

overview

This induction heating circuit using 12-48V low voltage DC power supply, the maximum current is 20A, maximum power is 1000W.

Because of its power is moderate, it can be used to make small parts hardening, annealing and other heat treatment, but also with a graphite crucible melting gold, silver, copper, aluminum and other metals.

When using 24V input the power should be more than 10A, when using 48V input the no load current should be 20A or more, the higher the voltage, the greater the current heating the same things..

(No additional cooling or copper tube doesn't add water-cooled, it is recommended to use the maximum power should not exceed 60% of the maximum rated power)

Precautions

1. Need to provide a power supply and cooling devices.

Power recommended 24V 300W above switching power supply, or communication power. This power supply has output short circuit protection circuit will not burn, but the battery without any protection measures so are not recommended. Aquarium pumps can use ordinary water pump, if not use water pump, then you can directly use tap water through a hose connected to the brass.

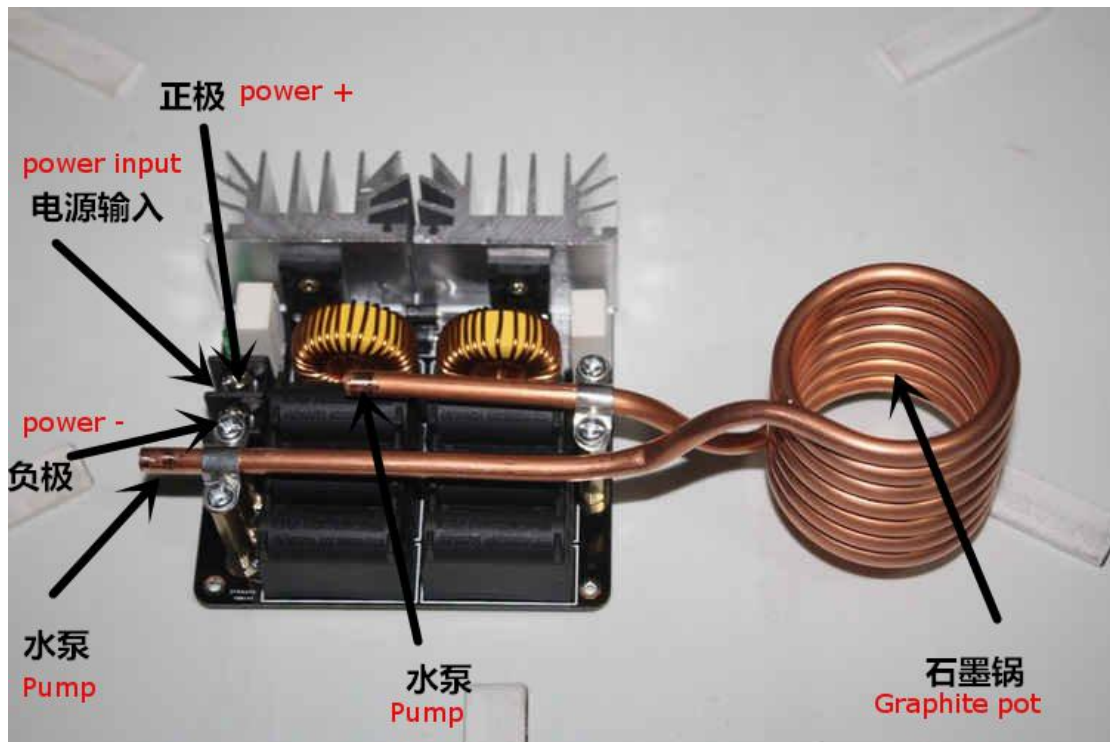
2. The circuit board using double-sided fiberglass board, the mainly wiring are using widen copper traces, the entire back surface as the resonant circuit, but because of the resonant circuit current is very large, so if you had to work continuous, you need to add a cooling fan blowing down from above, to cool the resonant capacitor and other components.

3. Please note that when using the switching power supply, because high power generally has a slow start function, that is, when the machine boot on, the output voltage is slowly rising, if you connect induction heating circuit before the voltage rises to 12V, it will lead to the start voltage is not enough and can not afford to vibration, resulting in two mos tube simultaneous conduction and element burned thereby. So first of all, you need to start switching power supply, voltage reaches 12V or more and then connect the induction heating circuit.

4. When you want to heat the iron rod objects, the diameter can not exceed the finger thickness, otherwise it may burn out circuit or the power of the power supply because of overload. Although the current of this circuit can tolerate more than 20 A, but on the safe side, should not exceed 15A, you can add an ammeter at any time convenient to monitor current between the power supply and driver board not heating overload.

PCB heating plate size: 10x10 cm

Heating coil diameter size: Default 40mm, with crucible should be 50mm





Molten copper (this circuit can not be directly heated copper, so need to use graphite crucible)

Put a fish tank pump into a water container (such as using a big Coke bottle, small plastic pots), can be cooled with water.



Note

When using crucible heated, need to mat a ceramic fiber cloth between the graphite crucible and corundum crucible, so that it can heat evenly, otherwise uneven heating will cause fragmentation.

Fault and Maintenance

Generally the problem is likely to voltage regulator tube (1N4742), fast recovery diode (FR307) and mos tube (IRFP260), if there is one component damage, may cause damage to other components, such as a breakdown mos tube, might also burn the recovery diode and regulator tube. Therefore, when measuring about replacement of components required to check other components. If in doubt, you can replace the four diodes.