KY-029 Bi-Color LED Module – Detailed Explanation

The **KY-029 module** is a **bi-color LED module** that contains **a single LED with two colors: Red and Green**. This allows it to display **red, green, or a combination (yellow/orange)** by controlling the brightness of each LED component.

Overview of KY-029 Module

- **Type**: LED Module
- **LED Colors**: Red & Green
- **Pins**:
    - **GND (Ground)** – Connects to the negative power supply (0V).
    - **Red Pin** – Controls the red LED.
    - **Green Pin** – Controls the green LED.
- **Power**: Can operate at **3.3V or 5V**, making it compatible with **Arduino, ESP8266, ESP32, and other microcontrollers**.
- **Usage**: Used in **visual indicators, status displays, and simple RGB lighting effects**.

How KY-029 Works

The **KY-029 LED module** has a **single two-color LED** inside. It contains **two separate LED chips (red and green)** that share a common cathode (GND).

By controlling the brightness of each LED component, you can generate different colors:

- **Red** ⟶ Turn on the red LED only.
- **Green** ⟶ Turn on the green LED only.
- **Yellow/Orange** ⟶ Turn on both LEDs at the same time with varying intensities.

Applications of KY-029

KY-029 can be used for:

1. **Indicator Lights** – Show system status (e.g., red for errors, green for OK).
2. **Traffic Light Simulation** – Red & Green for stop/go signals.
3. **Simple RGB Effects** – By adjusting brightness levels, you can mix colors.
4. **Notification Systems** – Alert users with different LED colors.

How to Use KY-029 for More Effects

- **Flashing Red for Warnings** – Blink the red LED rapidly for alerts.
- **Pulse Effect** – Gradually increase and decrease brightness using PWM.
- **Color Mixing** – Use different intensities of red & green to create smooth transitions.

Summary

Feature	Description
Name	KY-029 Bi-Color LED Module
LED Colors	Red & Green
Control Method	PWM (for brightness control)
Operating Voltage	3.3V - 5V
Uses	Status indicators, lighting effects, notifications
Microcontroller Compatibility	Arduino, ESP32