

Ejoyous induction120201

Ejoyous ZVS Induction Heating Module User Manual

Model: induction120201

1. INTRODUCTION

This manual provides essential information for the safe and effective use of the Ejoyous ZVS Induction Heating Module. This low-voltage, high-frequency power supply is designed for various DIY heating applications, offering up to 1000W of power with an input voltage range of 12V to 48V and a maximum current of 20A. It includes a ZVS heating power supply module and a brass heating coil.

2. SAFETY INFORMATION

WARNING: This device operates at high power and voltage. Improper use can lead to electric shock, burns, fire, and damage to components. Always exercise extreme caution.

- **Power Supply:** Use a stable DC power supply within the 12V-48V range. Ensure the power supply can deliver the required current (up to 20A).
- **Slow Start Function:** When using a switching power supply, ensure the output voltage reaches at least 12V *before* connecting the induction heating circuit. Connecting the circuit while the voltage is slowly rising can cause insufficient vibration, leading to simultaneous conduction of MOS tubes and component damage.
- **Cooling:** Continuous operation requires active cooling. Add a fan to blow air down onto the circuit board, especially targeting the resonance capacitors and other components, to prevent overheating.
- **Overload Protection:** The volume of the object being heated inside the heating coil must not exceed 1/5 of the coil's volume. For cylindrical objects, the object's diameter should be less than 1/3 of the heating coil's inner diameter. Exceeding these limits can cause overload and damage to the power supply or circuit.
- **Insulation:** Ensure all connections are secure and properly insulated to prevent short circuits.
- **Heat:** The heating coil and heated objects will become extremely hot. Use appropriate heat-resistant tools and personal protective equipment (PPE) such as gloves and eye protection.

3. PACKAGE CONTENTS

Verify that all items are present and undamaged upon opening the package.

- 1 x ZVS Low Voltage Induction Heating Board
- 1 x Brass Heating Coil

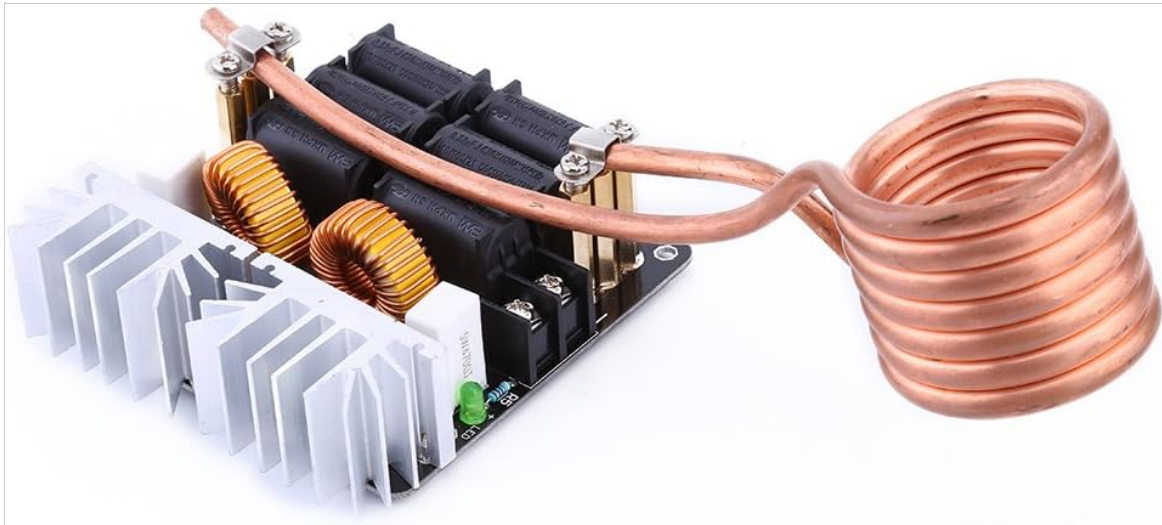


Image 3.1: The ZVS Induction Heating Module with the brass coil connected.

4. SPECIFICATIONS

Parameter	Value
Material	FR4 + Copper
Maximum Power	1000W
Maximum Current	20A
Input Voltage	12V-48V DC
PCB Size	11 x 11 cm (4.3 x 4.4 inches)
Heating Coil Inner Diameter	40mm
Heating Coil Height	50mm

5. SETUP

Follow these steps to set up your ZVS Induction Heating Module:

1. **Unpack Components:** Carefully remove the ZVS board and brass coil from their packaging.
2. **Connect Brass Coil:** Attach the brass heating coil to the designated terminals on the ZVS board. Ensure a secure connection.

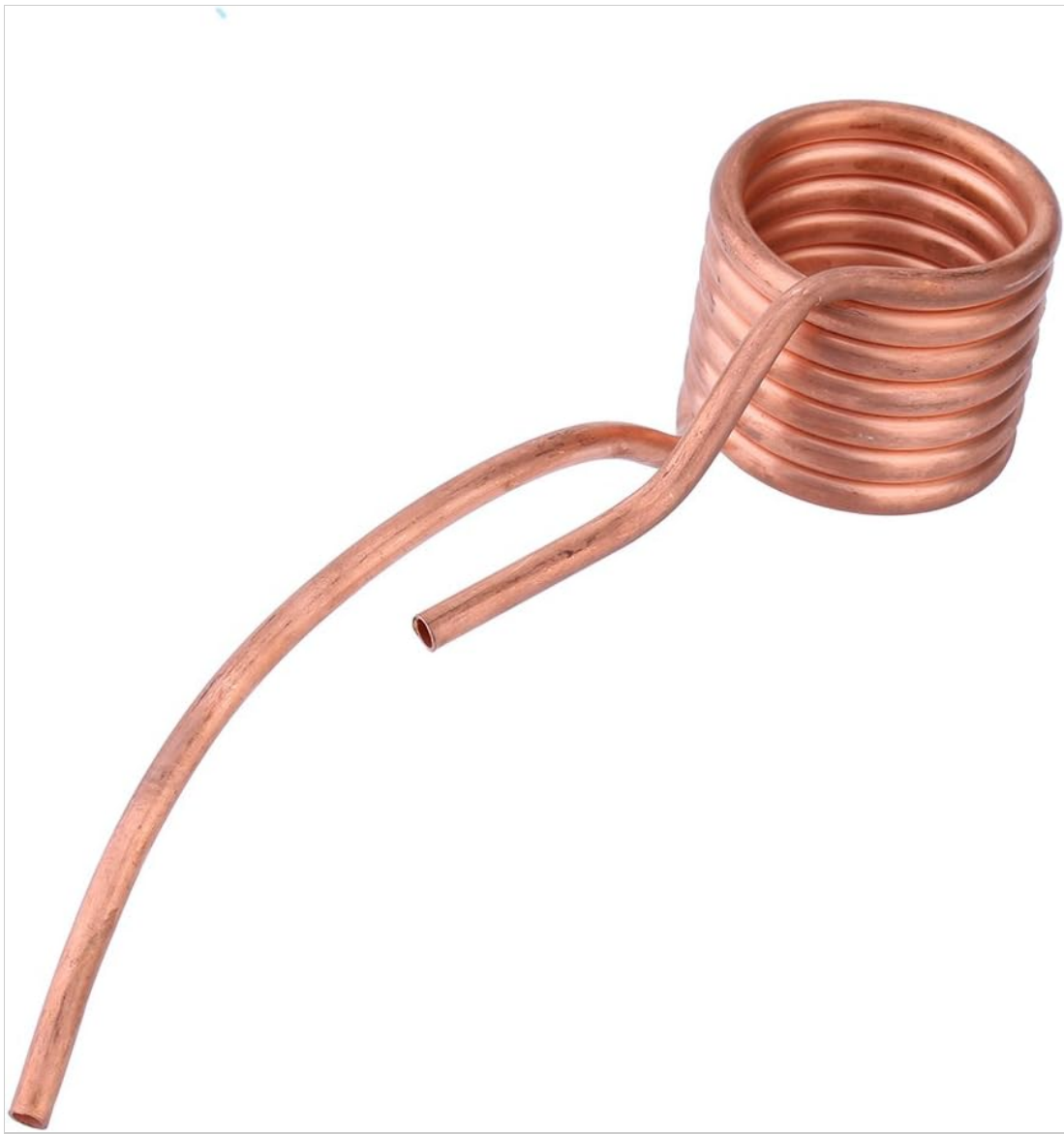


Image 5.1: The standalone brass heating coil.

3. **Prepare Power Supply:** Obtain a suitable DC power supply (12V-48V, at least 20A capacity).
4. **Install Cooling Fan:** It is mandatory to install a cooling fan. Position the fan to blow air directly onto the circuit board, especially over the resonance capacitors and MOS tubes, to dissipate heat during operation.
5. **Connect Power:** Connect the positive (+) and negative (-) terminals of your DC power supply to the corresponding input terminals on the ZVS board. Double-check polarity before applying power.



Image 5.2: Top view of the ZVS module, showing connection points and components.

6. **Power-Up Sequence (Crucial):** If using a switching power supply, turn on the power supply first and wait for its output voltage to stabilize at or above 12V before connecting the ZVS induction heating circuit. This prevents component damage due to insufficient voltage during startup.

6. OPERATING INSTRUCTIONS

Once the module is set up and powered correctly, you can begin induction heating:

1. **Place Object:** Carefully place the object to be heated inside the brass heating coil. Ensure the object's size adheres to the safety guidelines (max 1/5 of coil volume, or 1/3 of coil diameter for cylinders).
2. **Activate Heating:** With the power supply already stable and connected, the module will begin to generate a high-frequency electromagnetic field, heating the object placed within the coil.
3. **Monitor Temperature:** Continuously monitor the temperature of the heated object and the module itself. Ensure the cooling fan is operating effectively.
4. **Deactivate:** To stop heating, disconnect the power to the ZVS module. Allow the heated object and coil to cool down before handling.

This module is suitable for applications such as hardening, annealing, and other heat treatments of small metallic objects, and can be used with a graphite crucible for melting metals like gold, silver, copper, and aluminum.

7. MAINTENANCE

Regular maintenance helps ensure the longevity and safe operation of your ZVS Induction Heating Module:

- **Cleaning:** Keep the circuit board free from dust and debris. Use a soft brush or compressed air for cleaning.
- **Inspection:** Periodically inspect all connections for tightness and signs of wear or corrosion. Check the brass coil for any deformation or damage.
- **Cooling System:** Ensure the cooling fan is clean and operating correctly. A clogged fan can lead to overheating.
- **Storage:** Store the module in a dry, cool environment away from direct sunlight and corrosive substances when not in use.

8. TROUBLESHOOTING

If you encounter issues with your ZVS Induction Heating Module, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Module does not heat or operate.	<ul style="list-style-type: none">• Insufficient input voltage during startup (slow rise).• Incorrect power supply connection.• Power supply unable to provide enough current.• Damaged components.	<ul style="list-style-type: none">• Ensure power supply voltage is stable at 12V+ before connecting the module.• Verify correct polarity and secure connections.• Use a power supply rated for at least 20A.• Inspect for visible damage; contact support if necessary.
Module overheats quickly.	<ul style="list-style-type: none">• Inadequate cooling.• Object being heated is too large.• Continuous operation without breaks.	<ul style="list-style-type: none">• Ensure a powerful fan is directed at the board.• Reduce the size of the object being heated (max 1/5 coil volume).• Allow the module to cool down periodically during extended use.
Components (e.g., MOS tubes) burn out.	<ul style="list-style-type: none">• Slow rising power supply voltage during startup.• Overload due to oversized object.• Short circuit.	<ul style="list-style-type: none">• Always ensure power supply is stable at 12V+ before connecting.• Adhere strictly to object size limits.• Check all connections for shorts.

9. WARRANTY AND SUPPORT

This product is intended for DIY use. Specific warranty details may vary depending on the retailer and purchase date. Please retain your proof of purchase for any warranty claims.

For technical support or inquiries, please refer to the seller's contact information provided at the time of purchase. Ensure you have your model number (induction120201) and a detailed description of your issue ready.