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› [IS](#) /

› IS DIY Windmill Soldering Practice Kit US-21804 Instruction Manual

IS US-21804

IS DIY Windmill Soldering Practice Kit US-21804

Instruction Manual

INTRODUCTION

This manual provides instructions for assembling and operating the IS DIY Windmill Soldering Practice Kit, model US-21804. This kit is designed for beginners and students to learn basic electronics and soldering skills through a hands-on STEM project. It features LED flashing lights and an adjustable rotation speed, offering an engaging and educational experience.

Windmill DIY Kit



The assembled IS DIY Windmill Soldering Practice Kit, featuring a classic windmill design with illuminated LEDs.

SAFETY INFORMATION

- Always use appropriate safety gear, including eye protection, when soldering.
- Ensure adequate ventilation in your workspace to avoid inhaling solder fumes.
- Soldering irons become very hot. Handle with extreme care to prevent burns.
- Keep out of reach of small children. This kit contains small parts and requires adult supervision for assembly.
- Use only the specified power source (DC 5V via Type-C interface).

PACKAGE CONTENTS

Verify that all components listed below are present in your kit:

- Printed Circuit Board (PCB)

- Electric Geared Motor
- LED Lights (various types, including white running and yellow steady)
- Resistors
- Capacitors
- Diodes
- Transistors
- Integrated Circuits (ICs)
- Potentiometer (for speed adjustment)
- Power Switch
- Type-C USB Port
- Windmill Blades and Housing Components
- Mounting Hardware (screws, standoffs)
- Instruction Manual (this document)

DIY Soldering Practice Kit

The kit includes only one SMD component, with all others using through-hole design



ASSEMBLY INSTRUCTIONS

Follow these steps carefully to assemble your DIY Windmill Soldering Practice Kit. All components, except for one SMD component, use a through-hole design for easier soldering.

1. **Prepare Your Workspace:** Ensure a clean, well-lit, and well-ventilated area. Gather your soldering iron, solder, desoldering wick/pump, and safety glasses.
2. **Identify Components:** Match each component from the package contents list to its corresponding symbol and location on the PCB. The PCB is clearly marked for component placement.
3. **Solder Resistors and Diodes:** Start with the smallest components. Insert resistors and diodes into their designated holes on the PCB. Ensure diodes are oriented correctly (band matches the marking on the PCB). Bend the leads slightly to hold them in place, then solder and trim excess leads.
4. **Solder Capacitors and Transistors:** Proceed with capacitors (pay attention to polarity for electrolytic capacitors) and transistors.
5. **Solder Integrated Circuits (ICs):** Carefully align the ICs with the notch or dot on the chip matching the marking on the PCB. Solder each pin.
6. **Solder LED Lights:** Insert the LED lights into their respective positions. Note that the longer lead of an LED is typically the anode (+) and the shorter lead is the cathode (-). Match these to the PCB markings.
7. **Solder Potentiometer and Power Switch:** Install the potentiometer (for speed adjustment) and the power switch onto the PCB.
8. **Solder Type-C USB Port:** Carefully solder the Type-C USB port to the designated area on the PCB.
9. **Mount the Electric Geared Motor:** Secure the electric geared motor to its position on the PCB using the provided mounting hardware. Solder its leads to the appropriate pads.
10. **Assemble Windmill Structure:** Attach the windmill blades to the motor shaft. Assemble the main windmill housing components around the PCB, securing them with screws or clips as indicated in the detailed diagram.
11. **Final Inspection:** Visually inspect all solder joints for cold joints, bridges, or unsoldered pins. Ensure all components are correctly oriented and securely attached.



The fully assembled DIY Windmill Soldering Practice Kit, ready for operation, showcasing the LED lights and windmill blades.

OPERATING INSTRUCTIONS

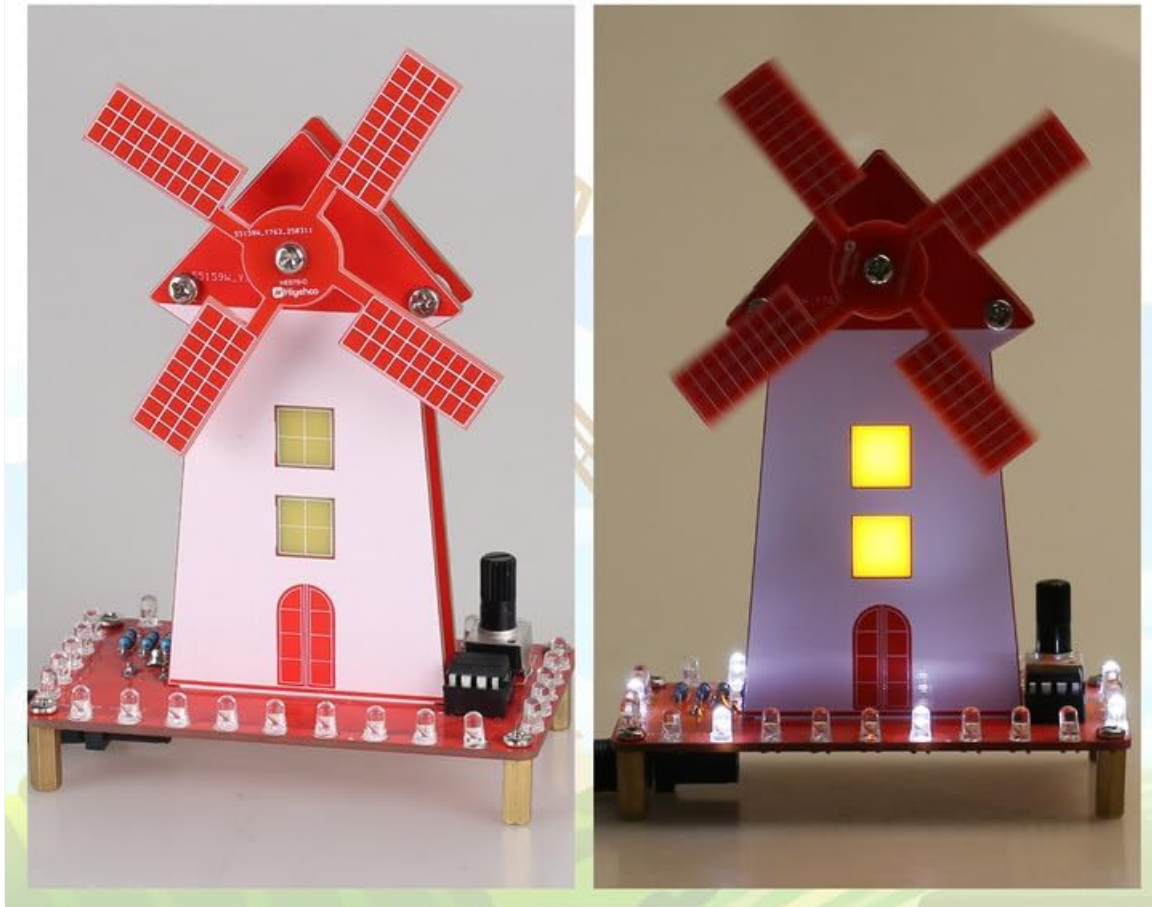
1. **Power On:** Connect the kit to a DC 5V power source using a Type-C USB cable. Flip the power switch to the "ON" position.
2. **Observe LED Lighting:** The LED lights surrounding the PCB will illuminate. The kit features various lighting modes, including white running LEDs and warm yellow steady LEDs for the window lights.
3. **Adjust Rotation Speed:** Use the rotating speed adjustment knob (potentiometer) to control the speed of the windmill blades. Turn the knob clockwise to increase speed and counter-clockwise to decrease speed.



Close-up view of the windmill kit highlighting the rotating speed adjustment knob, used to control the blade rotation.

LED Lighting Effect

White running LEDs and Yellow steady LEDs



Comparison of the LED lighting effects: white running LEDs around the base and yellow steady LEDs illuminating the windmill windows.

MAINTENANCE

- Keep the kit clean and free from dust. Use a soft, dry cloth for cleaning.
- Avoid exposing the kit to moisture or extreme temperatures.
- Periodically check solder joints for any signs of damage or loosening. Re-solder if necessary.
- Store the kit in a safe place when not in use to prevent damage to components.

TROUBLESHOOTING

Problem	Possible Cause	Solution
Kit does not power on	No power, faulty USB cable, incorrect soldering of power components	Check USB connection and power source. Inspect soldering of Type-C port and power switch.
LEDs do not light up	Incorrect LED polarity, faulty LEDs, poor solder joints	Verify LED orientation. Check all LED solder joints.

Problem	Possible Cause	Solution
Windmill blades do not rotate	Motor not connected, faulty motor, incorrect soldering of motor, potentiometer issue	Ensure motor leads are correctly soldered. Check potentiometer connections.
Blades rotate erratically	Loose motor connection, faulty potentiometer	Secure motor connections. Inspect potentiometer.

SPECIFICATIONS

- **Operating Voltage:** DC 5V
- **Operating Current:** <250mA
- **Power Interface:** Type-C USB
- **Operating Temperature:** -20°C to 85°C
- **Operating Humidity:** 5% to 85% RH
- **Dimensions:** 100 x 60 x 156 mm (approx. 3.94 x 2.36 x 6.14 inches)
- **Weight:** 110 g (approx. 3.88 oz)
- **Assembly Type:** DIY Soldering Kit (Through-hole design)
- **Features:** LED Flashing Lights, Adjustable Rotation Speed

WARRANTY AND SUPPORT

This product is designed for educational and hobby use. For technical assistance or inquiries regarding missing parts, please contact the manufacturer or your retailer. Our experienced technical team is dedicated to providing timely support.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page’s manual context to help answer it.

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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