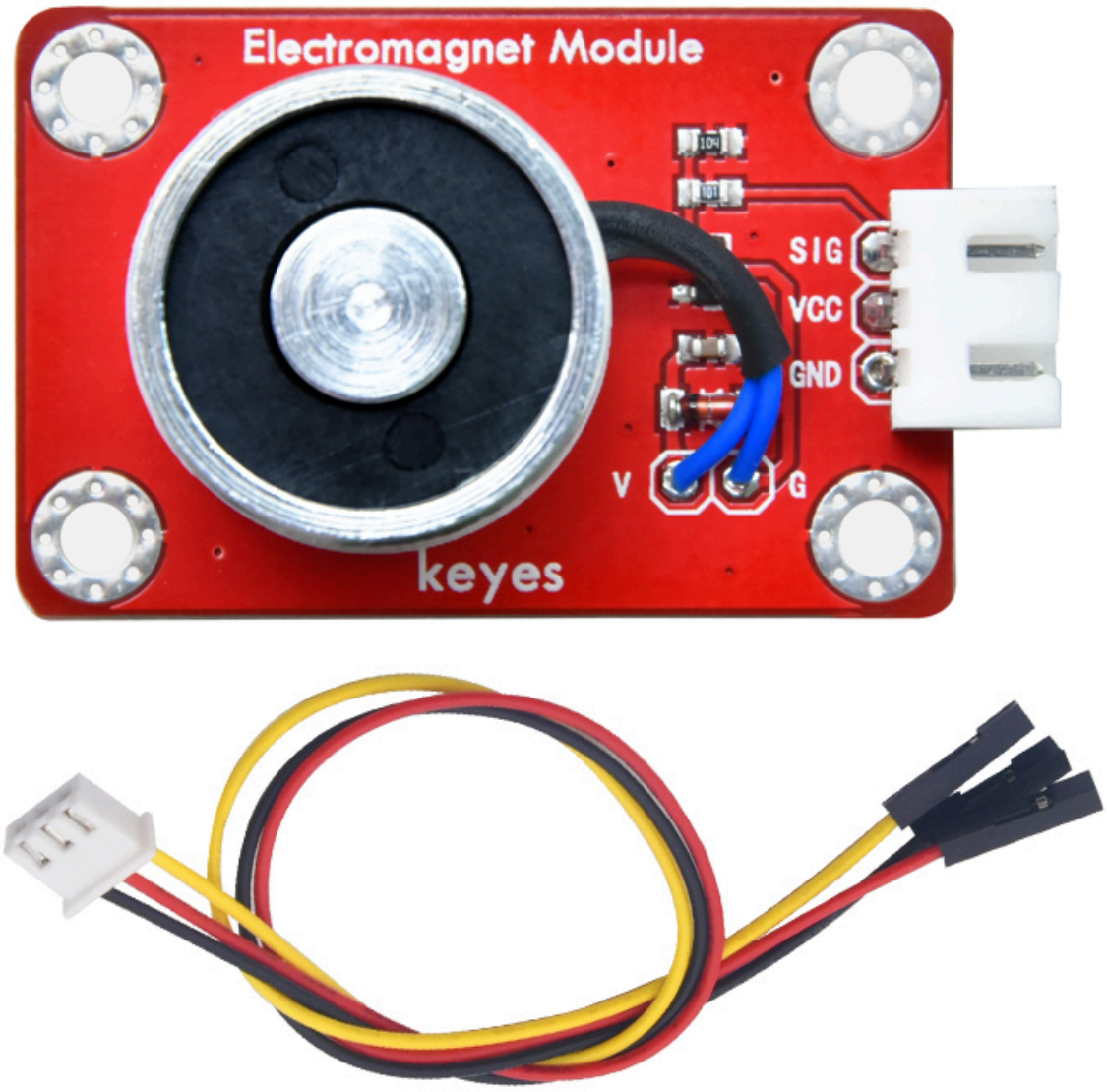
KE2069 Keyes Brick ZYE1-P20/15 Electromagnet Module



1. Description

KE2069 is a module based on the ZYE1-P20/15 electromagnet. This module can control the power-on and off of the electromagnet through a microcontroller, thereby achieving the

functions of attracting or releasing. It is used in various applications, such as automatic doors, mechanical arms, smart homes, etc.

---

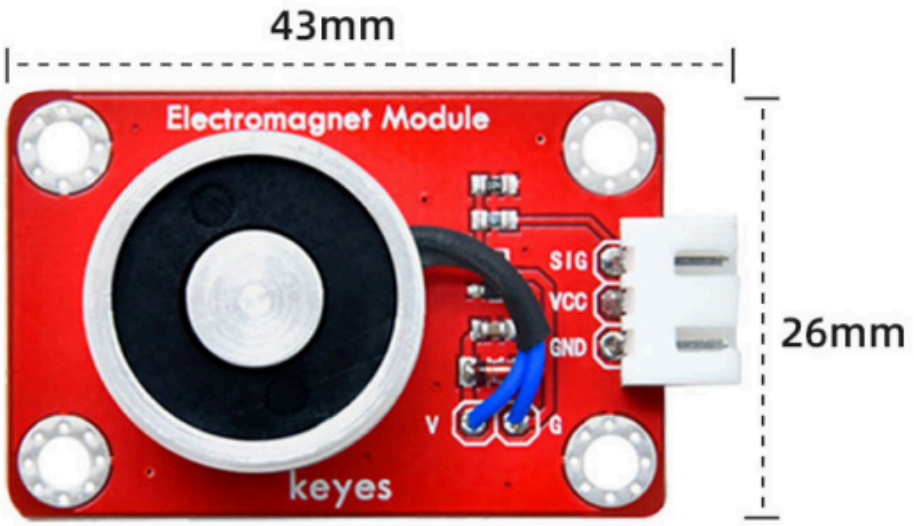
2. Features

- **High performance** : The electromagnet module can quickly engage and release, making it suitable for applications that require rapid response.
- **Anti-reverse insertion Design** : The module is equipped with anti-reverse insertion white terminals, which facilitate connection and prevent wiring errors.
- **Compact and lightweight** : The module size is small, so is suitable for embedded applications and DIY projects, and is easy to integrate into various devices.
- **Easy to use** : The on-off control of the electromagnet can be achieved through simple control signals.

---

3. Parameters

- **Operating Voltage** : DC 5V
- **Operating Current** : 0.3A
- **Suction power** : The maximum suction power is about 20N (depending on the supply voltage and load).
- **Dimensions** : About 40mm x 20mm
- **Weight** : About 15g



4. Working Principle

The KE2069 module controls its attraction and release through the current of the electromagnet. When current passes through the electromagnet, it generates a magnetic field that attracts metal objects. When the current is cut off, it releases the object. The module integrates a drive circuit inside so can control the power-on and power-off of the electromagnet through the digital output pins of the microcontroller.

Workflow:

1. **Power-on** : The microcontroller outputs a high-level signal to drive the electromagnet to be powered.
2. **Attraction** : The electromagnet generates a magnetic field to attract metal objects.
3. **Power-off** : The microcontroller outputs a low-level signal to cut off the power supply of the electromagnet.
4. **Release**: The electromagnet loses its magnetic field and releases a metal object.

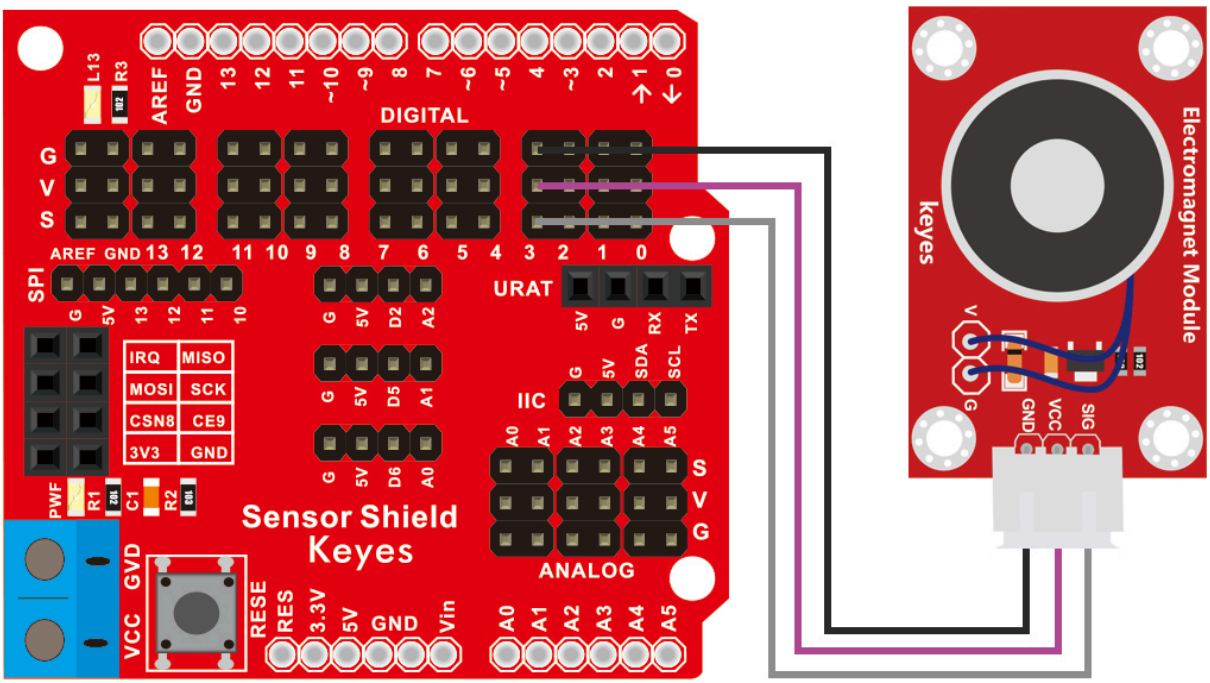
---

5. Interface

NO.	Name	Function
1	VCC	Power input (DC 5V)
2	GND	Ground
3	IN	Control signal input (power on at high level, power off at low level)

---

6. Wiring Diagram



Connection:

1. Connect the VCC pin of the module to a 5V power supply.
2. Connect the GND pin of the module to ground.
3. Connect the digital output pins of the microcontroller to the IN pin of the module.

---

7. Test Code

The following is a sample code for controlling an electromagnet by Arduino:

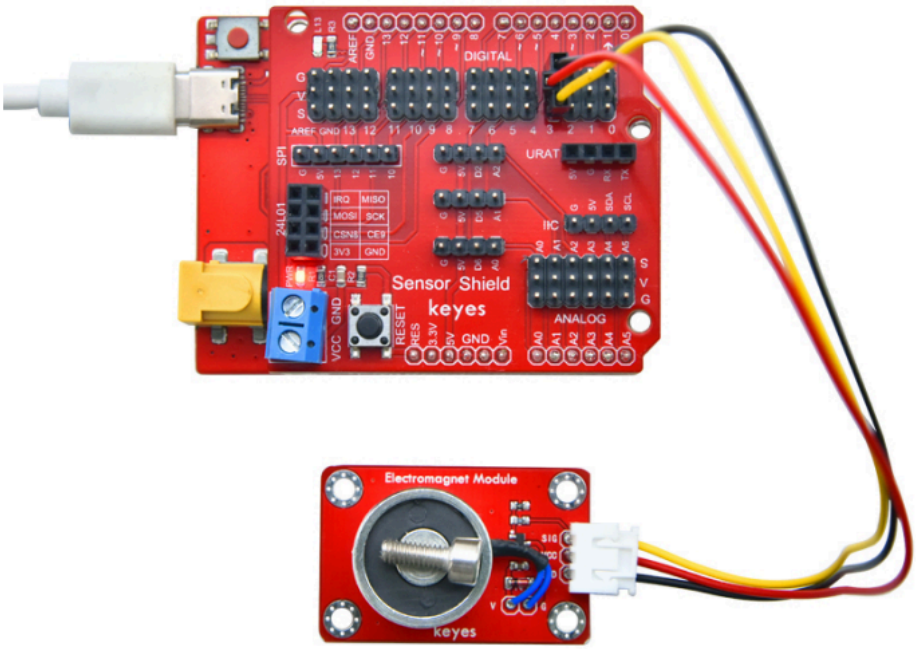
```
#define electromagnetPin 9 // Define the control pins of the electromagnet

void setup() {
  pinMode(electromagnetPin, OUTPUT); // Set the pin to output mode
}

void loop() {
  digitalWrite(electromagnetPin, HIGH); // When powered on, the electromagnet
attracts
  delay(1000); // attract 1s
  digitalWrite(electromagnetPin, LOW); // When powered off, the electromagnet
```

```
releases
  delay(1000); // release 1s
}
```

---

8. Test Result

After wiring up and uploading the code, you can observe the attraction and release of the electromagnet. When powered on, it will attract metal objects. Cut off the power and the metal object will be released. Modify the delay time and observe the working status of the electromagnet at different intervals.



Experiment procedures:

1. Connect the module and upload the code.
2. Bring the electromagnet close to a metal object.
3. Observe the process of attracting and releasing the electromagnet.

---

9. Precautions

- **Power supply requirements** : Ensure that the power supply voltage connected to the module is 5V to avoid damaging the module.

- **Current limit** : Operating current is 0.3A. Ensure that the power supply can provide sufficient current.
- **Heat dissipation** : When working for a long time, pay attention to the temperature of the electromagnet to avoid overheating.
- **Connection** : Ensure that the power supply and control signal are connected correctly to avoid short circuits.
