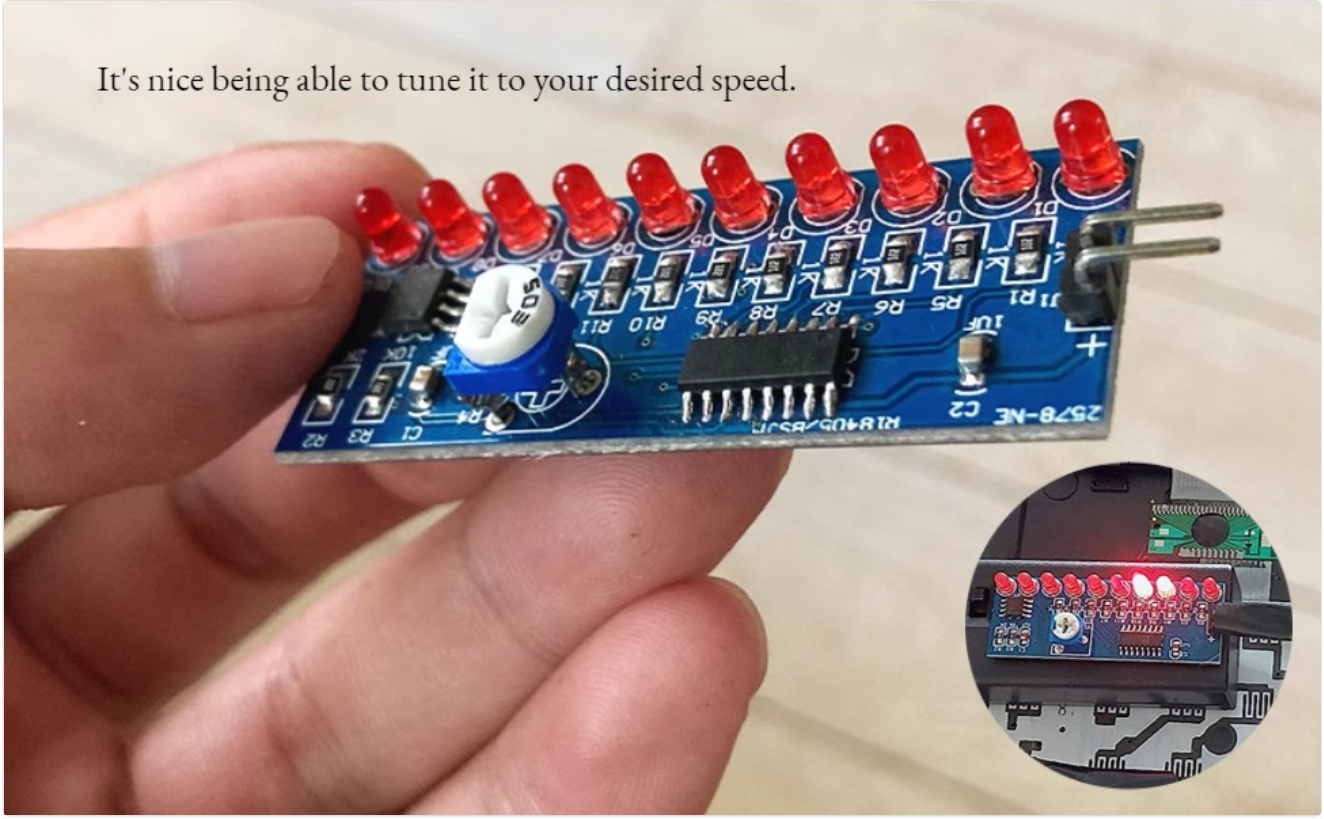

Image 5.1: Adjusting the LED light flow speed.

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Video 5.1: Demonstration of the Hilitand NE555+CD4017 LED Chaser module in operation, showing the adjustable speed of the flowing light effect.

6. Specifications

Feature	Specification
Model Number	738586662755
Brand	Hilitand
Light Source Type	Light Emitting Diode (LED)
Number of Light Sources	10
Voltage Range	2.5V - 14.5V (DC3-5V recommended)
Product Dimensions	5.4cm L x 2.1cm W x 0.16cm H (2.13"L x 0.83"W x 0.06"H)
Board Thickness	1.6mm (double-sided PCB)
Material	Electronic Component
Color	Blue PCB, Red LEDs

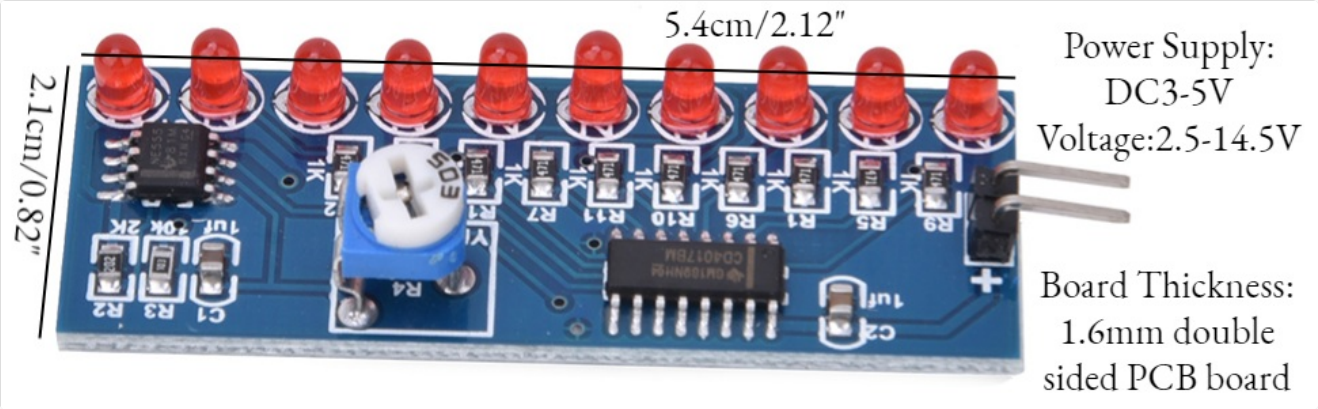

Image 6.1: Module dimensions and power supply details.

7. Troubleshooting

- **No Lights / Module Not Functioning:**
  - **Check Power Supply:** Ensure the power supply voltage is within the specified range (2.5V-14.5V, 3-5V recommended) and that it can provide sufficient current.
  - **Verify Polarity:** Double-check that the positive (+) and negative (-) terminals of the power supply are connected correctly to the module's input pins. Incorrect polarity can cause damage.
  - **Inspect Connections:** Ensure all connections are secure and free from shorts.
- **Inconsistent or Erratic Light Pattern:**
  - **Power Supply Stability:** An unstable or noisy power supply can affect the NE555's clock generation. Try a different power source.
  - **Potentiometer Adjustment:** Ensure the R4 potentiometer is not at an extreme setting that might cause instability. Adjust it slowly.
- **Module Overheating:**
  - **Excessive Voltage:** Operating the module above its maximum rated voltage (14.5V) can cause overheating and damage.
  - **Short Circuits:** Check for any unintended short circuits on the PCB.
- **Replacing LEDs or Connecting External LEDs:**
  - If replacing the onboard LEDs or connecting external ones, ensure the correct polarity for each LED. LEDs are diodes and will only light up when current flows in the correct direction (anode to cathode). The short leg of an LED is typically the negative pole (cathode).
  - Always use appropriate current-limiting resistors for external LEDs to prevent damage. The onboard resistors are designed for the integrated LEDs.

8. Maintenance

The Hilitand LED Chaser Module requires minimal maintenance:

- **Keep Clean:** Ensure the module is kept free from dust, dirt, and moisture to prevent short circuits and corrosion.
- **Handle with Care:** Avoid physical shock or excessive force, which can damage the electronic components or solder joints.
- **Storage:** Store the module in a dry, cool environment when not in use.

9. Warranty and Support

For warranty information, technical support, or inquiries regarding your Hilitand NE555+CD4017 LED Chaser Running Light Module, please refer to the seller's contact information or the official Hilitand brand store where the product was purchased. Keep your proof of purchase for any warranty claims.
You can visit the Hilitand Store for more information:Hilitand Store on Amazon

Related Documents - 738586662755

	DIY Sunlight Controlled Solar Dump Water Heater System Guide to building a DIY solar dump water heater system using readily available components to utilize excess solar power, manage intermittent sunlight, and adjust heating load seasonally.