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ISolderStore Mini Tesla Coil Kit

ISolderStore DIY Mini Tesla Coil Kit Instruction Manual

Model: Mini Tesla Coil Kit

1. INTRODUCTION

This manual provides detailed instructions for the assembly, operation, and maintenance of your ISolderStore DIY Mini Tesla Coil Kit. This electronic kit is designed to allow users to build a functional Tesla coil capable of producing electric arcs, non-contact lighting, and playing music. It serves as an excellent soldering practice project and an educational tool for understanding basic electrical principles.



Image 1.1: Fully assembled ISolderStore Mini Tesla Coil Kit.

2. SAFETY PRECAUTIONS

Please read and understand all safety warnings before assembling or operating the Tesla Coil Kit. Failure to follow these instructions may result in injury or damage to the product.

- **Soldering Safety:** This kit requires soldering. Ensure proper ventilation, use appropriate safety gear (e.g., safety glasses), and follow general soldering safety guidelines.
- **Tesla Wire Preparation:** It is crucial to burn or scrape off the insulating paint on both ends of the Tesla wire before soldering. Failure to do so will prevent the coil from functioning correctly.
- **Electrical Safety:** While this product is designed to be safe, it is not recommended to touch the electric arc directly at the top of the coil.
- **Heat Generation:** The heat sinks and the coil can become very hot during prolonged operation. If necessary, use a cooling fan to dissipate heat.
- **Electromagnetic Interference:** Keep mobile phones, MP3 players, and other electronic devices at least half a

meter away from the Tesla coil during operation to prevent high-frequency electromagnetic interference and potential damage to these devices.

- **Power Supply:** Use a DC power supply with an output of 15-24V and a current of 2A.

Purchase valued packaging kit from ISolderStore Dingdong Store, with detailed English installation guidance and professional after-sales service.



If the tesla coil kit you purchased is a imitation, please apply for 10 times compensation.

Image 2.1: Important precautions and common problem solutions.

3. WHAT'S IN THE BOX

Your ISolderStore DIY Mini Tesla Coil Kit includes the following components:

- PCB Board
- 10K Resistors (2 pcs)
- 2K Resistors (2 pcs)
- Electrolytic Capacitor 1uF (1 pc)
- Monolithic Capacitor 105 (1 pc)
- 2P Pin Header (1 pc)
- 5mm Red LED (1 pc)

- 5mm Blue LED (1 pc)
- 80NF70 Transistor (1 pc)
- BD243 Transistor (1 pc)
- DC Power Socket (1 pc)
- 3.5mm Audio Socket (1 pc)
- Audio Cable (1 pc)
- Tesla Coil (1 pc)
- Heat Sinks (2 pcs)
- Screws (6 pcs)
- Copper Pillars (4 pcs)
- Neon Bulb (1 pc)
- Double-sided Tape (1 pc)
- Black Wire (1 pc)

Functions:

1. Arc generation: After power-on, the high-frequency voltage is self-excited by series resonance, and the wire at the top of the coil releases the arc in the air, which is beautiful.

2. Non-contact lighting: It can lights up fluorescent light, LED, neon bulbs after powered on.

3. Play music: The arc excites the air to become plasma and vibrates the air, making a sound and becoming a loudspeaker! It can play music with less volume.



In the upgraded version, the red LED is on the left, and the blue LED is on the right.

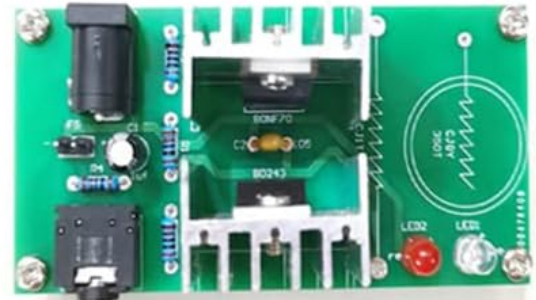
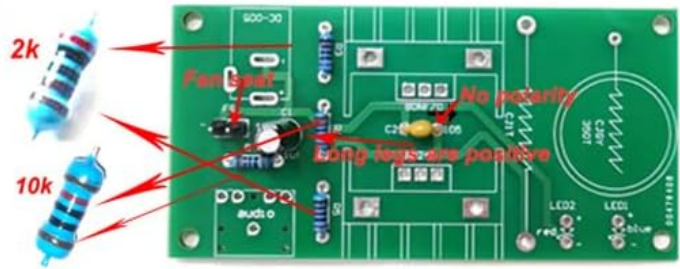
Image 3.1: All components included in the kit.

Installation steps:

Note: Burn or scrape off the paint on both ends of the tesla wire and then install, otherwise it might not work.

Step1: Install 2pcs 10k resistors at R1,R4. (brown, black, black, red, brown, without polarity)
Step2: Install 2pcs 2k resistors at R3,R5. (red, black, black, brown, brown, without polarity)
Step3: Install 1uf electrolytic capacitor at C1. Pay attention to the polarity.
Step4: Install 105 monolithic capacitor at C2. Without polarity.
Step5: Install 2P pin header at A2.

Step6: Install 5mm Blue LED at LED1. The longer lead is positive electrode.
Step7: Install 5mm Red LED at LED2. The red LED is the power indicator. The longer lead is positive electrode.
Step8: Fix the transistors on the heat sinks with screws, and install the 80NF70 transistor on Q1 and the BD243 transistor on Q2.
Step9: Install DC power socket.
Step10: Install 3.5mm audio socket.



Step11: Fix the Tesla coil on the PCB board with double-sided tape and connect the tesla wire to pcb board. Burn or scrape off the paint on both ends of the tesla wire before install, otherwise it might not work.

Step12: Cross-wrap the black wire around the coil and connect to the PCB. Note that the black wire should not touch the coil, the best distance is 1.5mm, the intersection point is on the outside of the coil,



Step14: After the installation is complete, check that all the solder points are correct, then power up and test it!

Image 3.2: Detailed packing list and assembly tips.

4. SETUP AND ASSEMBLY

This kit requires soldering. Please ensure you have the necessary tools (soldering iron, solder, wire cutters, etc.) and follow the steps carefully. For detailed visual instructions, scan the QR code provided with your package.

- 1. Install Resistors:** Solder the two 10K resistors at positions R1 and R4 (brown, black, black, red, brown, without polarity). Solder the two 2K resistors at R3 and R5 (red, black, black, brown, brown, without polarity).
- 2. Install Capacitors:** Solder the 1uF electrolytic capacitor at C1, paying attention to its polarity. Solder the 105 monolithic capacitor at C2, which has no polarity.
- 3. Install 2P Pin Header:** Solder the 2P pin header at A2.
- 4. Install LEDs:** Solder the 5mm Blue LED at LED1. The longer lead is the positive electrode. Solder the 5mm Red LED at LED2. The longer lead is the positive electrode. The red LED indicates power, and the blue LED indicates arc generation.
- 5. Install Transistors:** Fix the transistors onto the heat sinks with screws. Install the 80NF70 transistor at Q1 and the BD243 transistor at Q2.

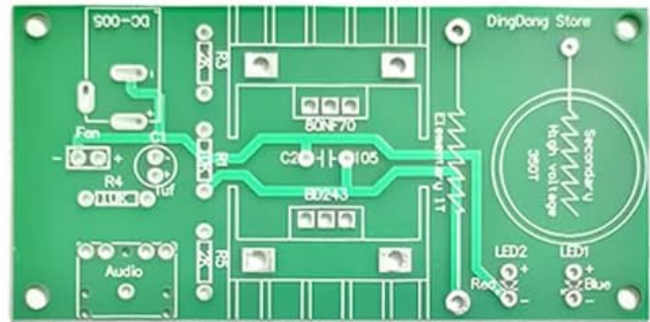
6. **Install Sockets:** Solder the DC power socket and the 3.5mm audio socket.
7. **Mount Tesla Coil:** Fix the Tesla coil onto the PCB board using double-sided tape.
8. **Connect Black Wire:** Cross-wrap the black wire around the coil and connect it to the PCB. Ensure the black wire does not touch the coil, maintaining a distance of approximately 1.5mm. The intersection point should be on the outside of the coil.
9. **Prepare Tesla Wire:** Before installation, burn or scrape off the paint on both ends of the Tesla wire. This is critical for proper operation.
10. **Final Check:** After completing all soldering, carefully check all solder points for proper connections and ensure no short circuits.

High Quality PCB Board from Dingdong Store

*High quality materials and professional guidance
lead to higher soldering success rate*

Input Voltage: DC 15-24v
Input Current: 2A

1.57 inch



3.14 inch



***If you need 18V 2A
power adapter for
tesla, please find it in
our store.***

***We recommend this
assembled Tesla Magic
Box for you.***



Image 4.1: Visual guide for component placement and soldering.



Image 4.2: PCB dimensions and recommended power supply information.

5. OPERATING INSTRUCTIONS

Once assembled and verified, your Mini Tesla Coil Kit is ready for operation. Ensure a 15-24V DC, 2A power supply is connected.

5.1 Arc Generation

Upon power-on, the high-frequency voltage is self-excited by series resonance. The wire at the top of the coil will release a visible electric arc into the air. The higher the input voltage (within the 15-24V range), the more pronounced the arc effect will be.

5.2 Non-Contact Lighting

The Tesla coil can wirelessly light up fluorescent lights, LEDs, and neon bulbs. Simply bring a compatible bulb close to the top of the coil after it is powered on. The electromagnetic field will induce current in the bulb, causing it to light up without direct contact.

5.3 Music Playback

Connect an audio source (e.g., smartphone, MP3 player) to the 3.5mm audio input jack on the Tesla coil. The arc will excite the air, creating plasma that vibrates the air, effectively turning the arc into a plasma speaker. Music will be played through the arc, though at a lower volume compared to conventional speakers.

Packing List:

Component name	Qty	Marker	Component name	Qty	Marker
10K Resistor	2	R1,R4	2K Resistor	2	R3,R5
Electrolytic capacitor 1uf	1	C1	Tesla coil	1	
Monolithic capacitor 105	1	C2	3.5mm audio socket	1	
2P Pin header	1	A2	Audio cable	1	
5mm RED LED	1	LED2	Heat sink	2	
5mm Blue LED	1	LED1	Screw	6	
80NF70 transistor	1	Q1	Copper pillar	4	
BD243 transistor	1	Q2	Neon bulb	1	
DC power socket	1		Double-sided tape	1	
Black wire	1		PCB board	1	



If the tesla coil kit you purchased is a imitation, please apply for 10 times compensation.

Tips:

Please check the components before soldering, if there are any components lost, please feel free to contact us.

Please scan the QR code on the product to get the detail installation instruction manual.

Most of our customers can successfully assemble this Tesla module.



Image 5.1: Demonstrations of arc generation and non-contact lighting with a neon bulb.



Image 5.2: The Tesla coil in action, demonstrating its capabilities.

Your browser does not support the video tag.

Video 5.3: Official demonstration of the Tesla Coil Kit's functions, including arc generation and non-contact lighting.

6. MAINTENANCE

The ISolderStore Mini Tesla Coil Kit is designed for durability, but proper care ensures longevity and optimal performance:

- **Cleaning:** Keep the PCB and components free from dust and debris. Use a soft, dry cloth for cleaning.
- **Component Inspection:** Periodically check soldered connections for any signs of loosening or corrosion. Resolder if necessary.
- **Wire Integrity:** The coil wire is delicate (approximately 0.0055" diameter). Handle with care to avoid breakage.
- **Heat Management:** If operating for extended periods, consider adding a small fan to cool the heat sinks and prevent overheating.
- **Storage:** Store the assembled kit in a dry, cool environment away from direct sunlight and excessive humidity.

7. TROUBLESHOOTING

If your Tesla Coil Kit does not function as expected after assembly, refer to the following common issues and solutions:

- **No Arc/Functionality:**
 - **Tesla Wire Paint:** Ensure the insulating paint on both ends of the Tesla wire has been completely burned or scraped off before soldering.
 - **Short Circuit:** Check all solder points for any unintended connections or short circuits.
 - **Power Supply:** Verify that the power supply is 15-24V DC and provides at least 2A of current.
 - **Audio Connection:** If attempting music playback, ensure the audio cable is securely plugged into the 3.5mm audio socket.
- **Red Light Off (No Power Indication):**
 - Check the polarity of the electrolytic capacitor and LEDs.
 - Verify the correct installation of resistors (10K and 2K) according to the markings on the board.
- **Blue Light On, But No Arc:**
 - Ensure the black wire's intersection point is on the outside of the coil and maintains a 1.5mm distance from the coil.
 - Confirm the 80NF70 and BD243 transistors are correctly installed.
- **Weak Arc/Lighting:**
 - Increase the input voltage towards the upper limit of 24V (ensure power supply can handle it).
 - Check for any loose connections or cold solder joints.

If you encounter persistent issues, please contact ISolderStore customer support for professional assistance.

8. SPECIFICATIONS

Feature	Specification
Product Dimensions	7.4 x 4.33 x 0.78 inches
Item Weight	2.39 ounces
Input Voltage	DC 15-24V
Input Current	2A (recommended)
Manufacturer	ISolderStore
Recommended Age	12 years and up

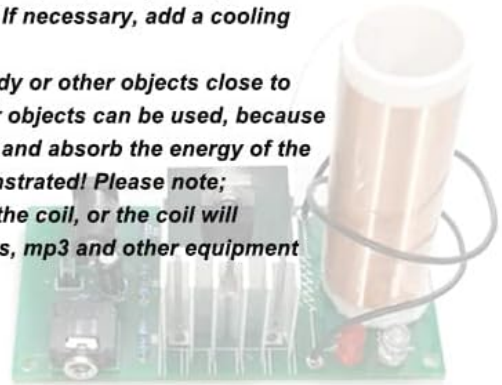
9. WARRANTY AND SUPPORT

ISolderStore is committed to customer satisfaction. If any components are missing from your kit, please contact us immediately for replacements. For any questions regarding assembly, operation, or troubleshooting that are not covered in this manual, please reach out to our customer support team for professional assistance.

You can find contact information by scanning the QR code provided on the product packaging or by visiting the

PRECAUTIONS:

- 1. Burn or scrape off the paint on both ends of the tesla wire and then installing it, otherwise it's hard to work.**
- 2. This product is safe, power is not high, will not be injured by electric shock, but it is not recommended to touch the arc at the top of the coil, there will be a burning sensation.**
- 3. Do not touch the heat sink after prolonged power-on. The temperature is very high. Especially when using 24v high voltage, the heat is huge. There is a fan interface reserved. If necessary, add a cooling fan to dissipate heat.**
- 4. It is recommended that when the Tesla coil is working, do not put the body or other objects close to the coil, that is, leave the space within half a meter of the coil and no other objects can be used, because other objects as good conductors will allow the coil to form a good circuit and absorb the energy of the coil. Pull the coil at this time the demo effect is worse or can not be demonstrated! Please note;**
- 5. Do not put the mobile phone, mp3 and other electronic devices close to the coil, or the coil will produce high-frequency magnetic field interference, making mobile phones, mp3 and other equipment failure or even damage!**



COMMON PROBLEM:

- 1. The resistance solder error, there are two resistances of 10K and 2K, should correspond with the logo on the board.**
- 2. Both the positive and negative polarities of the electrolytic capacitor and the LED are long positive and negative.**
- 3. The 80NF70 and BD243 models should correspond to the board.**
- 4. Burn or scrape off the paint on both ends of the tesla wire and then installing it.**
- 5. The intersection of the black lines must be on the outside, and do not touch the tesla coil. The best distance is about 1.5 mm.**
- 6. When the black line is long, cut it short and place it around the middle of the coil in a circle. Refer to our picture.**
- 7. Check the short circuit.**
- 8. 15-24V power supply, current 2A above, connect to DC socket or fan interface.**
- 9. Plug in half the audio plug to have sound..**
- 10. The red light is the power light. Check the resistors and LEDs when the red light is off. The blue light is there is an arc or not.**

Image 9.1: Product packaging showing the QR code for additional support and instructions.