EUDAX EUDAX-FC-80PCS

EUDAX School Physics Labs Basic Electricity Discovery Circuit and Magnetism Experiment Kit

Model: EUDAX-FC-80PCS

Introduction

This instruction manual provides comprehensive guidance for the EUDAX School Physics Labs Basic Electricity Discovery Circuit and Magnetism Experiment Kit. Designed for high school students, this kit offers a hands-on approach to understanding fundamental principles of electricity and magnetism. Through various experiments, users will explore concepts such as circuit building, electromagnetism, and basic electronics. Please read this manual thoroughly before beginning any experiments to ensure safe and effective use of the kit.



Figure 1: Overview of the EUDAX Electricity and Magnetism Experiment Kit components.

Safety Information

Always prioritize safety when conducting experiments. This kit involves electrical components and magnets, which require careful handling.

- **Adult Supervision:** It is recommended that experiments be conducted under adult supervision, especially for younger students.
- **Battery Safety:** The kit requires 3 AA batteries (not included). Ensure batteries are installed with correct polarity. Incorrect installation can lead to overheating or damage. Do not short-circuit batteries.
- **Component Handling:** Handle all components with care. Avoid dropping or applying excessive force to prevent damage.
- **Electrical Connections:** Ensure all connections are secure before activating circuits. Loose connections can cause sparks or intermittent operation.
- **Magnet Safety:** Keep magnets away from electronic devices, credit cards, and pacemakers.
- **Storage:** Store all components in the provided storage bag when not in use to prevent loss or damage.



Figure 2: Important warning regarding correct parallel battery installation to prevent short circuits and overheating.

Component List

The EUDAX Electricity and Magnetism Experiment Kit includes a comprehensive set of components for various experiments. Below is a detailed list of items included:

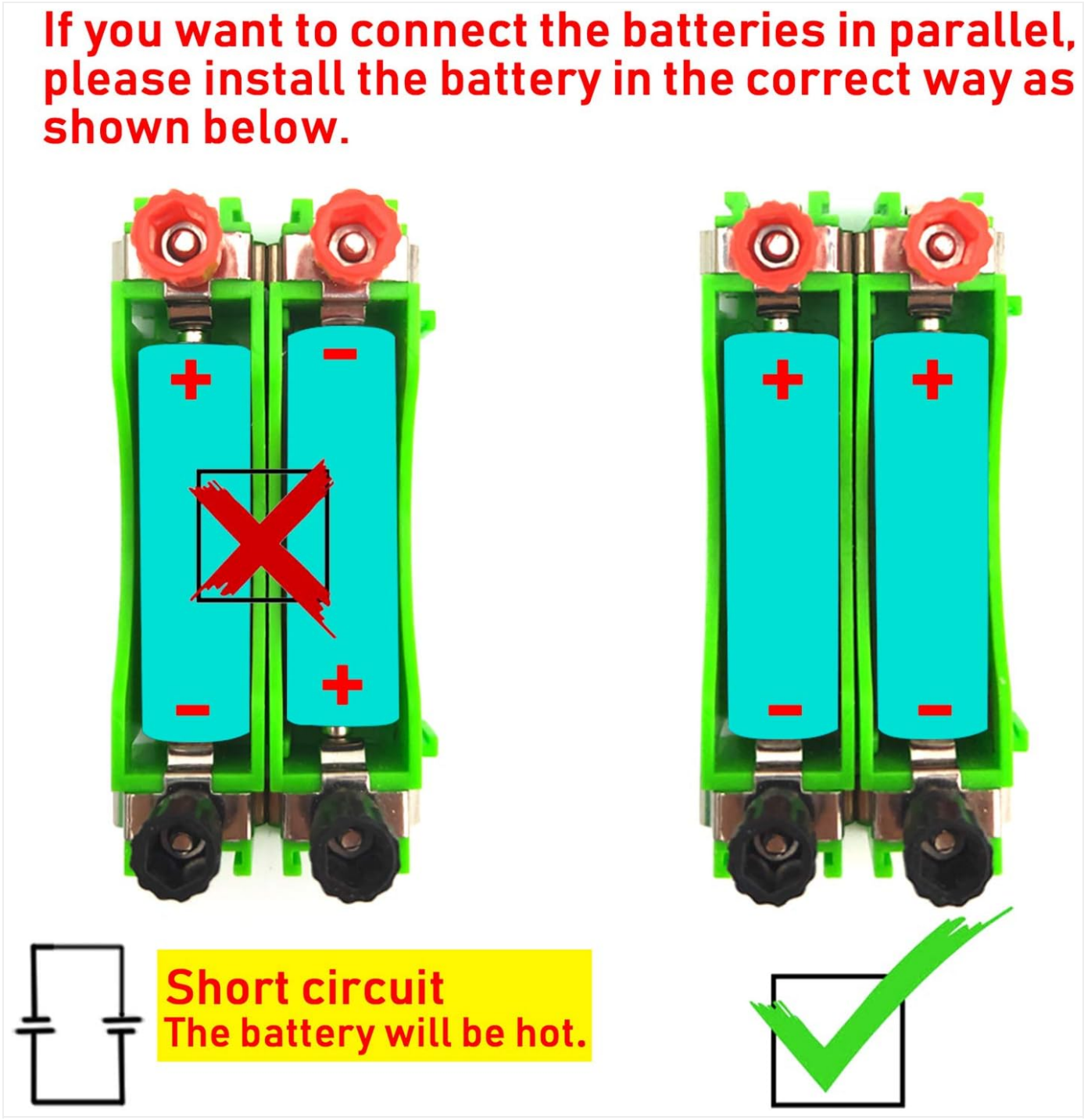


Figure 3: Visual representation of the complete equipment list included in the kit.

Electricity Components (56 items):

- 1 x Ammeter (0.6A, 3A)
- 1 x Voltmeter (3V, 15V)
- 5 x Lightbulb
- 3 x Lightbulb Holder
- 3 x Switch
- 3 x Battery Holder
- 1 x Resistor Module (5-Ω, 10-Ω, 20-Ω)
- 1 x Resistor Module (Unknown)
- 1 x Solar panels
- 1 x Potentiometer
- 1 x Mini Buzzer

- 1 x LED Module
- 4 x Copper Electrodes
- 4 x Zinc Electrodes
- 1 x Resistance Tester
- 1 x Electrostatic interaction kit
- 20 x Wire
- 2 x Alligator Clip Wire
- 2 x LED

Magnetism Components (21 items):

- 1 x Bar Magnet
- 1 x Horseshoe Magnet
- 2 x Circle Magnet
- 1 x Mini Magnetic car
- 1 x Compass
- 1 x Iron Filing Box
- 1 x Solenoid
- 1 x Copper Rod
- 1 x Double Rail Module
- 1 x Electric Motor Model
- 2 x Fan Blade
- 1 x Electric Motor
- 1 x Solar motor
- 1 x Hand Crank
- 1 x Electric Bell Model
- 1 x Multifunctional car
- 1 x Stand (for Circle magnets)
- 1 x Copper coil
- 1 x Iron nail

Special Offer (3 items):

- 1 x Storage bag
- 1 x Full-color Manual (32 pages)
- 1 x Screwdriver

Setup

Before starting any experiment, ensure you have a clear workspace and all necessary components are accessible. Follow these steps for basic setup:

1. **Unpack Components:** Carefully remove all components from the storage bag. Refer to the Component List section to verify all items are present.
2. **Battery Installation:** Insert 3 AA batteries (not included) into the battery holders. Pay close attention to the polarity markings (+ and -) to ensure correct installation. Incorrect installation can lead to short circuits and overheating.
3. **Connecting Components:** Use the provided wires to connect components as per the experiment diagrams. Ensure wires are securely fastened to the terminals.

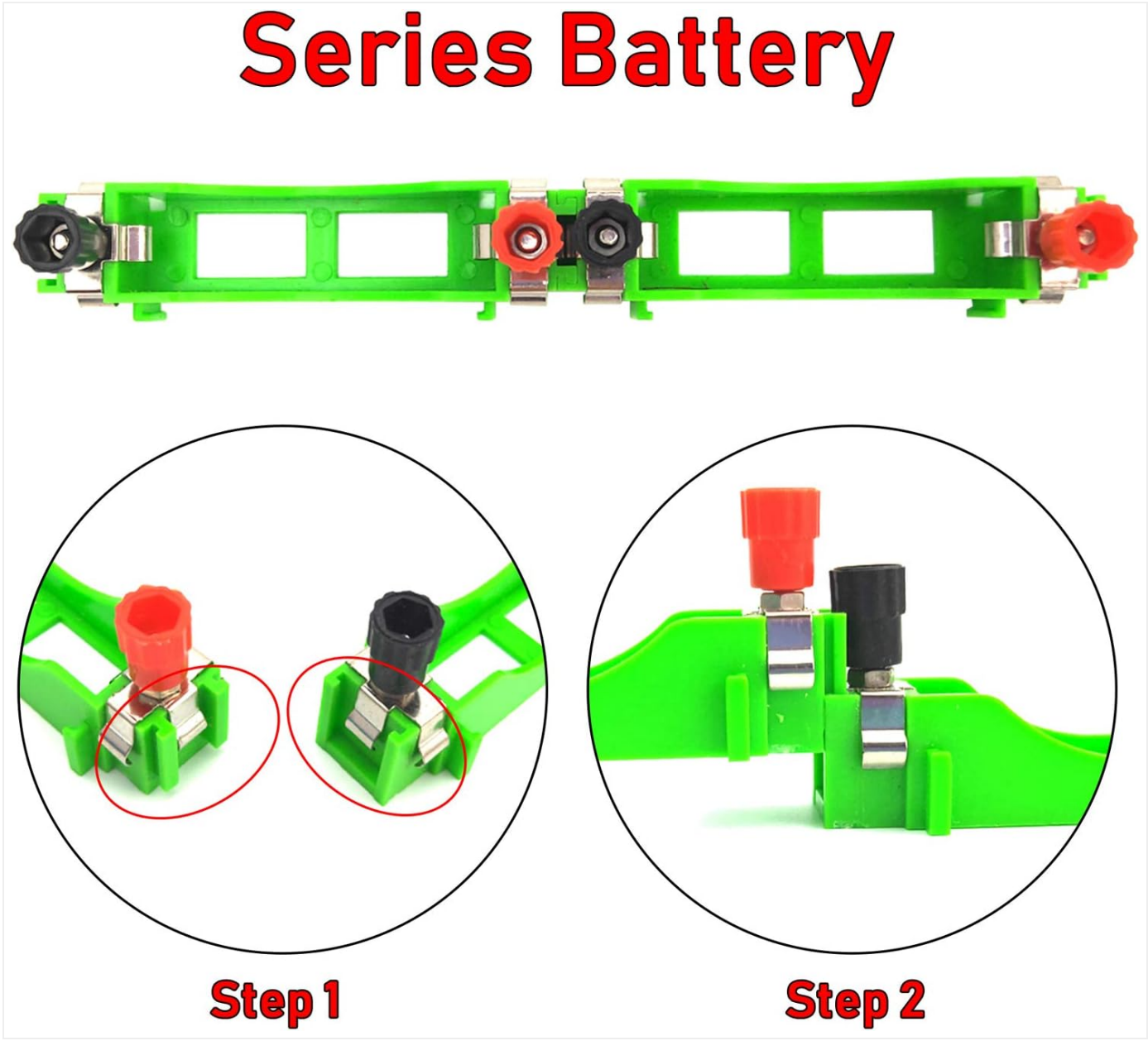


Figure 4: Instructions for connecting battery holders in series, showing secure terminal connections.

Operating Instructions: Experiments

This kit allows for a wide range of experiments to explore electricity and magnetism. The included full-color manual provides detailed instructions for each experiment. Below are some key experiments you can perform:

Electricity Experiments:

- **Series Circuits:** Learn how components behave when connected in a single path. Observe how current flows and voltage distributes.
- **Parallel Circuits:** Understand how components function when connected across multiple paths. Observe current division and constant voltage.
- **Fruit Battery:** Discover how to generate electricity using common fruits and the provided electrodes.
- **Measure Unknown Resistor with Ohm's Law:** Apply Ohm's Law (V=IR) to determine the resistance of an unknown component using the voltmeter and ammeter.
- **Electric Bell Making:** Assemble a working model of an electric bell to understand the principles of electromagnetism in action.



Figure 5: Examples of various circuit and magnetism experiments that can be conducted with the kit.



Figure 6: Demonstrating series and parallel circuit configurations.



Figure 7: Setting up a fruit battery using oranges and metal electrodes.



Figure 8: Circuit for measuring unknown resistance with Ohm's Law.



Figure 9: Assembling the electric bell model.

Magnetism Experiments:

- **Oersted Experiment:** Observe the magnetic field produced by an electric current and its effect on a compass.
- **Electromagnet:** Construct a simple electromagnet and investigate factors affecting its strength.
- **Amper's Force Investigation:** Explore the force exerted on a current-carrying conductor in a magnetic field.
- **Hand Crank Generator:** Generate electricity manually using the hand crank and observe its effects on a lightbulb or motor.

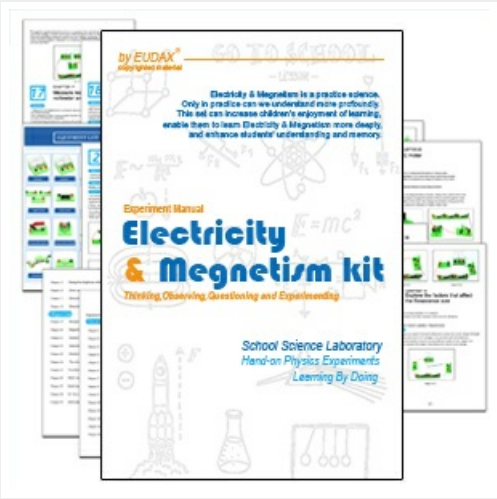


Figure 10: Setup for the Oersted experiment, demonstrating magnetic field from current.



Figure 11: Constructing and testing an electromagnet.



Figure 12: Using the hand crank generator to power a lightbulb.

For detailed step-by-step instructions, circuit diagrams, and expected observations for each experiment, please refer to the included full-color manual.

Maintenance

Proper maintenance ensures the longevity and functionality of your experiment kit.

- **Cleaning:** Wipe components with a soft, dry cloth after use to remove dust or residue. Do not use harsh chemicals or abrasive materials.

- **Storage:** Always store all components neatly in the provided storage bag. This prevents loss of small parts and protects them from damage.
- **Battery Removal:** If the kit will not be used for an extended period, remove batteries from the holders to prevent leakage and corrosion.
- **Inspection:** Periodically inspect wires for fraying or damage, and component terminals for corrosion. Replace damaged parts if necessary.



Figure 13: The experiment kit components organized within the provided storage bag for easy transport and protection.

Troubleshooting

If you encounter issues while conducting experiments, refer to the following common troubleshooting tips:

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
Lightbulb does not light up / Motor does not spin.	◦ Incorrect battery installation (polarity). ◦ Loose wire connections. ◦ Dead or low batteries. ◦ Damaged component (e.g., lightbulb filament broken). ◦ Circuit not complete (open circuit).	◦ Check battery polarity and reinsert correctly. ◦ Ensure all wires are securely fastened to terminals. ◦ Replace batteries with fresh ones. ◦ Test components individually if possible. ◦ Review circuit diagram and ensure all connections are made.
Ammeter/Voltmeter shows no reading or incorrect reading.	◦ Meter connected incorrectly (e.g., ammeter in parallel, voltmeter in series). ◦ Meter range set incorrectly. ◦ Loose connections to the meter.	◦ Connect ammeter in series with the circuit, voltmeter in parallel across the component. ◦ Adjust the meter's range setting. ◦ Secure all connections to the meter.
Electromagnet is weak.	◦ Insufficient current. ◦ Too few turns in the coil. ◦ Core material not suitable.	◦ Ensure fresh batteries are used. ◦ Increase the number of turns in the coil around the iron core. ◦ Ensure the iron nail/core is properly inserted into the coil.

If problems persist, please refer to the detailed instructions in the included manual or contact EUDAX customer support.

Specifications

Attribute	Detail
Model Number	EUDAX-FC-80PCS
Package Dimensions	15.75 x 10.67 x 2.76 inches
Item Weight	3.14 pounds
Manufacturer Recommended Age	15 years and up
Power Source	3 x AA Batteries (Not Included)
Kit Contents	56 Electricity items, 21 Magnetism items, 2 repair tools, 1 full-color manual, 1 storage bag

Warranty and Support

EUDAX is committed to providing quality products and excellent customer service. If you have any questions, concerns, or require assistance with your EUDAX School Physics Labs Basic Electricity Discovery Circuit and Magnetism Experiment Kit, please do not hesitate to contact us. We are dedicated to providing the best after-sales service.
For support, please visit the official EUDAX store on Amazon or use the contact information provided in your product packaging.
Note: Specific warranty details may vary. Please refer to your purchase documentation for precise warranty terms.

Product Videos

Currently, there are no official product videos from the seller available for embedding in this manual. Any available videos are from customer reviews and are not included here as per manual guidelines.

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