

Product Structure	Product Specification	Product Explain Details	Product On-site Photo	Corporation Introduction	Instruction
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Product Name	Infrared line three reflow soldering machine of ZB-RF
Heating method	Infrared line heating
Number of cooling zones	1pc
Length of heating zones	1000MM
Width of net belt	300MM
PCB size	MAX208 × 280MM
Height of net belt	300±20mm

Transport Speed of Net Belt	0--2000mm/MIN
Transport Direction of Net Belt	Left—right (right--left)
Starting power	6kw
Working power	2kw
Heating up time	About half an hour
Time of passing through the machine	3.5-5.5 minutes
Temperature Control Range and method	Inner temperature—400 degrees
Outline size	1700*715*670mm
Outline package size	mm
Net weight	131kg
Gross weight	
Input power supply	Three phase five wire AC380V±10%50HZ

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ZBHW-330 Infrared line solder reflow machine

Thank you for purchasing and using infrared reflow oven of ZB-HW series produced by Wenzhou Zhengbang Electronic Equipment Co., Ltd. This model can meet different customers' demands of SMD soldering or solidification of different products with its compact and reasonable structure and superior performance.

This machine adopts the M-type stainless steel finned heating pipe with corrosion resistance, high temperature resistance, long service life and high heat efficiency. Cooperating with hot air circulation system, the heat storage structure allows the heat to be fully used. The multi-layered heat insulation structure minimizes the loss of heat. The temperature is controlled by PID closed circle, with highly precise temperature control.

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01 PID micro-computer overall situation temperature control system

Temperature is control by the PID close-cycle which provide high precision temperature control.



02 Professional temperature control model design, intuitive and easy

Professional temperature control model, temperature of each temperature zone is stable and precise.





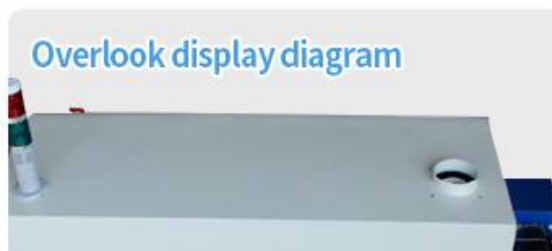
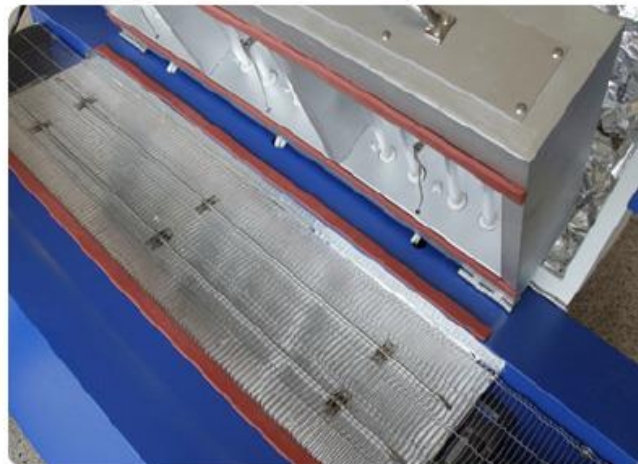
03 Excellent materials and wear well

Furnace uses industrial grade anti-high temperature and corrosion furnace-paint, the temperature highest up to 800 degrees.



04 Infrared line quartz tube heating tube

This machine adopts the M-type stainless steel finned heating pipe with corrosion resistance, high temperature resistance, long service life and high heat efficiency. Cooperating with hot air circulation system, the heat storage structure allows the heat to be fully used. The multi-layered heat insulation structure minimizes the loss of heat.







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ZBHW-330 Infrared line solder reflow machine





Introduction

**Our quality policy: updating, persistent effective and customers first
Zhengbang service for you heart and soul!**

ZB-HW series machine welding machine variety, eg:

Electronic communication products: kinds of cordless telephone、 Caller Id Readout、 Visual telephone、 cell phones and accessories and so on.

Computer series: Main board、 variety board cards、 wireless mouse、 LCD display and so on.

Network series: Exchanger、 network card、 Concentrator and so on.

Video series: VCD, DVD decode board、 Senior efficacy 、 tuner、 wireless microphone、 radio receiver、 CD player、 MP3、 Satellite TV receiver and so on.

Household Appliance series: air conditioning , washing machine control board, remote controller 、 Visual doorbell 、 safe guard chain door lock 、 digital camera、 Electronic scale, ammeter and so on.

ZB-HW series reflow oven can weld almost all the electronic components and parts:

CHIP Series : 1206、 0805、 0603、 0402and tantalum capacitor 。

IC series: IC, LCC, SOP,QFP,CSP and BGA and so on.

Audion: Kinds of chip-type Cylindrical diode and Audion.

Variety chip-type: Chip-type inductance, crystal oscillator, plastic socket, chip-type transformer and kinds of other shapes and so on.

Installation

I. Installation site

1. Please operate the machine in a clean environment;
2. Please avoid operating or storing the machine under the environment conditions of high temperature and humidity;
3. Don't install the machine near electric or magnetic interference sources;
4. When installing, the inlet and outlet of reflow soldering machine should not directly face the fan or the windows with wind blowing.

II. Safety precautions

1. When using it, don't put something other than the work pieces into the machine;
2. Please pay attention to the high temperature during operation, to avoid scalding;
3. When conducting the maintenance, try best to start up the machine in room temperature.

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III. The operating environment of this series of model

Environment temperature: Regardless of whether there are any work pieces in the reflow oven, the working environment temperature of this series of reflow oven should be between 5-40°C.

Relative humidity: The relative humidity of the working environment of this series of reflow oven should be between 20-95%.

Transportation and storage: This series of reflow soldering machine can be transported and stored within the range of -25-55°C. Within 24 hours, it can withstand the high temperature not more than 65°C. During the transportation, please try best to avoid excessive humidity, vibration, pressure and mechanical shocks.

IV. Power source

Please use the power source of Three-phase, Five-wire 380V 50Hz and rated current, and ground the rack. The grounding should be operated by the licensed electrician.

V. The height adjustment of reflow soldering machine

Adjust the transport height and level of reflow oven through the adjustable four machine legs at the bottom of machine. The adjustment method is using industrial and alcohol level meter to measure, and make repeated horizontal adjustments to the reflow oven on all sides through the adjustable four machine legs at the bottom of machine, until it is completely horizontal.

VI. Notice for users

1. The reflow oven should operate in a clean environment, to ensure the oven quality;
2. Don't use and store the machine under the conditions of open air, high temperature and humidity;
3. Don't install the machine near electric or magnetic interference sources;
4. When repairing the machine, please shut down the power to prevent electric shock or short circuit;
5. After moving the machine, it is necessary to check all the parts, especially the position of transport net belt, to prevent it from getting stuck or falling off;
6. The machine should keep steady, without any tilted or unsteady phenomenon. Adjust the foot cups at the bottom of machine to ensure that the transport net chain is in a horizontal state, to avoid the displacement of PCB board during transportation.
7. When operating, please pay attention to high temperature, to avoid scalding;
8. Make sure that the transport net chain will not fall off the roller at the bottom

Operation

I. Starting up

1. Turn on the switch of power source.
2. Turn on the main power switch of reflow oven and make sure that the emergency stop switch is not pressed, and then, press the green starting button.
3. Turn on the switch of electron speed regulator of transport belt on the control board, from "STOP" to "RUN", and check whether the position of speed regulator is consistent with that before shutdown.
4. Turn on temperature controller, from "OFF" to "ON".
5. 20-30 minutes after normal starting up, move on to the next step after the actual

5. 20-30 minutes after normal starting up, move on to the next step after the actual temperature and set temperature of temperature controller reach a balance.
6. Put the circuit board affixed with components on the net belt to enter the reflow oven to conduct automatic oven.

II. Shutdown

1. After confirming that there is no circuit board in the furnace of reflow oven, press "STOP" button on the panel.
2. The machine will automatically shut down after delaying for 15 minutes. (Note: During the delay, it is ineffective to start up. It is only after the automatic shutdown of delay that the machine can be started up.)

III. Emergency stop switch

The switch is on during normal operation. If the machine breaks down during the operation, pressing the switch will lead to the power off of the main circuit. Take care not to use the switch frequently; otherwise it will result in premature aging and damage. After handling the failure by emergency stop, close the power source and press the start button, and the system will return to the operating state.

IV. Transportation setting

Alteration of setting value: Press ▲ or ▼ to enter the alteration state of setting value in 3 seconds. PV window in the upper row displays the measured value. SV window in the lower row displays the setting value. Press ▲ or ▼ to alter the value. Long pressing of ▲ or ▼ can realize plus or minus rapidly. After altering, press "SET" to save and exit. Without pressing any button, it will automatically save and exit after 10 seconds.

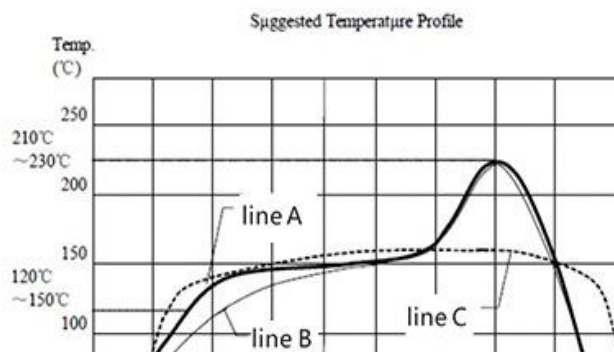
V. Reference value of temperature setting

Temperature zone setting (Temperature adjust range: indoor temperature—4000°C)

	Set temperature 1 (Solder paste)	Set temperature 1 (Red plastic)
The first temperature zone:	190±15°C ()	150±5°C ()
The second temperature zone:	210±10°C ()	150±5°C ()
The third temperature zone:	230±15°C ()	150±5°C ()

Temperature Profile

ZB-RF series machine aims to heat PADS and the pasted components on the surface of PCB, to make the solder paste melt in the heat and reflow, so as to get the temperature diagram of solder paste similar to the requirements, and meanwhile it will not lead to any damages of PCB and the components (such as burning or dark burning etc.). The IPC standard temperature diagram of soldering:





line A: Adopted by the soldering of common solder paste.

Raise the temperature of PCB pad from room temperature to 120-150°C within 60 seconds, with the rate below 3°C/s. In the 90-150 seconds of 60~180 seconds, stabilize it at around 150°C to be below the melting point 183 of solder paste, so that the soldering work pieces can achieve temperature equilibrium before the liquefaction of solder paste. From 183 to 210-230°C, keep 30 seconds to enable the full reflow soldering of solder paste.

line B: Used in the soldering techniques with fine pitch IC and tiny components (e.g. 1005).

Control the sharp rise of temperature in the preheating zone to postpone the softening of flux in the soldering paste. Postpone the softening of flux in the soldering paste, and make the tiny tin powder particles outflow together to form solder balls.

line C: Used in the solidification of common SMT adhesive. At about 150°C, keep 3-5 minutes of basic constant temperature curing time.

Function

I. Functional description:

1. Preheating section

The purpose of this section is to heat the PCB board at room temperature to the second specific temperature (120-150°C) as soon as possible.

The function of this section is to make the solvent fully volatilized through an endothermic process; the heating rate should be controlled at 1°-4°/S.

2. Insulation section

It means the section of temperature rising from 120-150° to the melting point of solder paste.

The purpose is to stabilize the temperature inside SMA (component connector), that is, each component is heated evenly.

The flux is volatilized fully, and the oxides on the pad, solder balls and component feet are removed.

3. The reflow section (soldering section)

The purpose is to closely connect the solder and components. The temperature in this section is the highest, of 230°C with lead. The temperature is set according to different solders. By principle, it is the melting point of solder paste plus 20-40°. This section cannot last too long, or it will damage the components.

4. Cooling section

The purpose is to cool the fully melted solder paste as soon as possible, to make the solder joint smooth and bright. The cooling rate is 3-10°/S.

II. Power distribution:

The first temperature zone: Upper preheating zone

Digital temperature control, 2kw

The fifth temperature zone: Lower preheating zone

Digital temperature control, 2kw

The second temperature zone: Upper first dry zone

Digital temperature control, 2kw

Fault Analysis

Phenomena	Check measures
1. The machine cannot operate.	a. Check the power source: the machine power supply in the switch box on the wall.
	b. Check whether the circuit breaker is turned on.
2. The temperature does not rise.	a. Check whether SSR is normal. Reconnect or replace SSR.
	b. Check whether the interface of heating tube is disengaged. Reconnect it.
3. The transport belt does not work.	a. Check whether the speedcontroller is in start state.
	b. Check whether the motor sprocket of transport belt is slipping.
	c. Check whether the speed control motor is damaged.
	d. Check whether the connecting line is solid and reliable.
4. The fan does not work.	a. Check whether the power line is disengaged.
	b. Check whether the fan is damaged.
5. Overheating	a. The fan does not work.
	b. The temperature controller is out of control.
	c. SSR breaks down and burns out.
6. There is no display on the temperature control instrument.	a. Check whether the switch of temperature control instrument is damaged or displays "HH" or "LL".
	b. Check whether the temperature control instrument is damaged.
	c. Check whether the sensor opens circuit, connects reversely or does not match.

Warning of maintenance and overhaul:

In emergency stop, though the breaker is disconnected, there is still electricity in the circuit. Before repairing or maintaining the machine, disconnect the circuit devices installed on the wall, to ensure that the electricity entering the machine is cut off.

The replacement of heating tube:

- Open the furnace pipe to disassemble the sensor.
- Remove the cooling aluminum plate.
- Remove the connecting lines at both ends of the electric heating tube.
- Remove the fixed nuts at both ends of the heating tube.
- Take out and replace the heating pipe.

Suggested repairing spare parts to prepare:

- SSR; 2. Fan; 3. Heater; 4. Alarm bulb

SMT Fault Diagnosis and Solutions

Fault Diagnosis and Solutions

Problems	Possible Causes	Adoptable Measures
Incomplete reflow	<ol style="list-style-type: none"> Insufficient heating The shadow of components Copper foil in the middle of board 	<ol style="list-style-type: none"> Reduce the speed of belt. Increase the heat at the bottom. Reduce the speed of belt and increase the preheating zones.
Insufficient wetting	<ol style="list-style-type: none"> The board and components are oxidized and cannot be tinned. There is no time for sufficient wetting. 	<ol style="list-style-type: none"> Pre-tin the board and components. Increase temperature 1, 2, 3 or 4.
Warping of board	<ol style="list-style-type: none"> Exceed the limit of temperature difference of the board. 	<ol style="list-style-type: none"> Reduce the temperature difference of preheating section and the temperature

		<p>zone at the bottom.</p> <p>b. Increase the speed of belt.</p>
Board is discolored or dim.	<ol style="list-style-type: none"> 1. Exceed the tinning temperature of board. 2. Exceed the temperature gradient or heating speed. 	<ol style="list-style-type: none"> a. Increase the speed of belt. b. Reduce the preset zone temperature. c. Increase the speed of belt and zone temperature 3 and 4.
Too many fine articles	<ol style="list-style-type: none"> 1. The top temperature is over the limitation. 2. The viscosity of solder paste is too small or the network board is too thick. 	<ol style="list-style-type: none"> a. Reduce heat on the top and increase the zone temperature 2 and 4 at the bottom. b. Check the viscosity and reduce the thickness of network board.
Solder balls	<ol style="list-style-type: none"> 1. The drying is too fast. 2. Tin printing is unqualified or the board is reprinted. 3. The solder paste is not good with oxidation. 4. There is moisture in the solder paste. The solder paste is too much. 	<ol style="list-style-type: none"> a. Decrease the speed of belt and zone temperature 3 and 4. b. Use the board only after cleaning and drying it. c. Enhance the activity or change solder paste. d. Reduce the humidity in the surrounding. e. Adjust the printing.
Flux is coked.	<ol style="list-style-type: none"> 1. Exceed the temperature. 	<ol style="list-style-type: none"> a. Increase the speed of belt. b. Reduce the preset zone temperature 5.
Micro-components are dislocated.	<ol style="list-style-type: none"> 1. The location is not proper. 2. The tinning on the pad is irregular or unsymmetrical. 3. Drying too fast causes the airflow to blow components. 	<ol style="list-style-type: none"> a. Check the location. b. Check the tinning shape and thickness. c. Decrease the speed of belt and zone temperature 3 and 4.
Solder bridge	<ol style="list-style-type: none"> 1. The position is not proper or there is tin on the back of the network board. 2. The solder paste collapses. 3. The heating is too fast. 	<ol style="list-style-type: none"> a. Check the position or clean the network board. Adjust the printing pressure. b. Increase the metal ingredients and viscosity. c. Adjust the temperature time profile.
Tin is removed or collapses.	<ol style="list-style-type: none"> 1. The wetting is over time or the environment temperature is too high. 2. The viscosity of solder paste is small. 	<ol style="list-style-type: none"> a. Adjust the profile or increase the speed of belt or control the environment humidity. b. Choose appropriate solder paste.
The components are erected.	<ol style="list-style-type: none"> 1. The heating is too fast and uneven. 2. The solderability of component is poor. 3. The ingredients of solder paste are unsteady. 	<ol style="list-style-type: none"> a. Adjust the temperature time profile. b. Check the components. c. Choose the solder paste with good solderability.
Insufficient solder	<ol style="list-style-type: none"> 1. Printing parameter is wrong, which results in the insufficiency of solder paste. 2. The tinning of pad is uneven. 3. The components are uneven. There is solder mask and dirt on the pad. 	<ol style="list-style-type: none"> a. Reduce the viscous force or check the angle and speed of printing pressure. b. Try to make the tinning on the pad even.
Over-temperature of the board	<ol style="list-style-type: none"> 1. Heating rate is too high. 	<ol style="list-style-type: none"> a. Decrease the speed of belt and preset zone temperature.

Packing List

1. Instruction manual	1 piece
2. Certification	1 piece
3. Exhaust duct	1 units
4. Pipe button	1 units

After-sale Service

This machine warranty period is 12 months from the date of purchase, we will repair for free if it doesn't belong to man-made fault during the warranty period. In the case of man-made fault or beyond warranty period, we will take maintenance fee according to the circumstances and guarantee lifelong maintenance.

Maintenance

Before starting up, check whether the operating voltage of the machine is within the safe range or is steady, to ensure that all the parts of the machine can work normally and safely, and check

whether all the setting parameters are consistent with those in the last shutdown. When shutting down, don't make the transport belt stop inside the machine which is still in high temperature, in order to avoid the accelerated aging of transport belt in the high temperature. It is advisable to stop the transport belt after the temperature in the machine is lower.

Generally, every day when the machine works, due to the requirements of indoor environment, the casing of machine and the residues on the outlet should be cleaned before and after work, in order to keep the machine look clean and tidy.

Transport belt:

- a. Lubricate the drive roller chain. Smear it with high temperature lubricant every two months.
- b. Regularly clean up the dust on the nylon wheel of chain drive.

Motor:

The motor of machine operates at a high speed for a long time. It is indispensable to add high temperature lubricant onto its arbor wheels not less than twice every week, in order to keep its smooth operation.

Fan:

Stir the air flow in the machine when the fan works. At the same time, clean all kinds of residues stuck on the fan blades and motor inside the machine timely, so as not to add up to cause a short circuit and burn out the fan.

Ground wire:

When the machine uses three-phase five-wire, the ground wire must be connected with the earth. Check whether the ground wire is connected before starting.