

**uxcell a16101700ux0246**

# uxcell 5V 50N Electric Lifting Electromagnet Solenoid User Manual

Model: a16101700ux0246

## 1. INTRODUCTION

This manual provides essential instructions for the safe and effective use of your uxcell 5V 50N Electric Lifting Electromagnet Solenoid. Please read this manual thoroughly before installation and operation to ensure proper function and to prevent damage or injury. This electromagnet is designed for various applications requiring controlled magnetic lifting or holding.

## 2. SAFETY INFORMATION

**WARNING: Failure to follow these safety instructions may result in electric shock, fire, or serious injury.**

- Ensure the input voltage matches the specified 5V DC. Incorrect voltage can damage the device.
- Do not exceed the specified "Electric time" of less than 7 minutes to prevent overheating and reduced performance.
- Always handle electrical components with care. Disconnect power before making any connections or adjustments.
- Keep the electromagnet away from sensitive electronic devices, magnetic storage media, and medical implants (e.g., pacemakers) when powered, as strong magnetic fields can interfere with their operation.
- Ensure the object to be absorbed is a good magnetic material. Non-magnetic materials will not be held.
- The suction surface of the electromagnet and the object must be smooth and clean for optimal holding force.
- The contact surface of the object must be larger than the adsorption surface of the electromagnet for maximum efficiency.
- The optimal thickness of the object for absorption is approximately 5mm.

## 3. PRODUCT OVERVIEW

The uxcell 5V 50N Electric Lifting Electromagnet is a compact and powerful device designed for various industrial and experimental applications. It operates on 5V DC and provides a peak force of 50N (approximately 5kg) and a holding force of 37N. Its robust metal construction ensures durability, while its smooth, flat surface allows for efficient magnetic coupling.

### Components:

- Electromagnet body (metal casing)
- Magnetic face (smooth, flat surface for contact)
- Power wires (red and blue, 24cm length)
- Mounting thread (M4)



Figure 1: Top-down view of the uxcell 5V 50N Electric Lifting Electromagnet, showing its cylindrical metal body and attached red and blue power wires.



Figure 2: Close-up view of the product label on the electromagnet, indicating "Electromagnet", "Model: WF-P25/20", "Voltage: DC 5V", and "Suction: 50N".



Figure 3: Detailed view of the smooth, flat magnetic contact surface of the electromagnet, essential for effective adhesion.

#### 4. SPECIFICATIONS

Parameter	Value
Brand	uxcell
Model Number	a16101700ux0246
Input Voltage	5V DC
Peak Force	50N (approx. 5kg)
Holding Force	37N (approx. 3.7kg)
Duty-cycle	50%
Max Electric Time	Less than 7 minutes
Overall Size (Dia. *T)	25 x 20 mm / 1 x 0.8 inch

Parameter	Value
Mounting Thread	M4
Wire Length	24 cm / 9.5 inch
Material	Metal (Pure Iron)
Product Weight	45 g
UPC	604267002199

## 5. SETUP AND INSTALLATION

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Follow these steps to properly set up your electromagnet:

- Mounting:** Secure the electromagnet using its M4 thread. Ensure it is firmly attached to a stable surface or mechanism.
- Power Connection:** Connect the red and blue wires to a stable 5V DC power source. The electromagnet is not polarity-sensitive for basic operation, but consistent wiring practices are recommended.
- Surface Preparation:** Ensure the surface of the object to be lifted or held is clean, smooth, and made of a good magnetic material.
- Testing:** Before full operation, perform a test with a small, magnetic object to verify proper function and holding force.



Figure 4: Bottom view of the electromagnet, showing the central mounting hole (M4 thread) and the attached power wires.



Figure 5: Close-up of the stripped ends of the red and blue power wires, ready for connection to a 5V DC power supply.

## 6. OPERATING INSTRUCTIONS

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To operate the electromagnet:

1. **Apply Power:** Once connected to a 5V DC power source, apply power to energize the electromagnet. It will immediately generate a magnetic field.
2. **Engage Object:** Bring the electromagnet's contact surface into direct, flush contact with the magnetic object you wish to lift or hold.
3. **Disengage Object:** To release the object, cut the power supply to the electromagnet. The magnetic field will collapse, allowing the object to be removed.

### Important Operating Considerations:

- **Duty Cycle:** The electromagnet has a duty cycle of 50% and an electric time of less than 7 minutes. This means it is designed for intermittent operation. Prolonged continuous use beyond 7 minutes can lead to overheating, which will decrease the magnetic force and potentially damage the unit. Allow sufficient cooling time between operations.
- **Holding Force:** The actual holding force can be less than the rated peak force (50N) or holding force (37N) due to factors such as:

- Long operating time (overheating).
- Lower than specified input voltage.
- Improperly sucked object (e.g., rough surface, non-magnetic material, insufficient contact area, or thickness less than 5mm).

It is recommended that the actual load is less than 80% of the rated holding force for reliable operation.

## 7. MAINTENANCE

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The uxcell electromagnet is designed for low maintenance. Follow these guidelines to ensure its longevity:

- **Cleaning:** Keep the magnetic contact surface clean and free from dust, debris, or rust. A clean, smooth surface is crucial for optimal performance. Use a soft, dry cloth for cleaning.
- **Storage:** Store the electromagnet in a dry environment, away from extreme temperatures and corrosive substances.
- **Inspection:** Periodically inspect the wires for any signs of damage, fraying, or exposed conductors. Replace if necessary.

## 8. TROUBLESHOOTING

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If you encounter issues with your electromagnet, refer to the following:

- **Problem: Electromagnet does not activate or has weak force.**
  - **Solution 1:** Check power supply. Ensure it is providing a stable 5V DC.
  - **Solution 2:** Verify wire connections. Ensure they are secure and not damaged.
  - **Solution 3:** Inspect the object. Confirm it is made of a good magnetic material and its surface is clean and smooth.
  - **Solution 4:** Check contact area. Ensure the object's contact surface is larger than the electromagnet's adsorption surface.
  - **Solution 5:** Allow cooling. If the electromagnet has been operating for an extended period (near or over 7 minutes), it may have overheated, reducing its force. Allow it to cool down.
- **Problem: Electromagnet becomes excessively hot.**
  - **Solution 1:** Reduce operating time. Ensure you are adhering to the "less than 7 minutes" electric time and 50% duty cycle.
  - **Solution 2:** Check input voltage. Overvoltage can cause excessive heat.
  - **Solution 3:** Ensure proper ventilation around the unit.

## 9. WARRANTY AND SUPPORT

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For warranty information and technical support, please refer to the retailer or manufacturer's official website. Keep your purchase receipt as proof of purchase.

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