

*BIRD SD2P2 SMART DIGITAL DISPLAY PLUG
AND PLAY "CHIMERA" 8888 V1.55 2012
"BEST INFRARED DEVICE"*



BGA Rework Station

User Manual

BIRD TECHNOLOGY Ltd.

- **Brief introduction to company**

- **Safety Instructions**

- I. Electric Safety**

- II. Operation Safety**

- III. The operation and conservation condition of products**

- **Our contact information**

- **product guarantee and so on**

- **The parameters of BIRD® SD2P2 8888 “CHIMERA” BGA Rework**

Station

- **hardware description and Self-help install**

- **Set heating temperature**

- **BGA Rework operation steps**

- **Prompt**

Brief introduction to company

BIRD Technology Co., Ltd. is a manufacturing enterprise specializes in BGA manual Reworks equipment research, development and production. BIRD brand extends the devices to new frontiers with Smart Digital Control and Computer Controlled systems developed by Dragon Group China International.

Based on the principles of producing high-quality and cost-effective welding equipment, our company has developed and produced a number of BGA Rework Stations, such as **ANY CHIP IR3000, ANY CHIP IR4K, ANY CHIP IR 5000, SDC 777 , SMART DUAL 5777, 4in1 BIRD 8888**. And has been recognized by the majority of users in practice. So far, our users have been involved in scientific research units, computer maintenance and repair of medical equipment, communications equipment maintenance, video game maintenance, training teaching, and other fields.

Now we introduce this new brand developed by Dragon Group China, with much better structure and functionality than before. BIRD is smarter, lighter, with independent control panels for easier exchange.

In the future, our company will continue serving users with sophisticated products, reasonable price, high quality, and continuously innovating and upgrading product structure and performance according to market, for meeting the developing needs of our users, and providing the users with systemic, comprehensive and thoughtful services.



Safety Instructions

I .Electrical safety

- Make sure the supply power voltage accord with the standards---- 220V-250V/50hz alternating current before installing. Please get a power converter if you are in a country with 110v current. Remember this machine top power is 5000 watts in its bigger set up, and 4200 watts in its minimum and 2200 watts in ECONOPOWER.
- To avoid possible electric shock caused serious damage, please disconnect the power cord from the outlet temporary before moving machines.
- If the machine damages, please contact us for maintenance. If the damage caused by the users when they dismantle or repair independently, please contact us for spares you need.

II . Operating safety

- Please carefully read the relevant information provided by the manual before starting using this product.
- Make sure the power cord has been properly connected properly before using the products. Also please check that are not parts loosen inside the machine, that could cause a short circuit, sometimes due to shipping that can happen.
- Install the equipment in stable work platform to use, where the air mobility should be small as possible. Avoid it closing to air conditioners, fans and the other outlet.
- In case of electrical short-circuit; avoid the contact of the device with water.
- Do not use this equipment close or in contact with flammable and explosive substances.
- Keep a safe distance from the device when is in operation, The use of dark infrared instead of infrared can be deceiving to the eye, when the machine is in operation the space between the preheated and top heater is extremely hot. Keep any part of your body or any other device or product away from the area, including the auxiliary lamp. After finish working with the machine, do not touch the heaters to avoid burning.
- If you have any technical questions or suggestions in the course of using this product, please contact with our technology department in

support@dragongroupchina.com . If you have any problem with the machine, contact claims@dgcsupport.com or <http://www.dgcsupport.com/tickets/>

- We will try our best to solve in a proper time frame.
- Please do not intend to modify the machine by yourself that can cause you problems and lose your warranty service.

III.Environmental requirements of operation and conservation

1. Operation environment of products

- Operation temperature:15 ~ 35 C
- Operation humidity:5% to 95%, non-condensing
- Products should be kept in the air mobility of a smaller environment under the welding operation.

2. Conservation environment of products

- Storage temperature:-20 ~ 35 C
- Storage humidity: 5% to 95%, non-condensing

Contact us

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Product Conditions and Warranty Service

Service Statement:

- Enjoy warranty maintenance service for three years, in which the spare parts in the first year is free. And the transport costs arise from maintenance should be paid by the buyers since purchased. Usually we cover any defect on pieces or parts of the device, you just need to send proof of malfunction either on mini video or pictures and we will send you the part, if you want to send a full machine, you need to pay shipping both for sending it to us, and we send it back to you. Parts and modules do not pay shipping charges.
- Only the actual cost of spare parts should be paid from the beginning of the second year (the 13th month) to the end of the third year (the 36th month) since purchased. Please call to ask the specific prices of spare parts. Also the shipping costs arise from maintenance should be paid by buyers during this period.
- Each product has one unique serial number that needs to be stated to receive service for warranty or technical support plus proof of purchase. In purchases online, the website product number on the website you purchase is your serial number.
- Please send the parts that are not working properly to the country close to you that was in the list above.

If the following situations occurred, the users will not be entitled to free warranty service, then the maintenance, the cost of materials and the man-hour will be charged.

So to ensure your rights, please read the following note carefully:

- No serial number stated or no proof of purchase
- Cause damage for not use, keep and storage as the manual.
- Cause internal and external appearance damage by modify or outside force.
- Product was deformed or lost components.
- Change product components without our authorization for maintenance.
- Beyond the warranty period of our promises..
- Product damage were caused by extreme factors (such as earthquakes, lightning etc)

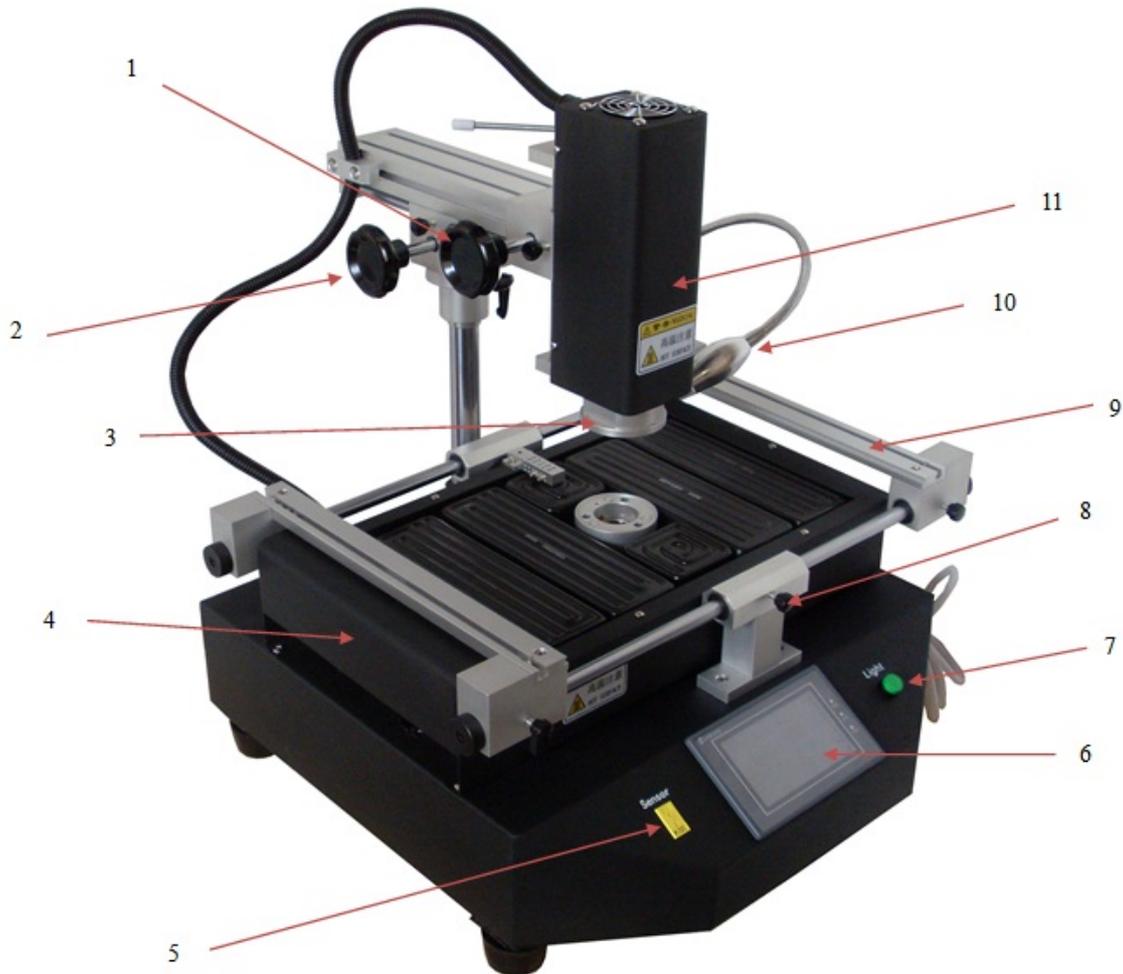
Note: Do not disassemble it by yourself without proper permission; it may cause the invalidation of product guarantee. . We reserve the right to analyze causes of malfunction and the proper actions to be followed.

The parameters of BIRD® SD2P2 8888 “CHIMERA “BGA Rework Station

Basic Parameters	
Heating	Mixed 4 Technologies - Dark Ceramic Infrared – Soft Infrared Tubes – Hot Air – Fast Ceramic Infrared Wide
Dimension	L530mm×W500×H500mm
Weight	23.5kg – About 27.5 With packing
Extras	Weight increases due to extra accessories included in the box
Electrical Parameters	
Power	220V AC
Upper Heating	CHXIR – SDIR – FDIR - HA
Size of Upper heating	60*60 / 60*60 / 95*95 / NOZZLE DIFFERENTIAL
Consumption of upper heating	250W / 500W / 900W / 850W
Bottom Heating	German Dark Infrared
Size of Bottom heating	320 mm×320 mm
Consumption of Bottom heating	2000W to 4000W
General power	2300W to 5000W
Temperature Control	
Control mode for TOP	Independent temperature control, high-precision closed-loop control, precision ± 0.5%, Alarm
Control mode for BOTTOM	Independent temperature control, high-precision closed-loop control, precision ± 0.5%, NO Alarm
Rework Function	
IC Components	Suit for welding, remove or repair packaged devices such as BGA, Mini BGA, SOP, PLCC, SMT, SMD , QFP, PBGA, CSP, multi-layer substrates, EMI metallic shield product and solder/lead free Rework 、welding
Size of applicable chips	≤80mm×80 mm
Size of applicable PCB	≤400mm×400 mm / Min 40mm*40mm

Hardware description

BIRD® SD2P2 8888 “CHIMERA “ BGA Rework Station is composed of upper part of Heating Components / Bottom Preheat Module / Bracket / Temperature Control Parts! Temperature control Table is control the upper and lower heating, Can Simultaneously heated or First preheat, then the upper part of heating.



1. Horizontal Adjustment Knob
2. Vertical Adjustment Knob
3. Top Heater Fan Adjuster – In case of this set up -
4. Side Cooling System – Set by SDD (Smart Digital Display)
5. Extra Temp Sensor to attach to Board – Shows in SDD
6. Touch Panel
7. LED Auxiliary Lighting

8. Knob Screw

9. PCB Support Pole

10. LED light

11. Top Heater

(Remember do not use the Light too close to the heating area, the light has circuits too that can just melt for the heat, the light is a powerful 12V system that you can use from the proper distance)

Description:

1. This product adopt 4.3" HD touch screen Human–Machine Interaction(HMI), PLC Control, real-time display five temperature curve, temperature precision be controlled in \pm degree.
2. 6 section temperature controls, can further refine the temperature of each solder segment, to better ensure the welding effect.
3. Can save 0-49 group of temperature curve setting, analyze the curve and change the setting on touch screen anytime.
4. There are 3 heating zones to heating separately, can control multi-group, multi-section temperature in the 3 heating zones at same time, ensure achieve the best welding effect in different heating zones. Heating temperature, time, slope, cooling, vacuum, all can be set on HMI.
5. Select high-precision K-Type thermocouple closed-loop control, detect temperature precisely through the external temperature testing interface.
6. Have alarm function after finish unsolder, have over-temperature protection circuit around the whole machine, stop heating and alarm when abnormal over-temperature
7. Use High Cross-flow Fan cool PCB board promptly, in case the deformation of PCB board, ensure the welding effect.
2. Use V Shape groove address the PCB, Flexible removable have the function of protect PCB

3. For large thermal capacity PCB and other high temperature requirements, both lead-free BGA/CSP and column BGA can deal with easily.
4. Hot air nozzles can 360 degree rotation, easy to replace. With a variety size of hot air nozzle, special requirements can be customized.

BGA Rework Station Operation Steps (This is just basic guidance, each Operator design their own steps and procedures)

1. Pre-heating:

Pre-heat PCB and BGA before rework, in case of bursting while rework, temperature of constant temperature oven is generally set at 80 °C -100 °C, time often are 12-24hours.

2. Disassembly:

Put PCB on the position support of rework station, select the appropriate hot air reflow nozzle, set proper welding temperature curve, pull the start switch, when procedure run over, move the hot air manually, use vacuum suction pen remove BGA.

3. Clean the welding:

Cleaning of PCB and BGA welding pad, one is use the suction tin line tow to same level, another is use soldering iron drag smooth directly. It is best remove soldering tin in a short time after remove BGA, while BGA not cooling totally, less damage of temperature difference to welding pad; Use soldering flux in the process of removing solder, can improve the solder activity, conducive to the removal of solder. Especially pay attention to do not damage the welding pad of PCB, for ensuring reliability of BGA welding, try to use some strong volatile solvent, washer, industrial alcohol during clean the remain solder paste on solder pad.

4. BGA REBALLING

Evenly coated solder paste on BGA pad with a brush, select the corresponding REBALLING steel mesh, use REBALLING STATION plant BGA tin

sweat on corresponding BGA pad.

5. BGA Tin Sweat Welding

Heating the bottom of Tin sweat station and rework station heating zone, solder the tin sweat on BGA pad

6. Spread soldering flux

Spread a layer of solder flux on PCB pad with a brush, too much will cause soldering together, on the other hand, too less will cause missing soldering, thus for clean the dirt on BGA tin sweat, enhance soldering effect, solder paste must be spread appropriately.

7. Mount

Mount BGA on PCB, when counterpoint by hand, use silk screen print frame line helps counterpoint, confirming whether mount BGA in counterpoint by hand touch feeling of surface of Tin Sweat and soldering pad.

8. Welding

Put PCB on the position support of rework station, select the appropriate hot air reflow nozzle, set proper welding temperature curve, start heating inching switch, run soldering procedure, stop running, front BGA cooling fan start cool BGA, improve hot air point, make hot air nozzle above on surface of BGA 8-10mm. and keep cooling 30-40 seconds, or after the start switch light power off, move hot air head, and then take away the PCB board from bottom heating area position stably.

a. Missing Solder; because of manually counterpoint will make deviation between chips and solder pad, Tension of tin sweat surface will make a process of correct the place between BGA chips and pad automatically. Because of uneven heating, leading the chip fall unevenly, if stopping reflowing now, the chip will not fall normally, resulting in non-co planarity phenomenon and then cause missing solder and cold solder, so need extend the time of temperature of third and forth section THERMATICS, our enhance the pre-heating temperature at bottom, melt tin sweat and fall evenly.

b. Short Circuit: The tin sweat is liquid when get melting point, the extension

and support function of tin sweat support will be damaged when suffer over-time, over heat temperature or over press, and then lead short circuit because of chip fall on the PCB pad completely while reflowing, Hence, we need decrease temperature and time of the third and forth heating section, or decrease the preheating temperature at bottom.

Note: Will appear small quantity ozone when reword station using, in order to ensure a comfortable, healthy and safe operating environment, please keep good air circulation.

BGA Rework Station Touch Screen Operation

Operation Introduction:

DRAGON GROUP CHINA LIMITED

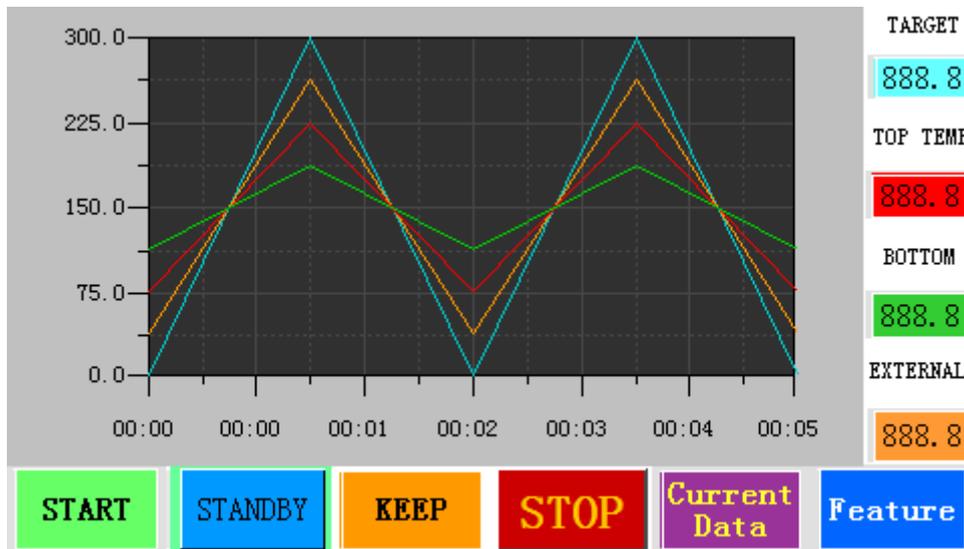
BGA PROFESSIONAL
4 TOP HEATER INTERCHANGEABLE HEADS STATION
BIRD 8888 - CHIMERA - BETTER INFRARED DEVICE



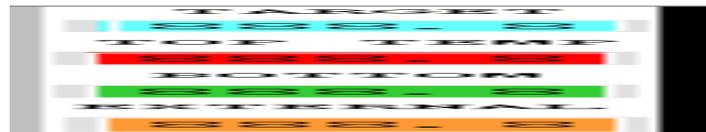
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English **中文**

A. Open the control power supply, rework station is powered. You will see like the below interface.



And then will appear top target temperature, top actual temperate, bottom actual temperature, actual thermostatic temperature of the third THERMATIC (preheating temperature at bottom), outer actual temperature from up to down at the right side of the touch screen.



Curves on image are: Tope target temperature (blue), top target actual temperature (red), bottom actual temperature (green), infrared actual temperature (purple), out tested actual temperature



Click **Currentdata** enter into each asked specification of running after start heating

These specifications are the target temperature, holding temperature time, heating-up speed

Second is the unit of heating-up speed, three THERMATIC of Top, infrared can set 6 section heating-up, 6section temperature-holding curve model, at this

interface, also can modify the specifications, but this specification will not be saved in inner of procedure, only be used in the heating curve after start at this specification. **To save, please read formula setting content!**



Click , return to curve interface



Click , the whole machine get into start heating, the running heating curve is specification as above described specification, meantime clean out last curve show on screen.

Under normal operation, when top target temperature and heating speed is zero, the whole process finished, machine stop work, hear Roar sound., if have set cooling and vacuum state in cooling vacuum interface, the output of cooling and vacuum will run.



Click , when running, the whole machine will

stop.  is the current state

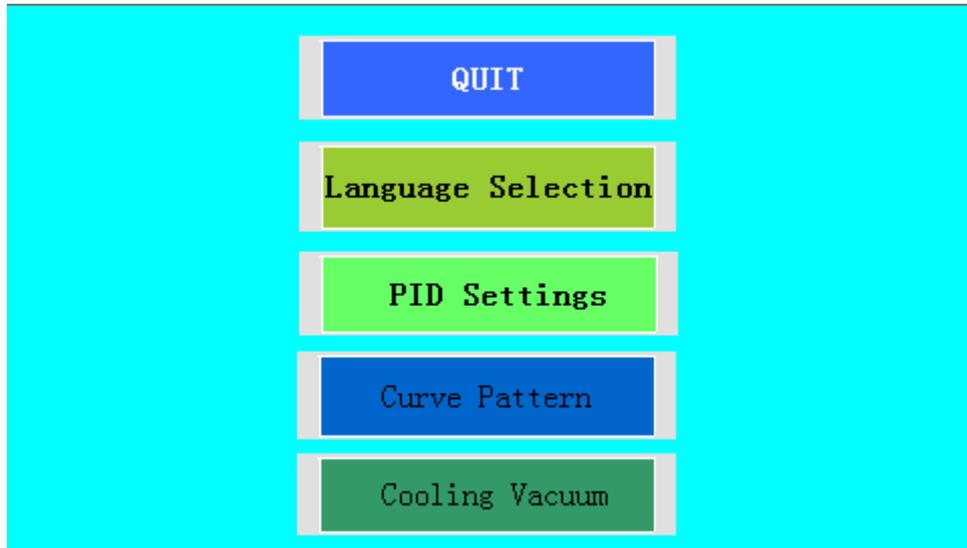


Click , when running, this button will shine, notify that the whole machine go into temperature-holding state, the three group of heating temperature output will remain at present temperature, running in constant

temperature, till to re-click , return to normal heating state.



Click  popup function select interface



1. Click  return to Chinese-English interface

2. Click  popup “enter code “window , This is a factory setting only, in some cases of extreme temperature it May need some calibration, only in that case you contact black@dragongroupchina.com and with the password and instruction a customer can modify this patterns and variables.

All specifications have been set before leave factory, no need change

3. Click  will appear follow image:

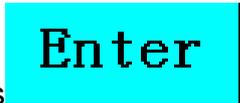
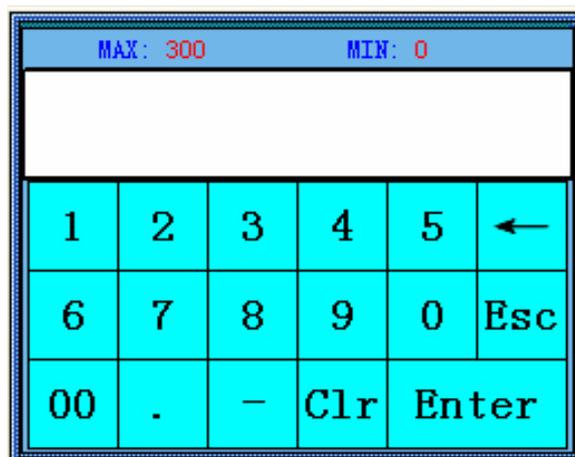
QUIT	SLOPE 1	SLOPE 2	SLOPE 3	SLOPE 4	SLOPE 5	SLOPE 6	Save Curve
TOP TEMP	999. 9	999. 9	999. 9	999. 9	999. 9	999. 9	Back
DWELL TIME	999	999	999	999	999	999	Next
HEATING SPEED	99. 9	99. 9	99. 9	99. 9	99. 9	99. 9	USE
BOTTOM TEMP	999. 9	999. 9	999. 9	999. 9	999. 9	999. 9	READ
DWELL TIME	999	999	999	999	999	999	Current
HEATING SPEED	99. 9	99. 9	99. 9	99. 9	99. 9	99. 9	99

Modify and save temperature curve often used

Set the heating temperature, constant temperature time, heating speed required by production craft, this product can store the temperature curve up to 50 groups. Save various production craft specifications in system, call it directly when meet different production craft.

Means the Formula stored in system, because the heating temperature is different while different products using. We could save different specification in different formula. When change the product, do not modify the specification much, just click call the corresponding formula

Click the Enter key numerical value at the pop-up

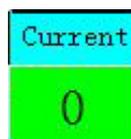


Enter the modified data, press **Enter**, Finished setting

Temperature specification of Three THERMATICS, click **Save Curve** then all specification set just now have stored under the name(serial number) of present formula.



. Also can get the asked temperature curve directly through **Back** two



buttons. (The formula noted) **0** (0-49) enter corresponding serial NO.

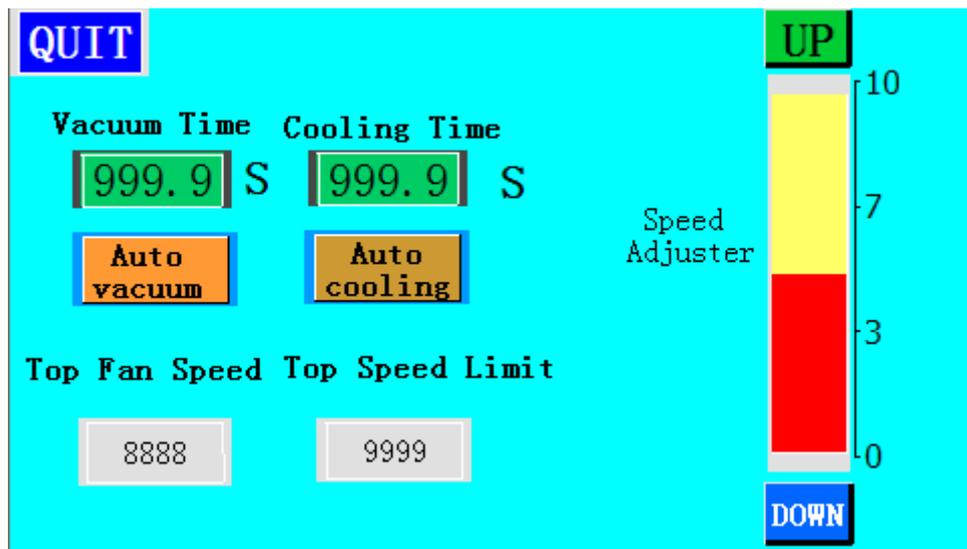


Click **USE** restart the running temperature curve of heating

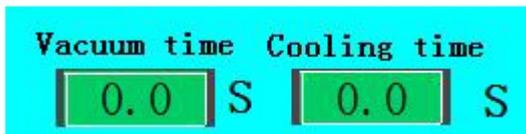
Or save the modified temperature specification in present interface through



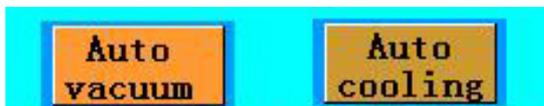
4. Click  at following interface:



Heating finished, System will run cooling and vacuum as



(Counting by second), or manually control cooling and vacuum state by



after went into manual, whether heating or not, vacuum suction always worked, click cooling manual button, only stop heating, then output, heating start, output stop, for having enough time take away the suction pen, suggest that when remove chip, set the cooling to zero.

This machine can real-time monitor the rotating speed of cooling fan of up-down hot air, also can set the min rotating speed. Fan stop work or rotating

speed less than set data during heating, and up-down hot air data high than 300 degree, system will stop heating immediately, alarm at same time, whole machine turn to cooling state, will show where is the trouble on main interface, can help worker find the trouble in a short time.

Caution!

While alarm due to trouble, all functional button will be locked! It cannot work still after deal with the trouble, power off.

BGA Rework Station Handling Precautions

1. Open repair station power switch, first check whether there is cold wind blowing in the upper hot lips and lower hot lips. If no wind blowing out, don't use the start switch, otherwise it will burn the up and bottom main heater; the bottom of the all infrared heating area is controlled with the switch. You can choose the bottom of the infrared heating area according to the size of PCB board.

2. Rework different BGA, it needs to set different temperature curve, the maximum temperature of each segment setting cannot exceed 300 °C. When rework with lead-free, one can set according to welding temperature curve reference of BGA solder beads.

3. When dismantle BGA, first transfer cooling fan and vacuum gear to the automatic gear, when the temperature curve operation is end, the buzzer alarms automatically, at this time quickly suck away BGA from the PCB board with vacuum suction pen, and then remove PCB board holder from the location grid.

4. While soldering the BGA, first transfer cooling fan is to the manual gear, turn off the vacuum. When the temperature curve operation is end, buzzer alarms automatically, the cooling fan starts to cool the heating area BGA and the down heating zone. Hot air chills cold wind at the same time. Then upgrade the main heater at the top, so that the bottom of hot air nozzle is 3 ~ 5MM up to the upper surface of BGA, and keep cool for 30 to 40 seconds, or remove the main heater after turning off the start switch lights, , then remove the PCB board from the rack

pan.

5. Before BGA installation, you must check whether the PCB board by chip and BGA solder ball pad is good; BGA chip must be carried out by visual inspection after soldering. If something is unusual, one should stop the installation of BGA and test the temperature, one cannot weld it before it is adjusted properly, otherwise it may damage the BGA or the PCB board.

6. The surface of the machine should be cleaned regularly; in particular, keep the clean of Infrared heating board to prevent dirt accumulating in the top which will affect the normal heat radiation, resulting in poor welding quality, and shortening the life of infrared heater.

If the heating unit is burned due to this reason, the Company will not be responsible for free replacement!

Concluding Remarks

In production areas of electronic products, especially computer and communications electronics products, the component is developing to the miniaturization, multi-function, green orientation, various packaging technologies continue to emerge, BGA / CSP is the mainstream of packaging technology nowadays.

To meet the rapidly growing demand of circuit assembly of BGA devices, manufacturers need to choose safer, more convenient and more efficient assembly and rework equipment technology.