KY-021 Reed Switch Module: Detailed Explanation

What is the KY-021 Sensor?

The **KY-021 Reed Switch Module** is a **magnetic field detection sensor**. It contains a **reed switch**, which is a small electrical switch that operates when exposed to a magnetic field. The KY-021 module is commonly used in **security systems, contactless switches, and automation projects**.

How Does KY-021 Work?

1. **Reed Switch Mechanism:**
    - The module consists of a **reed switch inside a glass tube**, which contains two ferromagnetic metal contacts.
    - These contacts **stay apart** when there is **no magnetic field**.
    - When a **magnet comes close**, the contacts **attract each other**, closing the circuit and allowing current to flow.
2. **Digital Output:**
    - The KY-021 sensor **outputs HIGH (1)** when there is **no magnet nearby**.
    - It outputs **LOW (0)** when a **magnet is detected** (switch is closed).
    - This makes it **easy to interface with microcontrollers** like Arduino, as it acts like a simple switch.

KY-021 Module Pinout

Pin	Description
Signal (S)	Digital output (HIGH = No magnet, LOW = Magnet detected)
VCC	Power supply (3.3V - 5V)
GND	Ground

Applications of KY-021

- **Security Systems:**
    - Used for **door/window sensors** in **alarm systems**.
    - When the door opens (magnet moves away), the circuit opens, triggering an alarm.
- **Automated Counting Systems:**
    - Used in **bicycle speedometers** or **rotary encoders** to detect movement.
- **Contactless Switches:**
    - Used in **home automation** to switch lights or devices using a magnet.
- **Position Sensing:**
    - Used in **robotics** to detect magnetic fields for navigation.

KY-021 vs. Other Magnetic Sensors

Sensor	Type	Output Type	Sensitivity
KY-021	Reed Switch	Digital (ON/OFF)	Low
KY-024	Hall Effect	Analog & Digital	Medium
KY-035	Hall Effect	Analog	High

Reed switches (KY-021) are simpler and **only detect ON/OFF states**, while **Hall effect sensors (KY-024, KY-035) measure magnetic field strength**.

Summary

**KY-021 is a simple magnetic field detection sensor using a reed switch.
It outputs HIGH (1) normally and LOW (0) when a magnet is nearby.
Commonly used in security, automation, and counting applications.
Easy to interface with microcontrollers like Arduino.**

Reed switch

What is the Wireless Door & Window Sensor, and How Does it Work?