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# Zhongshan Shuangping Electronic Technology Co., Ltd

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## **Zhongshan Shuangping Electronic Technology Co., Ltd**

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### **Introduction of the Company**

Zhongshan Shuangping Electronic Technology Co., Ltd is a high-tech private enterprise which engages in the design, development, production and sales of electromagnetic energy-saving products and commercial induction devices. The company has dedicated itself to the strategy of "safety, innovation, consolidation, development" since its establishment in June, 2004. Continuous efforts and innovation has cultivated Shuangping into a solution expert in induction heating applications and commercial induction heaters, exporting products to Vietnam, Indonesia, Malaysia and other Southeast Asian countries as well as other regions including Taiwan and Hongkong. We also have customers from all over the country, especially in the Pearl River Delta and Yangzte River Delta. The world's first electromagnetic water heater program in which we have spent heavily has achieved great success and gains us the new profitable space in induction heating.

A professional and experienced team both in research, production and sales has ensured the competitiveness of our products. We make every effort to carry out the spirit of meticulousness from designing, developing, manufacturing, quality checking to delivery. We promise high quality products, excellent service, competitive price, quick response and quick delivery. By substituting traditional electronic heating devices, we have renovated heating methods in a wide range of fields and achieved energy efficiency at the same time.

With the fast developing world economy, there is a growing trend of shortage of energy and raw materials. While China is a big producer of plastics, the increasing cost of manufacturing has intensified the pressure. Thus, to tackle with new situations, energy efficiency has become an import solution to cut down cost and increase profit. Its significance is profound and recognized.

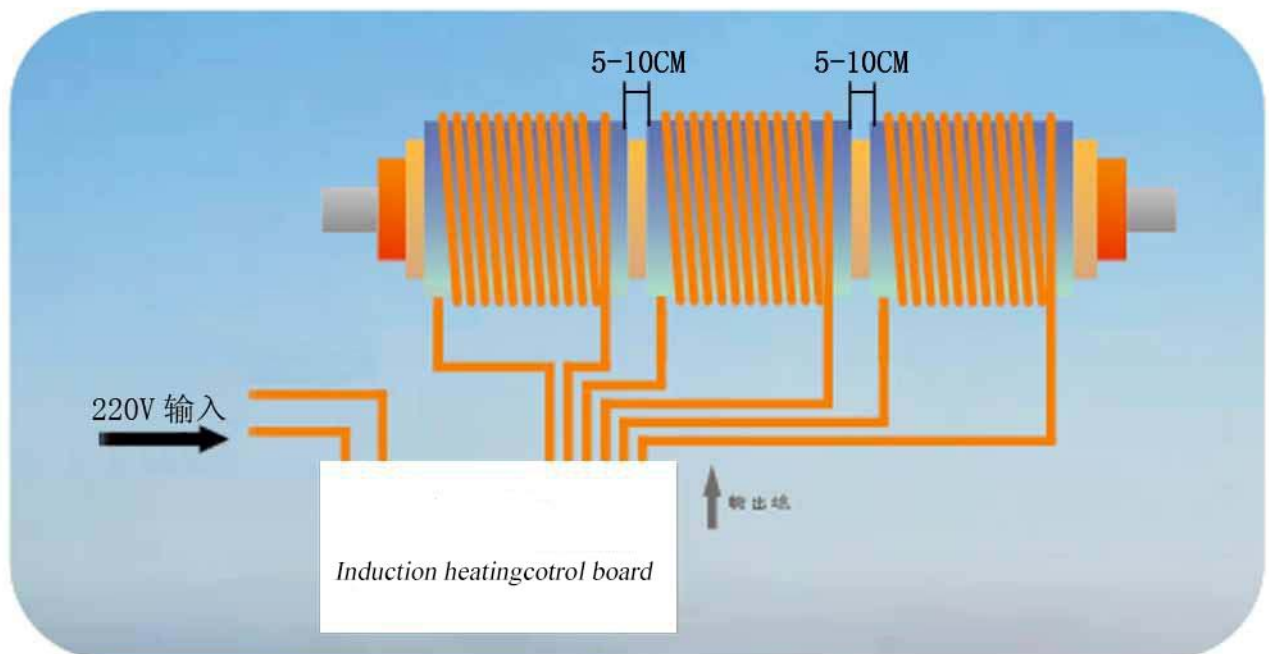
Echoing to the national policy of saving energy, Zhongshan Shuangping strives to develop more and better energy-saving products. We stick to the belief that quality is the life of enterprise and that brand is the image of the enterprise and we will spare no effort to provide customers with perfect service through strict and efficient management.

### **Why induction heating is more energy efficient?**

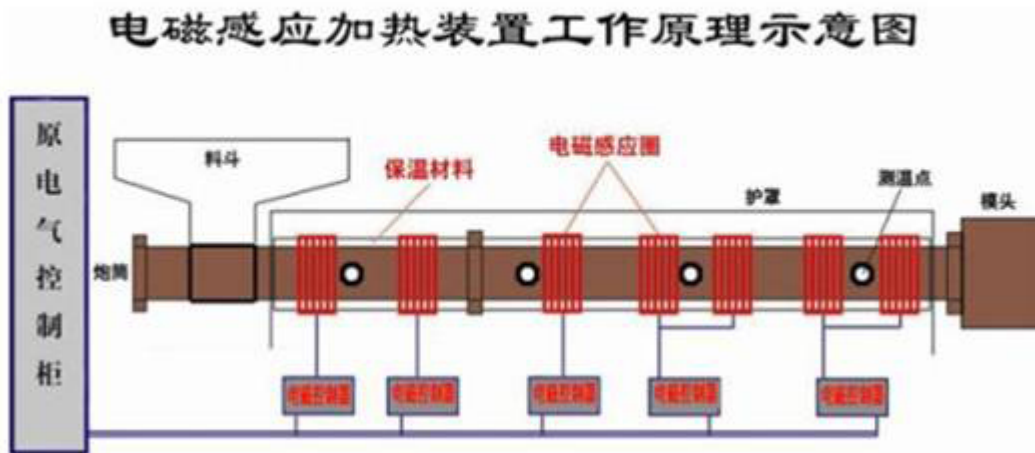
Currently, coils heating, which passes heat to cylinder through contact conduction, is most widely used. Yet there is heat loss during this process because only the heat close to the surface in the inner side of the cylinder is effective while most of the exterior heat has been dispersed into the air, leading room temperature to rise. In addition, the resistance wire heating has a low power density, which means it is

not adaptable in situations where high temperature is required. In contrast, induction heating heats the metal cylinder itself while additional thermal insulation material can be wrapped on the barrel to preserve heat at the same time. It greatly reduces heat loss and improves thermal efficiency, achieving significant effect. by saving up to 30% ~ 80% electricity.

Electromagnetic heating system is composed of two parts: electromagnetic controller and a heating coil. The thermostat-controlled power supply (heating output contactor or output of solid-state relay) rectify, filter, and invert the alternating current into 25 – 30 kHz High-frequency current through electromagnetic controller. Then it is conveyed to the induction coil to heat up the barrel. It is also possible to input power to the electromagnetic controller and use thermostat to command the electromagnetic controller instead.



## 管道加热原理



## About Our Products

Zhongshan Shuangping electronic technology Ltd. is a one of the earliest and leading researchers in induction heating industry. For years we have focused on industrial induction heating, engaging in electromagnetic heating technology research, development and manufacturing, concentrating on the application of induction heating. After more than 10 times upgrading products, we have accumulated valuable experience and grown into the most stable induction control board supplier. We have applied our products to industrial, commercial and domestic appliances, fully meeting the standard and winning more than 1800 enterprises and individuals.

### Our products are divided into following series:

- A, 220V series: 1.5KW, input 2.0KW, 2.5KW, 3KW, 3.5KW, 4KW, 5KW, 8KW - two
- B, 380V series: 5KW, 7KW, 12KW 9KW, 15KW, 18KW, 35KW - 15KW series, etc.

For further specific technical and surface parameters, please read the respective technical description.

## The advantage of induction heating control panel in plastic machine

Let's take injection molding machine for example to illustrate the advantages of electromagnetic control panel. Induction heating can not only replace traditional resistance heating wire but also outperform it in many ways.

### 1, Saving electricity and avoiding rising the temperature of surrounding

Currently, heating coils, which passes heat to cylinder through contact conduction, is most widely used. Yet there is huge heat conduction loss during the process because only the heat close to the surface in inner side of the cylinder is effective while most of the exterior heat has been dispersed into the air, leading room temperature to rise. In addition, the resistance wire heating has a low power density, which

means it is not adaptable in situations where high temperature is in need. In contrast, induction heating heats the metal cylinder itself while additional thermal insulation material can be wrapped on the barrel at the same time. It greatly reduces heat loss and improves the thermal efficiency, saving up to 30% ~ 50% electricity. It proves very effective for injection molding machine which requires high power.

### 2, Rapid heating, accurate control of temperature in real-time

The heat is generated by the metal cylinder itself in electromagnetic field so the internal and external temperature stay the same. In this way, quality and productivity have been greatly improved.

### 3, Long working life and simple maintenance

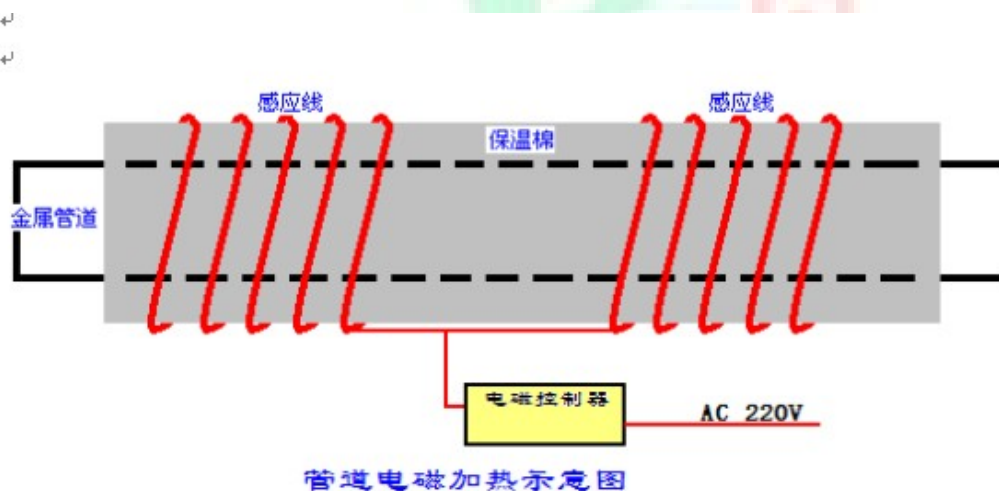
Traditional method uses heating resistance wire whose service life decreases as it is exposed to high temperature and harsh environment that causes oxidation in the device. In comparison, in the case of induction heating, the coil itself doesn't heat up but wound up by insulation material and high temperature resistance wire. Therefore, there is longer service life and free of troublesome maintenance.

### 4, High power.

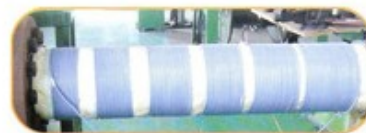
With the development of electromagnetic technology, the production process and techniques of electronic parts have improved. So far, software can provide stable voltage protection up to 1.5-35KW.

### 5, Safe and reliable.

Induction heating can cool down the surface temperature of the machine, which is completely safe to touch. This means that traditional accidents such as burn and scald can be avoided, thus the safety of workers can be guaranteed. In addition, electromagnetic radiation equals to only 1 percent of that of a phone, so there is no harm done on human body.



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### 1. Winding of the coil : (See above picture)

Depending on the power rate of the board, you should choose the suitable range of high temperature resistance wire from 4.0—36.0 m<sup>2</sup> (multiple enamelled coils are suggested) . Here is the specific requirement:

1.5KW-2.0KW: 4 m<sup>2</sup>

2.5KW-3KW: 6 m<sup>2</sup>

3.5KW-4KW: 8 m<sup>2</sup>

5KW :10 m<sup>2</sup>

10KW: 16 m<sup>2</sup>

20kw: 25 m<sup>2</sup>

30-35kw:36

Parameter of high temperature wire: more than 280°C

## 2. Electrical parameter of coil

Inductance: 60—140 u H(微亨) $\pm$ 10 (Inductance is dependent on power rate. Please refer to respective specific technical parameters)

A, 1.5KW-2.0KW: 160 $\pm$ 20UH,

B, 2.5KW: 180 $\pm$ 20UH

C, 3.0KW-4KW: 100 $\pm$ 10UH

D, 5KW: 90 $\pm$ 10UH。

E, 15-35KW: 80 $\pm$ 10UH(BH20119)

F,10-35KW: 50 $\pm$ 10UH(BH20118)

The above inductance parameters are provided by testing on Victor's BICTOR6243.

Note: circular coils usually wrap 30 laps, which can vary depending on the diameter of the cylinder.

## 3. How to wind the coil:

Wind the 4.0---36.0 m<sup>2</sup> high temperature resistant wire in the same direction around the cylinder after the cylinder has been wrapped by insulation material (see pictured above). It is advisable to add a layer of 0.5 MM glass fiber insulation board to the exterior of insulation material to fix it.

Or it can be wound on 2 separate cylinders (It should be series connection). Note that the diameter of exact winding coil must be 17 to 20 mm wider than the cylinder, i.e. the thickness of the insulation material should be most appropriate between 16 and 20 mm.

## 4, Thermal insulation material

Asbestos, aluminum silicate, calcium silicate (this is a hard solidity which is difficult to handle), ceramic fiber paper (easy to handle but the price is rather expensive, about 50 yuan per kilogram) are generally used. If asbestos or aluminum silicate is used, it is suggested to use gauze to tie, tighten, compact and flatten it before winding the coil. Make sure if the thickness of the cylinder is consistent after pressing the insulation cotton. The thickness of the insulation cotton should be between 1.5 to 2.0 centimeters (CM), or the winding might be rugged, causing breakdown of control board or even burning and blasting fuse.

## The range of induction control board application

- 1, Plastic and rubber industry, such as: plastic blowing machine, drawing machine, injection molding machine, rubber extruder, vulcanizing machine, cable production extruder, etc.
- 2, Medical and chemical industry, such as: special medical infusion bag production line, plastic equipment, chemical industry, liquid heating pipeline and so on.
- 3, Energy, food industry, such as: heating of crude oil pipelines; Food machinery, such as: the roasting machine needs electric heating equipment, etc.

4, Core kit of high-power commercial induction cooker

5, Building materials industries, such as: gas pipe production line, plastic pipe production line, PE plastic hard flat net, geonet units, automatic blowing molding machines, PE honeycomb panel production line, single and double wall corrugated pipe extrusion line, compound air cushion film machine, hard PVC pipe, core layer foam pipe line, PP transparent sheet extrusion production line, polystyrene foam extrusion pipe, PE stretch film.

6, Dry heating in the printing equipment

7, Similar industries

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### *Assembly process*

*1 Take down the original heating coils from the cylinder*



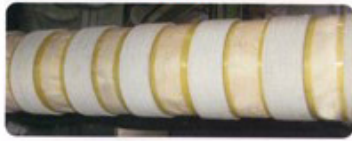
*2. Measure the dimensions of the cylinder (diameter, length)*



*3. Wrap a layer of heat insulation material around the cylinder*



4. Wind high temperature resistance wire



5. Connect the heat resistance wire and the controller



## I 1.5kw heating control board

### 1 Technical parameter of 1.5kw heating control board

Dimension: **220\*123.4\*60** (length \* width \* height)

Working voltage: 220V

Power range: 1000W-1600W

Capacity of inductance: 140uH + 20,

Conversion efficiency >90%

Working frequency: 20-25 kHz

Functional temperature: -10 °C ~ 50 °C

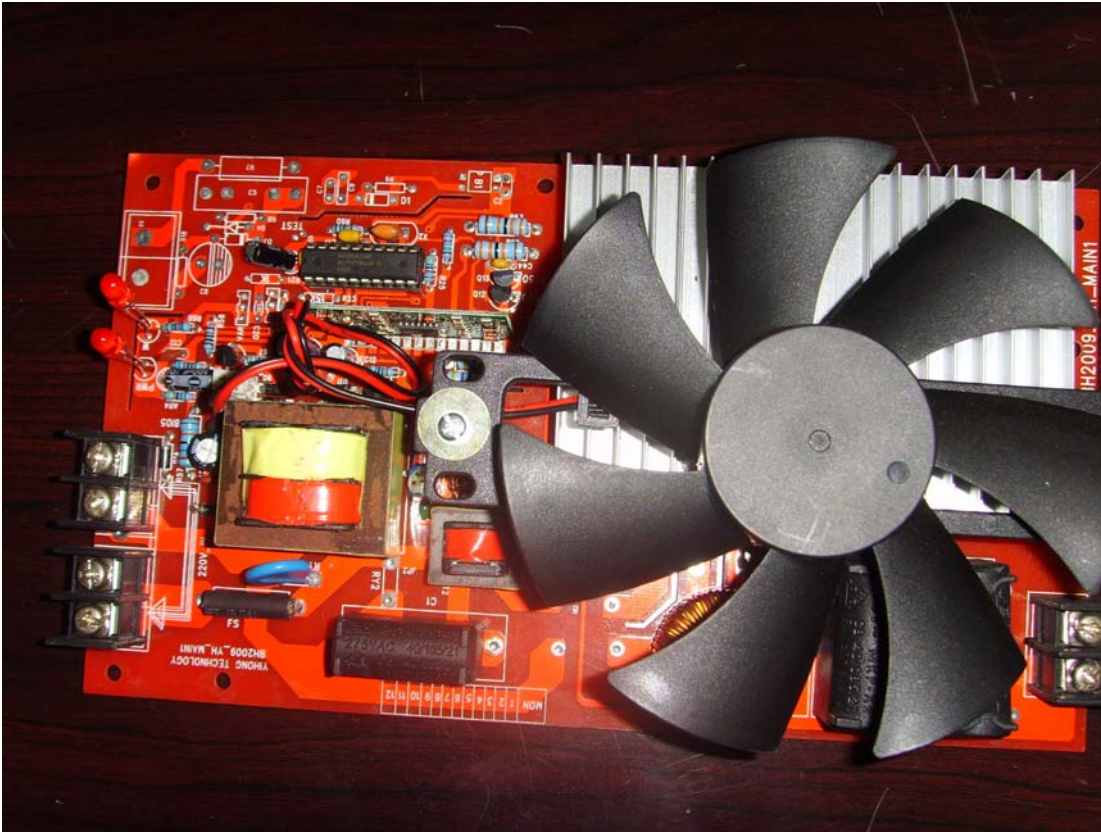
Working mode: continuous heating

Surge protection: ±1500V

Maximum power of combined coils: 45 KW

Distance from induction coil and heater: 20mm





## 2 Instructions for assembly of 1.5 KW control board

- a. There are two lights, one for indicating power, the other for work. The machine is working properly if both are on.
- b. The board is set to work if power is on. Or you can choose whether to run the machine at AC220V.
- c. Follow the reading of "220V\_IN" on the board to connect wire to 220V power.
- d. Connect the heating coils by following the reading of "LOAD" on the board.

## 3 Notifications of 1.5 KW electromagnetic heating control board

- a. Requirement for the shell:

The main control board should be installed inside the shell since the aluminium heat dissipater carries high pressure and large current electronics are used. Then it is connected to heating coils, power and thermostat controller by insulation wire. This can prevent electric shock even if electric parts are touched. Also, since the board will generate heat, the shell should be designed to be easy for ventilation and thermal dissipation.

- b, Heating coil.

Since we only provide control boards, so you need to add other components such as heating coils. Choosing coils can vary depending on power. 4 m<sup>2</sup> insulation high temperature resistance wire is fit for 1.5kw control board. Coils are generally circular with capacity of inductance 140±20uH (Measured by Victor's BICTOR6243 inductometer when coil is wound on the cylinder).

Note: circular coils usually wind 30 laps. Laps can vary depending on the diameter of the cylinder.

- c, Winding of heating coil

Wind the coils according to user's specific requirements. Make sure the winding direction should be the same to with the parameter in one single ferric cylinder. Distance between each section of coils should be greater than 40mm.

d, Requirement for the distance between heating coils and heated object

The distance from the surface of the coils to the surface of the heated metal should be adjusted according to diameter of coils. In the case of 1.5KW control board, the larger diameter of cylinder, the shorter distance is needed. On the contrary, the smaller diameter of cylinder, the further distance is needed. 15-22mm is most suitable because because the controller will deteriorate when it is too close, causing heat and even damaging IGBT while power could be gradually degraded when it is too far, causing adjustment failure due to over-voltage protection circuit.

5, Connecting power: You can start the board by connecting to power supply or controlling the output of 220V voltage on the plastic machine (Please notify us if you need this function).

## II 2.0KW heater

### 1 Technical parameters of 2.0KW heater

Dimension: 193.5\*102\*100 (length \* width \* height)

Working voltage: 220V

Power range: 1600W-2100W

Capacity of inductance: 160uH + 20

Conversion efficiency >90%

Working frequency: 20-25 kHz

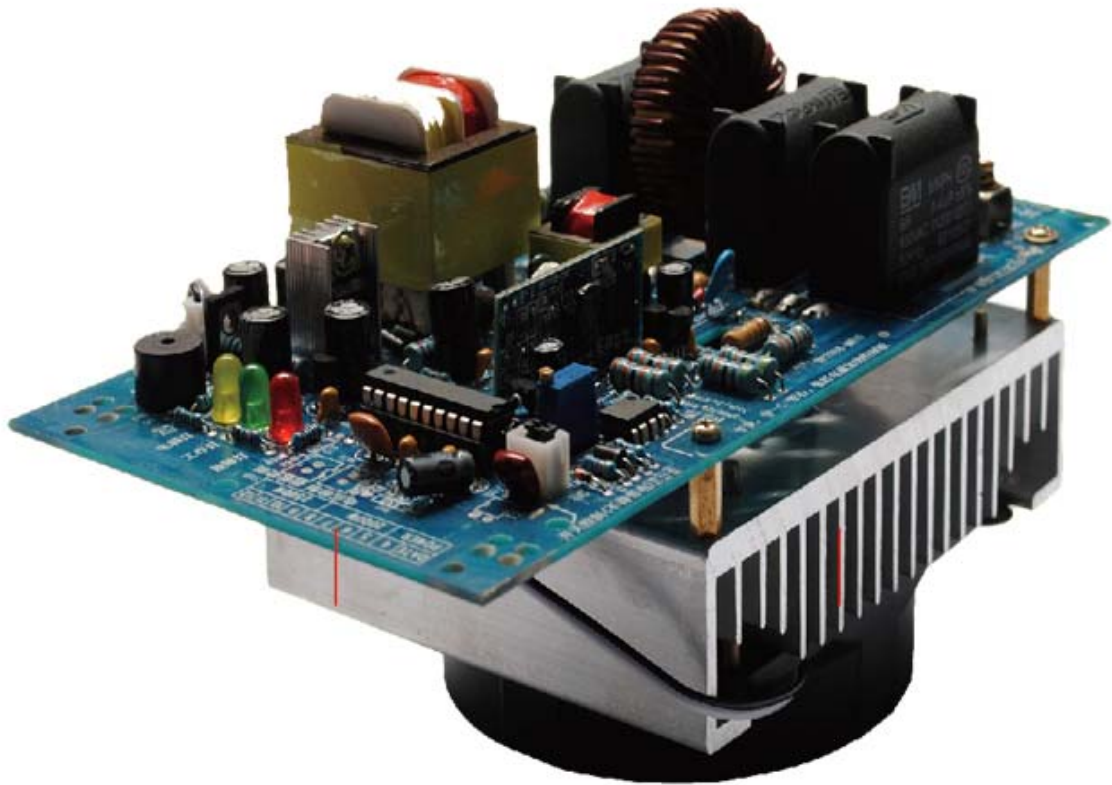
Functional temperature: -10 °C ~ 50 °C

Working mode: continuous heating

Surge protection: ±1500V

Maximum power of combined coils: 80KW

Distance from induction coil and heater: 20mm-23mm



## 2 Instructions for 2KW motherboard assembly

1, There are 3 lights respectively indicating power, work and fault. The “Power” and “Work” are on if the machine is functioning properly and the “Fault” is off. If there is a rundown, the “Power” and “Work” are off and the “Fault” is on.

2, Connect to the 2 posts reading “AC 220V” to get access to power. There is no need to distinguish L or N wire.

3, Coils are attached to 2 posts reading “two ends of coils”. Tighten the screw.

4. Set “work when power is on” at Factory Setting to start. A black short-circuited line at the socket of the "soft switch" can control short circuit. You can also start the machine by gently removing the short-circuit line, then attach one end of a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller.

## 3 Notifications of 2 KW electromagnetic heating control board

### 1, Requirement of the shell

The main control board should be installed inside the shell since the aluminium heat dissipater carries high pressure and large current electronics are used. Then it is connected to heating coils, power and thermostat controller by insulation wire. This can prevent electric shock even if electric parts are touched. Also, since the board will generate heat, the shell should be designed to be easy for ventilation and thermal dissipation.

### 2, Requirement of the coils

Since we only provide control boards, so you need to add other components such as heating coils. Choosing coils can vary depending on power. 4 m<sup>2</sup> insulation high temperature resistance wire is fit for

2kw control board. Coils are generally circular with capacity of inductance  $140\pm 20\mu\text{H}$  (Measured by Victor's BICTOR6243 inductometer when coil is wound on the cylinder)

Note: circular coils usually wind 30 laps. Laps can vary depending on the diameter of the cylinder.

3, Winding of heating coil: Wind the coils according to user's specific requirements. Make sure the winding direction should be the same to with the parameter in one single ferric cylinder. Distance between each section of coils should be greater than 50 mm.

4, Requirement for the distance between heating coils and heated metal

The distance from the surface of the coils to the surface of the heated metal should be adjusted according to diameter of coils. In the case of 2KW control board, the larger diameter of cylinder, the shorter distance is needed. On the contrary, the smaller diameter of cylinder, the further distance is needed. 17-22mm is most suitable because the controller will deteriorate when it is too close, causing heat and even damaging IGBT while power could be gradually degraded when it is too far, causing adjustment failure due to over-voltage protection circuit..

5, Assembly of 2KW Electromagnetic heating control board

The controller can work either by directly turning on power or being controlled by the thermostat controller.

a, Directly connecting to power: Connect the 220V power to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure if it is firmly contacted). This board has been set to work when power is on.

b, Using thermostat controller: Connect the 220V power supply to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure it is firmly contacted). Gently remove the black short-circuit line on the socket, then attach one end a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller. Test the machine.

Note: The thermostat is not allowed to contact with the mains or other high-voltage.

c. Combination of control boards: If you need one thermostat to simultaneously control the switches of several boards, first pick a main control board, and then use the connecting line (two-wire cord with a 2-pin plug at each end) to connect the "sub-panel control" of the main board to the "voltage control" of another board. Repeat the above steps if you want to add more boards.

### III 2.5KW heater

#### 1 Technical parameters of the control board 2.5KW heater

Dimension: 220\*136\*60 (length \* width \* height)

Working voltage: 220V

Power range: 2000W-25000W

Capacity of inductance:  $120\mu\text{H} + 20$

Conversion efficiency >90%

Working frequency: 20-25 kHz

Working temperature:  $-10\text{ }^{\circ}\text{C} \sim 50\text{ }^{\circ}\text{C}$

Working mode: continuous heating

Surge protection:  $\pm 1500\text{V}$

Maximum power of combined coils: 80KW

Distance from induction coil to heater: 17mm-25mm



## 2 Instructions for 2.5 KW ultrathin control board assembly

1, There are 3 lights respectively indicating power, work and fault. The “Power” and “Work” are on if the machine is functioning properly and the “Fault” is off. If there is a rundown, the “Power” and “Work” are off and the “Fault” is on.

2, Connect to the 2 posts reading “AC 220V” to get access to power. There is no need to distinguish L or N wire.

3, Coils are attached to 2 posts reading “two ends of coils”. Tighten the screw.

4. The board is set to work when power is on. A black short-circuited line at the socket of the "soft switch" can control short circuit. You can also start the machine by gently removing the short-circuit line, then attach one end of a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller.

## 3 Instructions and notifications for 2.5 KW ultrathin electromagnetic heating control board

1, Requirement for the shell:

The main control board should be installed inside the shell since the controller carries high pressure and large current electronics are used. Then it is connected to heating coils, power and thermostat controller by insulation wire. This can prevent electric shock even if electric parts are touched. Also, since the board will generate heat, the shell should be designed to be easy for ventilation and thermal dissipation.

2, Heating coil.

Since we only provide control boards, so you need to add other components such as heating coils. Choosing coils can vary depending on power. 6 m<sup>2</sup> insulation high temperature resistance wire is fit for 2.5kw control board. Coils are generally circular with capacity of inductance 120±10uH (Measured by Victor's BICTOR6243 inductometer when coil is wound on the cylinder)

Note: The length of circular coils is generally 13 m. Laps can vary depending on the diameter of the cylinder.

### 3, winding of heating coil

Wind the coils according to user's specific requirements. Make sure the winding direction should be the same to with the parameter in one single ferric cylinder. Distance between each section of coils should be greater than 50mm.

### 4, Requirement for the distance between heating coils and heated object

The distance from the surface of the coils to the surface of the heated metal should be adjusted according to diameter of coils. In the case of 2.5KW control board, the larger diameter of cylinder, the shorter distance is needed. On the contrary, the smaller diameter of cylinder, the further distance is needed. 16-22mm is most appropriate because the controller will deteriorate when it is too close, causing heat and even damaging IGBT while power could be gradually degraded when it is too far, causing adjustment failure due to over-voltage protection circuit.

### 5, Assembly

The controller can work either by directly inputting power or being controlled by the thermostat controller.

a, Directly connecting to power: Connect the 220V power to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure if it is firmly contacted). This board is set to work when power is on.

b, Using thermostat controller: Connect the 220V power supply to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure it is firmly contacted). Gently remove the black short-circuit line on the socket, then attach one end a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller. Test the machine.

## **IV 3KW—3.5KW heater**

### **1 Technical parameters of control board of 3KW—3.5KW heater**

Dimension: 207\*138\*115 (length \* width \* height)

Working voltage: 220V

Power range: 2500W-3500W

Capacity of inductance: 120±10U<sub>h</sub>

Conversion efficiency >90%

Frequency: 20-25kHz

Working temperature: -10 °C ~ 50 °C

Working mode: continuous heating

Surge protection: ±1500V

Distance from induction coil to heater: 16mm-22mm

Coils are wound on the same heater with distance between each section more than 12cm.



## 2 Instructions for 3.0-3.5 KW control board assembly

1, There are 3 lights respectively indicating power, work and fault. The “Power” and “Work” are on if the machine is functioning properly and the “Fault” is off. If there is a rundown, the “Power” and “Work” are off and the “Fault” is on.

2, Connect to the 2 post reading “AC 220V” to get access to power. There is no need to distinguish L or N wire.

3, Coils are attached to 2 posts reading “two ends of coils”. Tighten the screw.

4. Set “work if power is on” at Factory Setting to start. A black short-circuited line at the socket of the "soft switch" can control short circuit. You can also start the machine by gently removing the short-circuit line, then attach one end of a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller.

## 3 Notifications for 3.0-3.5KW electromagnetic heating control board

1, Requirement of the shell:

The control board should be installed inside the shell since the controller carries high pressure and large current electronics are used. Then it is connected to heating coils, power and thermostat controller by insulation wire. This can prevent electric shock even if electric parts are touched. Also, since the board will generate heat, the shell should be designed to be easy for ventilation and thermal dissipation.

2, Heating coil.

6 m<sup>2</sup> insulation high temperature resistance wire is required for 3.0-3.5KW control board. Coils are generally circular with capacity of inductance 120±10uH (Measured by Victor's BICTOR6243

inductometer when coil is wound on the cylinder).

Note: circular coils usually wind 28 laps. Laps can vary depending on the diameter of the cylinder.

3, Winding of heating coil: Wind the coils according to user's specific requirements. Make sure the winding direction should be the same to with the parameter in one single ferric cylinder. Distance between each section of coils should be over than 50mm.

4, Requirement for the distance between heating coils and heated metal

The distance from the surface of the coils to the surface of the heated metal should be adjusted according to diameter of coils. In the case of 3.5KW control board, the larger diameter of cylinder, the shorter distance is needed. On the contrary, the smaller diameter of cylinder, the further distance is needed. 15-22mm is most suitable because the controller will deteriorate when it is too close, causing heat and even damaging IGBT while power could be gradually degraded when it is too far, causing adjustment failure due to over-voltage protection circuit.

5, The controller can work either by directly inputting power or being controlled by the thermostat controller.

a, Directly connecting to power: Connect the 220V power supply to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure if it is firmly contacted). This board has been set to work once there is power supply.

b, Using thermostat controller: Connect the 220V power supply to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure it is firmly contacted). Gently remove the black short-circuit line on the socket, then attach one end a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller. Test the machine.

Note: The thermostat is not allowed to contact with the mains or other high-voltage.

c. Combination of control boards: If you need one thermostat to simultaneously control the switches of several boards, first pick a main control board, and then use the connecting line (two-wire cord with a 2-pin plug at each end) to connect the "sub-panel control" of the main board to the "voltage control" of another board. Repeat the above steps if you want to add more boards.

## **V Control board of BH2098-MB10-5KW induction heater**

### **1 Parameters of control board of BH2098-MB10-5KW induction heater**

Dimension: 219\*160\*160 (length \* width \* height)

Working voltage: 220V

Power range: 3000W-5000W

Capacity of inductance:  $80 \pm 10\mu\text{H}$

Conversion efficiency >90%

Frequency: 20-25kHz

Working temperature:  $-10\text{ }^{\circ}\text{C} \sim 50\text{ }^{\circ}\text{C}$

Working mode: continuous heating

Surge protection:  $\pm 1500\text{V}$

Distance from induction coil to heater: 15-20mm (the thickness of pressed insulation cotton plus



epoxy plate)

Coils are wound on the same heater with distance between each section more than 12cm..



### 2 Instructions for 4.0-5.0 KW ultrathin control board assembly

1, There are 3 lights respectively indicating power, work and fault. The “Power” and “Work” are on if the machine is functioning properly and the “Fault” is off. If there is a rundown, the “Power” and “Work” are off and the “Fault” is on.

2, Connect to the 2 post reading “AC 220V” to get access to power. There is no need to distinguish L or N wire.

3, Coils are attached to 2 posts reading “OUT1””OUT2”. Tighten the screw.

4. Set “work if power is on” at Factory Setting to start. A black short-circuited line at the socket of the "soft switch" can control short circuit. You can also start the machine by gently removing the short-circuit line, then attach one end of a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller.

### 3 Instructions and notifications for 5KW electromagnetic heating control board

1, Requirement for the shell:

The main control board should be installed inside the shell since the controller carries high pressure and large current electronics are used. Then it is connected to heating coils, power and thermostat controller by insulation wire. This can prevent electric shock even if electric parts are touched. Also, since the board will generate heat, the shell should be designed to be easy for ventilation and thermal dissipation.

A DC12 fan is also added to the device. Please secure the fans on two fixed column on the board and plug the fan into FAN12V two-pin socket next to the relay.

2. Coils and other component

Since we only provide control boards, so you need to add other components such as heating coils. Choosing coils can vary depending on power. 10 m<sup>2</sup> insulation high temperature resistance wire is fit for 5kw control board.

Coils are generally circular with capacity of inductance(L) 80±10uH (Measured by Victor's BICTOR6243 inductometer when coil is wound on the cylinder)

Note: circular coils usually wind 23 laps, which can vary depending on the diameter of the cylinder.

### 3, Winding of heating coil

Wind the coils according to user's specific requirements. Make sure the winding direction should be the same to with the parameter in one single ferric cylinder. Distance between each section of coils should be more than 60mm.

### 4, Requirement for the distance between heating coils and heated metal

The distance from the surface of the coils to the surface of the heated metal should be adjusted according to diameter of coils. The larger diameter of cylinder, the shorter distance is needed. On the contrary, the smaller diameter of cylinder, the further distance is needed. In the case of 5KW control board, 15-22mm is most suitable because the controller will deteriorate when it is too close, causing heat and even damaging IGBT while power could be gradually degraded when it is too far, causing adjustment failure due to over-voltage protection circuit.

5. The controller can work either by directly inputting power or being controlled by the thermostat controller.

#### a, Directly connecting to power

Connect the 220V power supply to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure if it is firmly contacted). This board has been set to work once there is power supply.

#### b, Using thermostat controller

Connect the 220V power to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure it is firmly contacted). Gently remove the black short-circuit line on the socket, then attach one end a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller. Test the machine.

Note: The thermostat is not allowed to contact with the mains or other high-voltage.

#### c. Combination of control boards

If you need one thermostat to simultaneously control the switches of several boards, first pick a main control board, and then use the connecting line (two-wire cord with a 2-pin plug at each end) to connect the "sub-panel control" of the main board to the "voltage control" of another board. Repeat the above steps if you want to add more boards

## **VI 5.5-6KW induction heater with aluminum alloy shell**

### **1 Parameters of 5.5-6KW induction heater with aluminum alloy shell**

Dimension: 400\*220\*120MM (length \* width \* height)

Working voltage: 220V

Power range: 5500W-6000W

Load inductance: 70±10uH

Conversion efficiency >90%

Frequency: 15-25 kHz

Working temperature: -10 °C ~50 °C

Working mode: continuous heating

Surge protection: ±1500V

Distance from induction coil to heater: 15-20mm (the thickness of pressed insulation cotton plus epoxy plate)

Coils are wound on the same heater with distance between each section more than 12cm.



## **2 Instructions of assembly of 5.5-6.0KW control board**

1, There are two lights, one for indicating power, the other for work. The machine is working properly if both are on.

2, Connect to the 2 posts reading “AC 220V” to get access to power. There is no need to distinguish L or N wire.

3, Coils are attached to 2 posts reading “two ends of coils”. Tighten the screw.

4. Set “work if power is on” at Factory Setting to start. A black short-circuited line at the socket of the "soft switch" can control short circuit. You can also start the machine by gently removing the short-circuit line, then attach one end of a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller.

## **3 Instructions and notifications of 6 KW electromagnetic heating control board**

1, Coils and other component

Since we only provide control boards, so you need to add other components such as heating coils. Choosing coils can vary depending on power. 10 m<sup>2</sup> insulation high temperature resistance wire is fit for 6kw control board.

Coils are generally circular with capacity of inductance(L) 70±10uH (Measured by Victor's BICTOR6243 inductometer when coil is wound on the cylinder)

Note: circular coils usually wind 20 laps and the length is 10 m. Laps can vary depending on the diameter of the cylinder.

## 2, winding of heating coil

Wind the coils according to user's specific requirements. Make sure the winding direction should be the same to with the parameter in one single ferric cylinder. Distance between each section of coils should be greater than 120mm.

## 3, Requirement for the distance between heating coils and heated object

The distance from the surface of the coils to the surface of the heated metal should be adjusted according to diameter of coils. In the case of 1.5KW control board, the larger diameter of cylinder, the shorter distance is needed. On the contrary, the smaller diameter of cylinder, the further distance is needed. 15-22mm is most suitable because the controller will deteriorate when it is too close, causing heat and even damaging IGBT while power could be gradually degraded when it is too far, causing adjustment failure due to over-voltage protection circuit.

## 4. The controller can work either by turning on power or being controlled by the thermostat controller.

a, Directly connecting to power: Connect the 220V power supply to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure if it is firmly contacted). This board has been set to work once there is power supply.

b, Using thermostat controller: Connect the 220V power supply to the L and N wire of the control board through an insulated wire. Connect the post of lead lines of the coils to the terminal of the controller (Make sure it is firmly contacted). Gently remove the black short-circuit line on the socket, then attach one end a connecting lead (two-wire cord with a 2-pin plug at each end) to the socket of the soft switch and the other end to the two contacts of thermostat controller. Test the machine.

Note: The thermostat is not allowed to contact with the mains or other high-voltage.

c. Combination of control boards: If you need one thermostat to simultaneously control the switches of several boards, first pick a main control board, and then use the connecting line (two-wire cord with a 2-pin plug at each end) to connect the "sub-panel control" of the main board to the "voltage control" of another board. Repeat the above steps if you want to add more boards.

## **BH2011-2.0KW induction heater with aluminum wire drawing shell**

Dimension: 150\*148\*110 (length \* width \* height)

Working voltage: 220V

Power range: 1600W-2000W

Capacity of inductance: 160uH±20

Conversion efficiency >90%

Frequency: 20-25kHz

Working temperature: -10 °C ~ 50 °C  
Working mode: continuous heating  
Surge protection: ±1500V  
Distance from induction coil to heater: 20mm-23mm



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**BH2013-MB10-2.5KW induction heater with aluminum wire drawing shell**

Dimension: 240\*148\*110 (length \* width \* height)  
Working voltage: 220V  
Power range: 2000W-2500W  
Load inductance: 120uH±20  
Conversion efficiency >90%  
Frequency: 20-25kHz  
Working temperature: -10 °C ~50 °C  
Working mode: continuous heating  
Surge protection: ±1500V  
Distance from induction coil to heater: 17-25mm



### **Three Phase 10KW-35KW (380V) heater board**

Dimension: **450\*350\*250mm** (length \* width \* height)

Working voltage: 380V

Power range: 15000W-35000W

Capacity of inductance: 80uH

Conversion efficiency >90%

Frequency: 20-25kHz

Working temperature: -10 °C ~ 50 °C

Working mode: continuous heating

Surge protection: ±1500V

Distance from induction coil to heater: 15-20mm



## **Three Phase 10KW-35KW (380V) BH20119 heater board**

### **1 Parameters of 5.5-6KW induction heater with aluminum alloy shell**

Dimension: 400\*350\*400mm (length \* width \* height)

Working voltage: 380V

Power range: 15000W-35000W

Capacity of inductance: 80uH

Conversion efficiency >90%

Frequency: 20-25kHz

Working temperature: -10 °C ~ 50 °C

Working mode: continuous heating

Surge protection: ±1500V

Distance from induction coil to heater: 15mm

Maximum power of combined coils: 150KW—700KW

### **2 Notification of installation**

1. Place the board on flat surface.
2. Keep it clean and stay away from platform where there is a lot of dirt. Do not wash it with water.
3. The machine will degrade the power rate when it is overheated (75°C) until it cools down to normal temperature. If temperature continues to rise, the controller will stop working and working light will flash. The display will show “1”.

### **3 Operational guidance**

The power rate will display “-” and red power light will flash after power is on. You can adjust power according to the power rate you need. The display board will show the number from 1-5 depending on the rate you choose. “1” is the lowest rate while “5” is the highest. Both the red power light and green working light are on.(If you don’t need a knob to adjust power, we can remove it.).

## **Specification of Three Phase 10KW-12KW (380V) BH20117 heater board**

### **1 Electrical specification**

Set voltage and frequency: 380V AC / 50Hz

Voltage adaptation range: 310V~430V

Set power: 10-12KW

Power adjustment range: 20%-100%

### **2 Adaptability**

Functional temperature: -20°C ~50°C;

Functional humidity: less than 95%

### **3. Description**

Current and voltage characteristics: constant current output;

Thermal efficiency: more than 90%;

IGBT overheating temperature:  $85 \pm 5$ °C;

Working frequency: 15-30 kHz;

Half bridge series resonant;

Soft start heating / stop mode,

Comprehensive user settings

Flexible operation;

Short circuit protection mechanism for coils;

Automatic phase tracking;

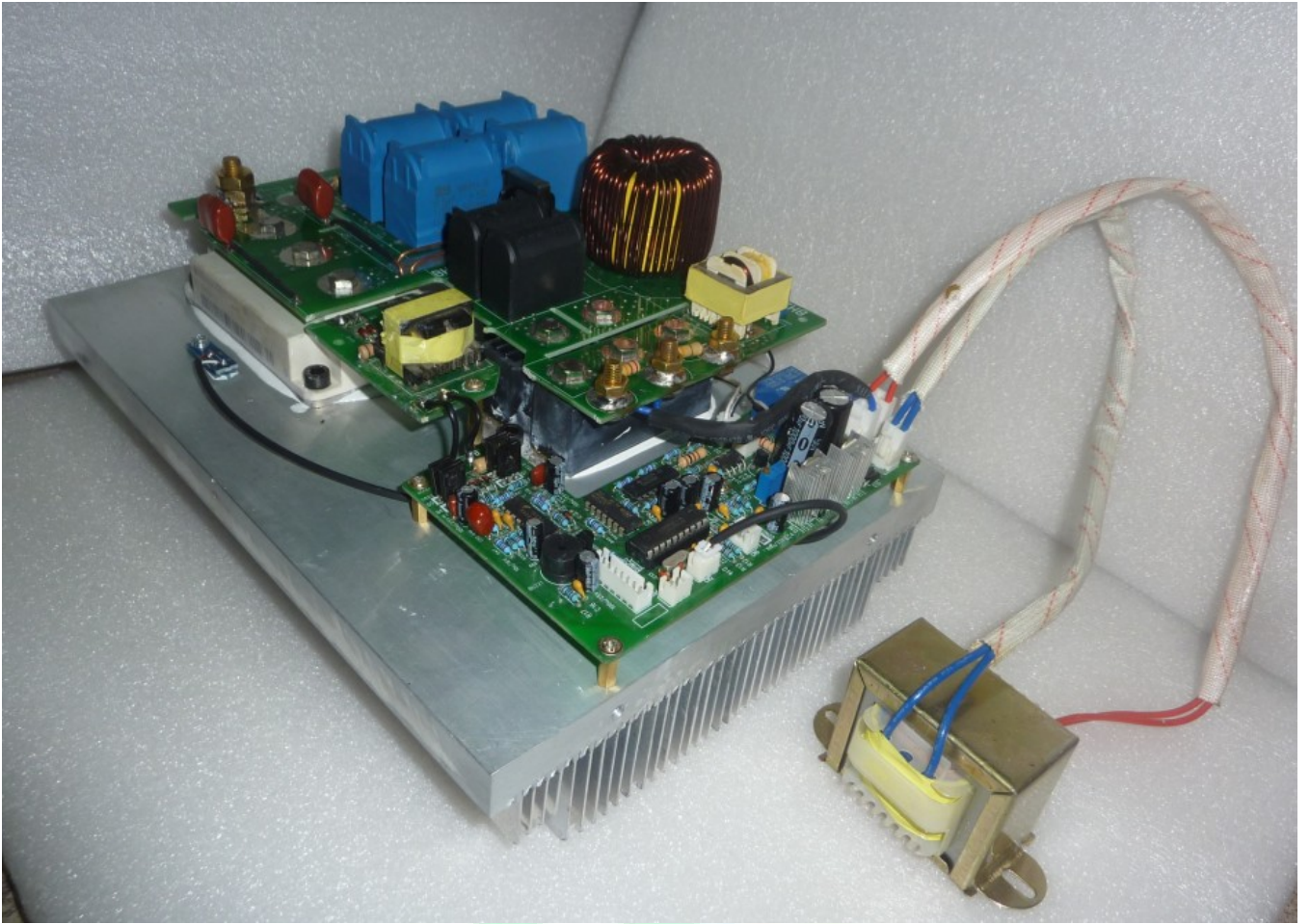
Dimension: 300 \* 530 \* 150(L\* W \* H) (Two 380V 150mm fans are within the package.)

Average mean time between failure: more than 10000 hours

### **4. Instructions of assembly**

- a. Attach “soft switch” to start the heater and remove it to stop working.
- b. A、 B、 C posts are where three phase power (380V) are input;.
- c. Connect heating coils to 2 posts reading “two ends of coils”
- d. About the coil: it is made by 10 mm<sup>2</sup> GN500°C cable with capacity of inductance about 130-160uH.
- e. The thickness of insulation cotton is around 15mm.





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