

## KEYESTUDIO KE-0040

# KEYESTUDIO 5V DC 25N Force Electric Lifting Magnet Solenoid Electromagnet Module User Manual

Model: KE-0040 | Brand: KEYESTUDIO

## 1. PRODUCT OVERVIEW

The KEYESTUDIO 5V DC 25N Force Electric Lifting Magnet Solenoid Electromagnet Module is designed to generate a magnetic field from an electric current. This module utilizes the principle of electromagnetism, where a coil wound with pure copper wire concentrates the magnetic field, enabling strong suction capabilities.

Key features include:

- Small electromagnet induction with high strength suction.
- Built-in pure copper coil for strong conductivity and low power consumption.
- Electric iron shell for less remanence and strong magnetic conductivity.
- Integrated molding for durability.

## 2. SETUP INSTRUCTIONS

To set up the electromagnet module with an Arduino Microcontroller Unit (MCU), follow these steps:

1. Ensure your Arduino MCU is powered off before making connections.
2. Connect the module to the Arduino MCU. Provide a 5V DC power supply to the module.
3. Connect the SIG (Signal) pin of the electromagnet module to a PWM (Pulse Width Modulation) port on your Arduino board.
4. For detailed wiring diagrams and code examples, search for "keyestudio wiki ks0320" in your web browser to access the online tutorial.

## 3. OPERATING INSTRUCTIONS

The magnetic field strength of the module can be adjusted by setting the PWM value on the connected Arduino port. The larger the PWM value, the stronger the magnetic field generated by the module.

- To activate the electromagnet, control the Signal end to a HIGH level.

- To deactivate the electromagnet, control the Signal end to a LOW level.
- When the PWM value is set to its maximum (255 for an 8-bit PWM), the module can achieve an adsorption force of 25N when an iron fitting touches the electromagnet component.

## 4. MAINTENANCE

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To ensure the longevity and optimal performance of your KEYESTUDIO Electromagnet Module, consider the following maintenance guidelines:

- Keep the module clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Avoid exposing the module to excessive moisture or corrosive environments.
- Handle the module with care to prevent physical damage to the coil or housing.

## 5. TROUBLESHOOTING

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If you encounter issues with your electromagnet module, consider these common troubleshooting steps:

- **No Magnetic Force:** Verify that the module is receiving the correct 5V DC power supply. Check all wiring connections to ensure they are secure and correctly aligned with the Arduino's pins (GND, VCC, SIG). Confirm that the Arduino code is correctly setting the PWM value and controlling the signal pin.
- **Weak Magnetic Force:** Ensure the PWM value is set appropriately for the desired magnetic strength. A higher PWM value (up to 255) will result in a stronger magnetic field. Check for any loose connections or insufficient power supply.
- **Module Overheating:** While some heat is normal during operation, excessive heat may indicate a short circuit or incorrect voltage/current. Disconnect power immediately and re-check your circuit and power supply specifications.

## 6. SPECIFICATIONS

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| Parameter                 | Value                     |
|---------------------------|---------------------------|
| Brand                     | KEYESTUDIO                |
| Model Number              | KE-0040                   |
| Working Voltage           | DC 5V                     |
| Working Current (maximum) | 0.3A                      |
| Maximum Power             | 3W                        |
| Interface Type            | 3PIN (2.54mm pitch)       |
| Item Weight               | 0.634 ounces              |
| Package Dimensions        | 4.69 x 4.17 x 0.75 inches |

## 7. VISUAL GUIDE

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Figure 7.1: Top-down view of the KEYESTUDIO Electromagnet Module, showing the main components and connection pins.

**Small electromagnet induction  
Strong suction**

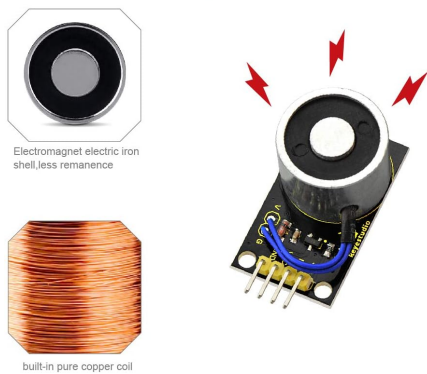


Figure 7.2: Diagram illustrating the principle of small electromagnet induction and strong suction, highlighting the pure copper coil.

**PARAMETERS**



|                                                                                                                                   |                                 |             |            |
|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|------------|
| Name                                                                                                                              | Keyestudio Electromagnet Module | N.W.        | 26g        |
| Working Voltage                                                                                                                   | 5 V                             | Size        | 40*20*19mm |
| <b>Advantages</b><br>Pure iron shell<br>Environmental-friendly<br>Clear surface, Safe & Stable<br>Strong suction and conductivity |                                 | Certificate | FCC & CE   |
|                                                                                                                                   |                                 | Wiring Type | 3PIN       |

Figure 7.3: Visual representation of the Keyestudio Electromagnet Module's key parameters.



Figure 7.4: Detailed view of the module's internal components, including high temperature resistant copper wire, built-in pure copper coil, and the fixed mounting hole.

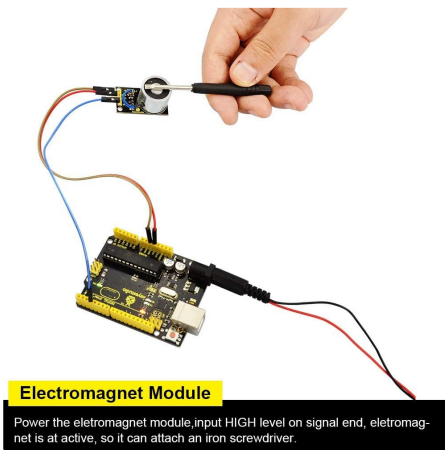


Figure 7.5: Demonstration of the electromagnet module connected to an Arduino board, actively attracting a metal screwdriver.

## Electromagnet Module

low power consumption;electric iron shell;strong suction

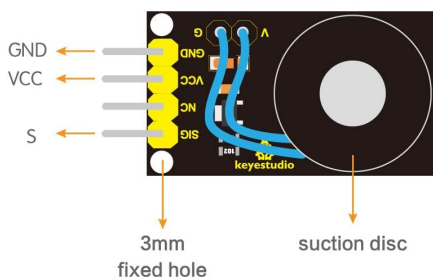


Figure 7.6: Close-up view of the electromagnet module, clearly labeling the GND, VCC, and S (Signal) pins, and the suction disc.

## Product Videos

Video 7.1: Official product video demonstrating the KEYESTUDIO 5-12V Electric Electromagnet Module for Arduino in action, showcasing its functionality and potential applications. (Duration: 0:30)

## 8. WARRANTY AND SUPPORT

For any technical support, warranty inquiries, or additional information regarding the KEYESTUDIO 5V DC 25N Force Electric Lifting Magnet Solenoid Electromagnet Module, please refer to the official KEYESTUDIO website or the specific product wiki by searching for "keyestudio wiki ks0320".

While specific warranty details are not provided in this manual, it is recommended to retain your proof of purchase for any potential warranty claims. For further assistance, please contact KEYESTUDIO customer support directly.

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**Name**

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**Email**

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

**Question**

Example: How do I reset this device or fix this error?

**Details**

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question