SMTmax

Precision Lead-free Reflow Oven

Model: AS-6080

User manual



User manual

Manufacturers: OMXIE Corporation

http://www.smtmax.com

Introduction

AS-6080 Precision is a lead-free reflow oven for SMT advanced research and small batch production reflow equipment. The product uses high-efficiency near and far infrared heating element and distributed hot air circulation system and thermocouple temperature measurement devices. By microcomputer precision control, reflow oven temperature profile control plane more precise and reflow temperature more uniform. Fully adapt to a variety of different formulations of binary and multi-alloy solder and lead-free solder reflow requirements. The precision adjustable temperature curve, in addition to the device also has an automatic fault detection alarm, automatic shutdown. This product has a single-sided PCB, SMT reflow soldering, reflow SMD aluminum plate, SMT / plug-in hybrid technology SMD components red plastic curing, PCB/FPC lamination heating, high temperature solder oil curing, high temperature curing process of screen printing, packaging components and thick film curing, epoxy curing electronic transformer, electronic transformer drying baking and other functions. Suitable for small and medium-volume SMT electronics manufacturing processes and research. Process electronic products research and production of the best equipment.

Newly developed operating software for the operating system in English and Chinese. Simple, powerful, good interface, easy to use, flexible set of parameters. Software control elements and more, multi-point temperature acquisition, temperature control system, hot air systems, cooling systems and many other features of the hybrid programming features. User acquisition and storage of process parameters, the software upgrade space. Circuit using efficient, durable, and convenient integrated board structure, S-shaped mechanical structure of the air flow channel, and no additional role of air power. Studio hot air does not flow naturally, helps to reduce harmful gas pollution and improve product efficiency hot air. Dynamic action in the exhaust, the whole studio scavenging channel without dead ends, remove the dry hot air and exhaust clean, fast heat

dissipation. Quickly to the next workflow. Set the exhaust port, you can easily put gas into the room. Reduce exhaust pollution and temperature on the working environment.

Hot air circulation system settings are conducive to a variety of precision temperature control process and temperature-sensitive electronic devices precision control, studio temperature is more uniform. Heat transfer data faster and better temperature control. Facilitate the discharge of gas when curing package. Encapsulated air bubbles to reduce defects.

Hang high temperature glass observation port. Facilitate the observation process issues. The use of aluminum silicate heat insulation cotton, environmental protection, in the performance of the structure and operation of all the surface was modified and upgraded.

Third, the main technical parameters

1,Input Power: AC220V / (Wiring AC110V Order) interface standard order
2,the operating frequency: 50 ~ 60Hz
3,input power: 2400W
4,heating methods: infrared radiation and hot air mixed heating mode
5, the operating system:AS-6080 Chinese and English bilingual operating system
6, the operating mode: Universal SMT reflow, and red plastic curing, multi-temperature drying mode
7, a site area: 300x400mm
8, the disk space height: 60mm
9, plate bearing: 7.5kg
10, Dimensions: 500x372x325mm
11, carton size: 600x500x400
12, Weight: 30kg

Mechanical structure, part of the Introduction

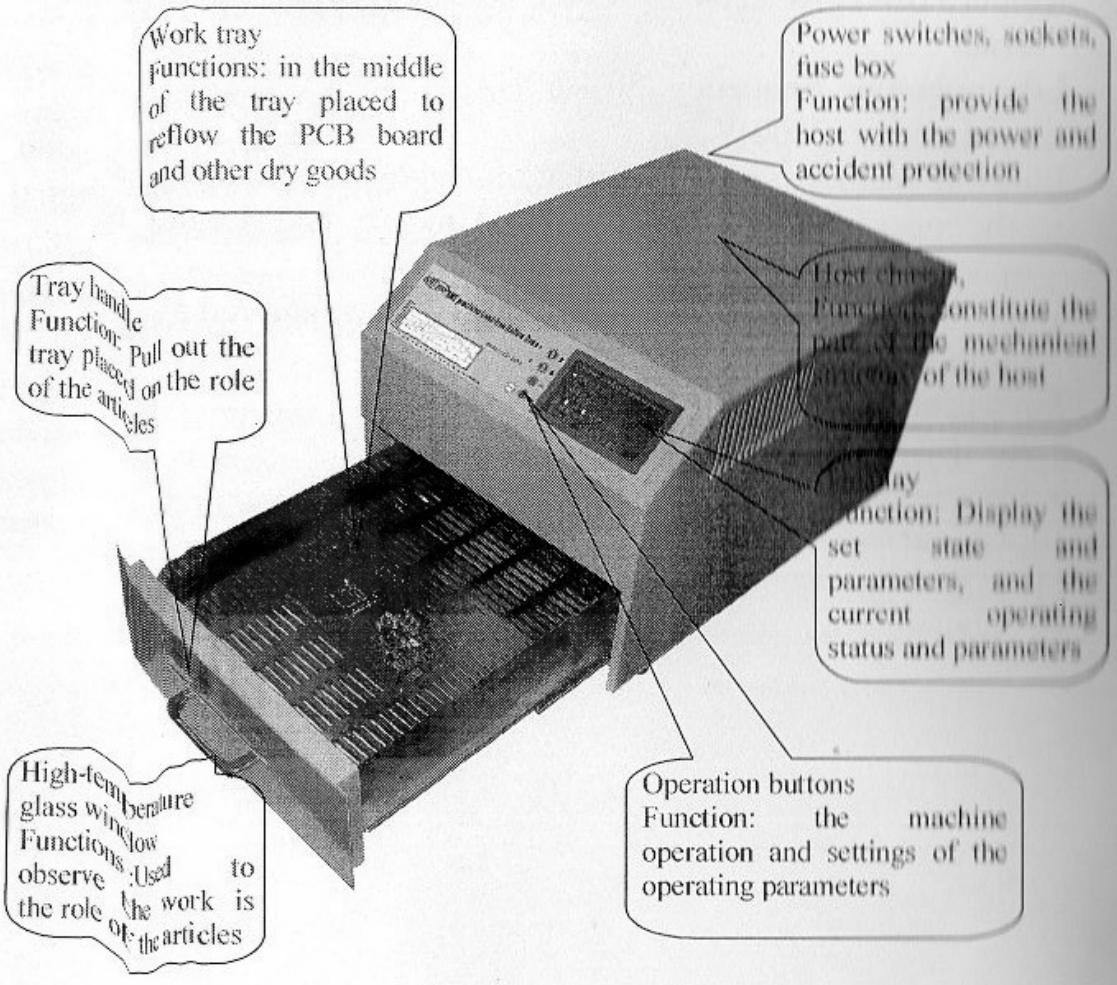


Figure 1

in addition to several components seen in "Figure 1", the chassis behind the power switch, power socket, fuse holder, exhaust interface. The nameplate of the machine a variety of certification mark attached to the back of the machine. The cooling air inlet of the machine is located at the bottom of the machine, the machine behind the machine is installed should stay out of more than 150mm of space, machinery, cooling and ventilation. The configuration of the power outlet must meet 220V/15A, 110V/30A capacity requirements. Machine around flammable objects and gases. The installation of the machine room must be ventilated. Temperature between 15-25 ℃,humidity of 50-90%

Function keys Explain

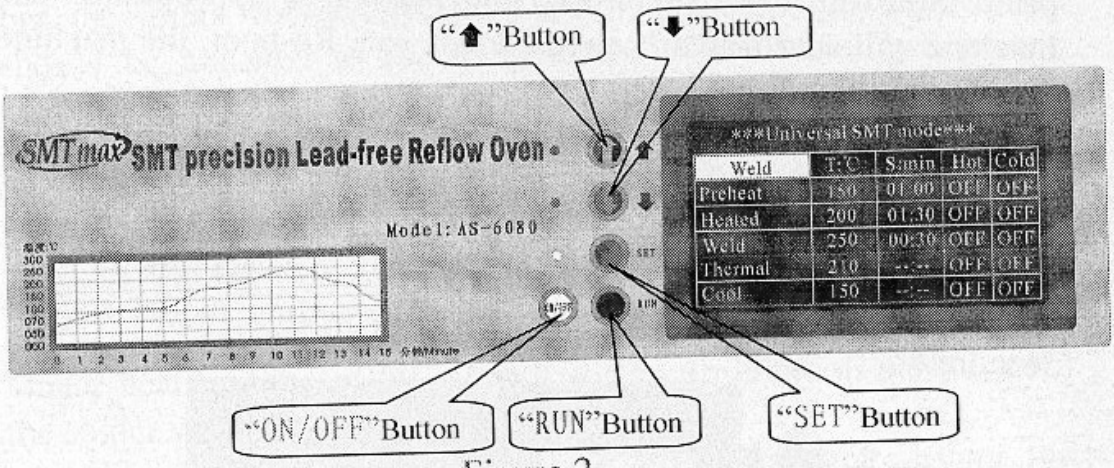


Figure 2

Total of five buttons on the operation panel of the device are as follows: {ON / OFF} key, {Run} key, {⬆} key, {⬇} key, {SET} key. Where {ON / OFF} key, {Run} key and {SET} key multifunction key, key combination to enter the various settings community, there will be corresponding to the bottom of the screen under a different user interface keyboard function.

Introduction in English mode

In the English mode of operation, set the three functional modules and graphics and text running interface

Universal SMT mode

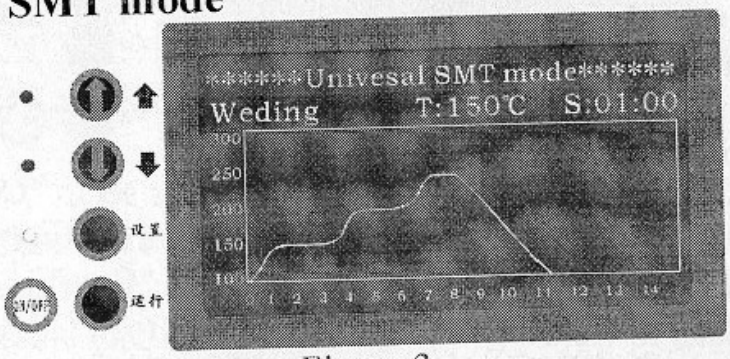


Figure 3

Universal SMT reflow mode, set, run

Universal SMT reflow mode: the main function is the function of the SMT chip to reflow. This mode parameter is set to a wide range of binary and multiple formulations to meet the low-temperature, medium temperature, high temperature solder

paste. Software to set parameters in the test is appropriate. The machine will automatically save the last run. Re-boot, the machine directly into the standby time.

The model has two interface modes, the "text" and "curve" the same control accuracy. Parameter settings in the text of the state.

Parameter settings:

In the standby state, press {⬆}or {⬇ }key to select functions.

Press the "Settings" button to enter the setting mode, such as "Figure 4"

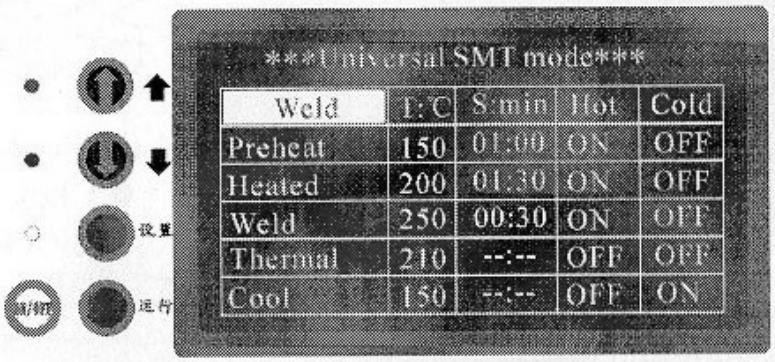


Figure 4

The selected function is highlighted, press the {⬆}or{⬇} set functions. Selected functions after. Enter the parameter setting press "SET" key to highlight the box of the selected parameters. {⬆}or{⬇}button to modify the parameter values, parameter values are set within the limits prescribed. Press {SET} button to save parameters and enter the next parameter set. "Hot" and "Cold" set {⬆}or{⬇}set to{ON }or{OFF}

"Hot" is a built-in hot air circulation system "Cold cooling ventilation system.

"Hot" in general in the heating process is set to "ON" so that is conducive to the temperature uniformity in the heating process.

"Cold" is generally in the course of the "Cool" is set to {ON} so beneficial to weld a good rapid cooling of the PCB board.

"Thermal" section of "Hot" and "Cold" is set to the {OFF} or "Hot" for the {ON} "Cold" to {OFF}

Run Universal SMT reflow mode

After setting, press {Run} key, the machine-load operation once again to ensure correct and put it into the PCB board to reflow.

but the joints yellow. Welding section of the high temperature should be adjusted to the temperature of the welding segment. Usually lowered to 5 ° C for an observation cycle.

If there is a bad solder joint or part of the solder joints insoluble tin, usually for the welding section of the temperature is too low or too short heating time actions, and this time should be adjusted for the welding section of the temperature or adjust the heating section and welding segments, usually to increase 5 ℃ or longer heating time of 30 seconds for an observation period, until the solder welding, surface brightness for good

Daily re-boot the machine-load operation time drying the moisture and the machine to heat up to normal operating temperature of 70 ° C or so.

Completion of the machine is running automatically after alarm, cooling to 70 ℃ after 30 minutes will automatically shut down when no longer operating

Red rubber mode

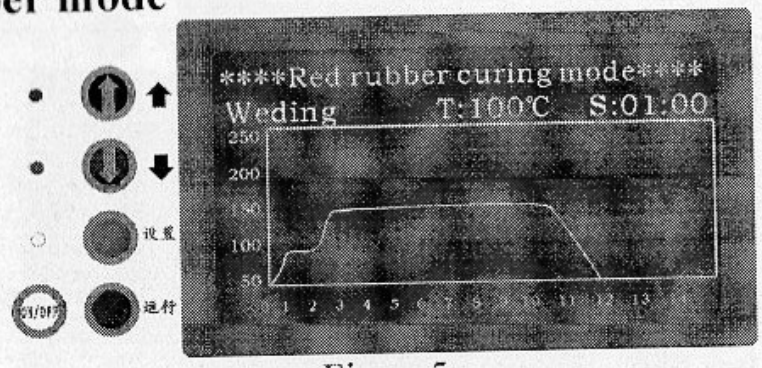


Figure5

SET Run Red rubber mode

Up red for double-sided SMT chip adhesive curing program. PCB underside of chip components up red rubber curing, welding tin stove can plug straight leg components. While the pin components and SMT components on the tin. Meet the three-dimensional PCB assembly process. This program is also suitable for curing in sealed plastic die components bonding process of the PCB. PCB board, moisture-proof anti-high-pressure encapsulation curing process.

This program is divided into a heating, venting, curing, cooling four connected

The purpose of the heating section of the material is heated to about 100 ° C in this process to remove moisture, eliminate stress. This setup time of 60-120 seconds.

Segment of the exhaust is discharged after warming gas emissions outside of the machine and reduce harmful gas on the city's air, the segment set for 30-60 seconds.

The curing paragraph in front of heating the good material, adhesive heat curing reaction through a period of constant temperature curing temperature, and eventually to the curing of a good product.

Cooling section, curing a good product and fast cooling to room temperature.

{SET} following the program setup process, {⬆} or {⬇} key in the standby interface, select the {**Red rubber mode**}, press {SET} key to enter the setting interface as shown in Figure {Figure 6}

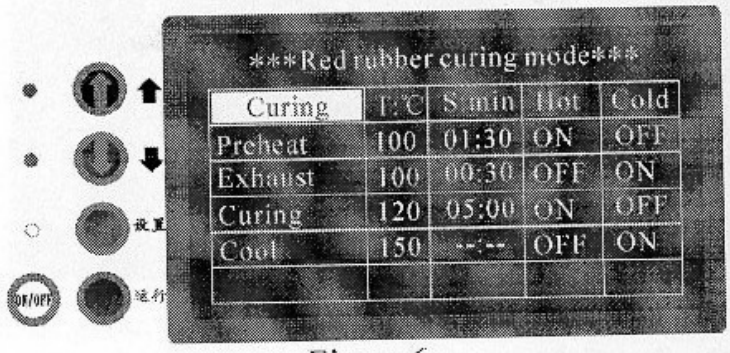


Figure6

press {⬆} or {⬇} key to select the function segment. Then press {SET} key, and then select the highlighted parameter box. press {⬆} or {⬇} to modify parameter values. Press {SET} key to save the parameters, the same operation, until all the parameter settings to complete.

Run: in the machine setup is complete, the machine-load operation, to ensure that the parameters of the machine settings are correct and reliable operation.

Multi-stage drying mode

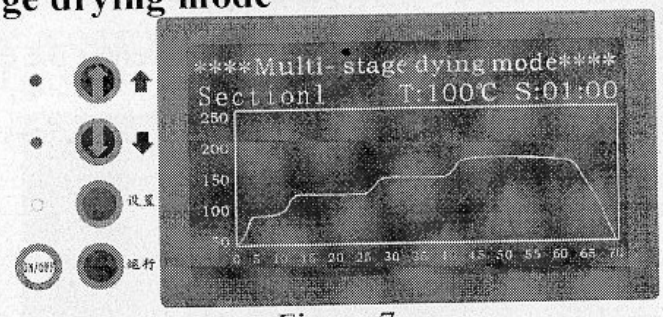


Figure 7

SET Run Multi-stage drying mode

Multi-heated drying mode is mainly used in electronic components in addition to the tide, drying, baking, long time solid seal components. Common set of process requirements in the SMT placement process.

This mode has four sections, each temperature value.

Function setting interface as shown in Figure {Figure 8}

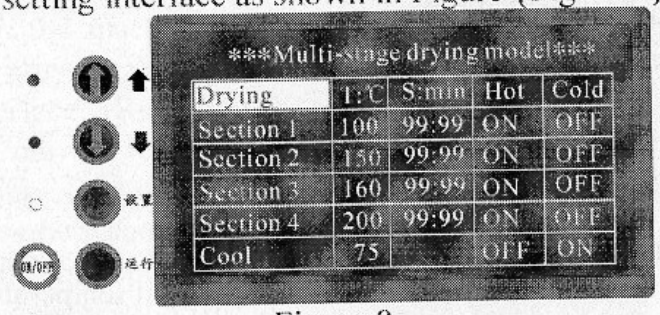


Figure 8

Settings: press {⬆} or {⬇} key to select temperature ranges. Then press {SET} key, and then select the highlighted parameter box. press {⬆} or {⬇} to modify parameter values. Press {SET} key to save the parameters, the same operation, until all the parameter settings to complete.

Run: in the machine setup is complete, the machine-load operation, to ensure that the parameters of the machine settings are correct and reliable operation.

Test Mode

Hold down the {RUN} then {ON / OFF} to enter the engineering test mode. {Figure 9}

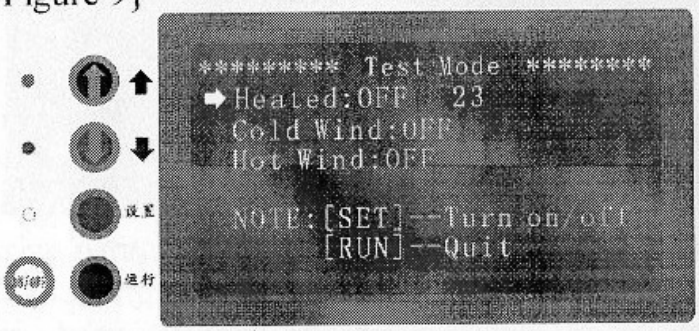


Figure 9

This user interface, the hardware part and software part of the engineering test.

Press {⬆} or {⬇} key to select the test project. Then press {SET} key to the ON / OFF test.

Press the {RUN}-the Quit

Temperature correction mode

This machine uses a thermocouple digital temperature module. Thermocouple temperature of the cold leg and hot leg temperature head installation location. May produce some error in the system control. To do this in the software system has a temperature correction module to correct the error.

In the process of temperature correction to the PCB close to the thermocouple head simulates the actual heating of PCB board. And constant temperature in the calibration points for some time, to ensure the accuracy of heating and temperature control. Due to the influence of the heating power, the nonlinear temperature heating curve. Temperature correction is also non-linear correction mode.

Set 50 150 250 300 ℃ four compensation point in the machine used in temperature. The compensation temperature is ±

50℃. Compensation temperature of the operation several times. To ensure the accuracy of the temperature-controlled, user interface, such as {Figure10}

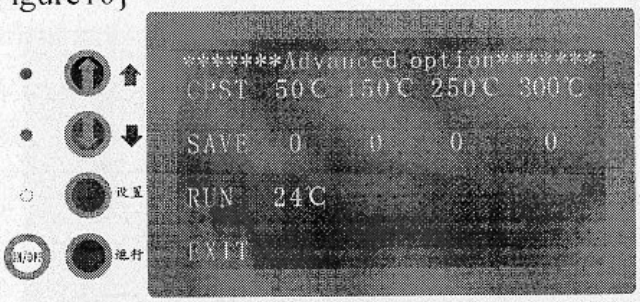


Figure 10

Ready before the temperature correction, the first high accuracy thermocouple tables and 100x100x1.6mm thick PCB board, the temperature measuring head with high temperature tape snapping in the middle of the PCB, into the middle of the tray of the machine.

Open the machine's power switch, press and hold {⬇} key and then press {ON/OFF} to enter the temperature compensation mode interface. {Run} key to the machine running, the display will show the current temperature. The measured temperature table is the heating temperature of the PCB board, when there are differences between the compensation point, and press {SET} key to enter the corresponding compensation point. {⬆} or {⬇} key to set the compensation, the compensation value of the {original± value=displayed} value. After multiple correction is correct {ON/OFF} key to exit. Machine to complete the temperature correction, more than a year a long time in the winter and spring and high humidity season or machine. Temperature deviation may occur. Corrected, the machine through the work tray materials how many will continue to affect the temperature of the machine.

Dangerous Temperature!

Equipment operation to 10℃ higher than the set temperature, the device will automatically alarm and display flashing display

{Dangerous Temperature! }. Equipment to enter the safe handling, turn off the heating element turns on the fan forced cooling, such as {Figure 11}

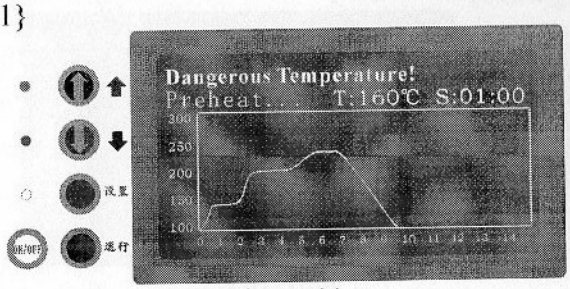


Figure 11

When the temperature dropped below the safe temperature, the alarm is automatically lifted, the device returns continue to work properly. You can also press {SET} to force quit the current work status.

ERROR Detecing Element

Equipment in the running of the work, if detected damage to the temperature measurement devices, automatic alarm, the screen flashes to show {ERROR Detecing the Element} {Figure 12}

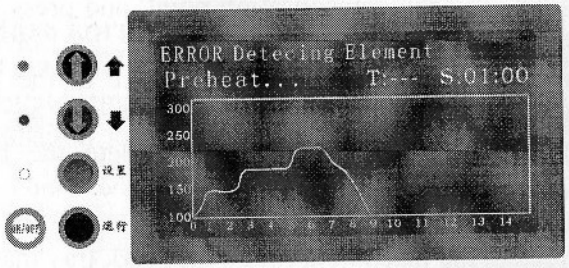


Figure 12

Shows, the buzzer at the same frequency alarm, the heating tube elements off, the fan turns on. According to {Run} key or {SET} key to exit the current working state. Such failures are generally back to the factory for repair or qualified maintenance personnel to replace the temperature

measurement devices.

ERROR Heating Element

Equipment in the work of running the operating current to detect less than a heating element, the device reported that the heating element failure alarm display flashes to show { **ERROR Heating Element**}, {Figure 13}

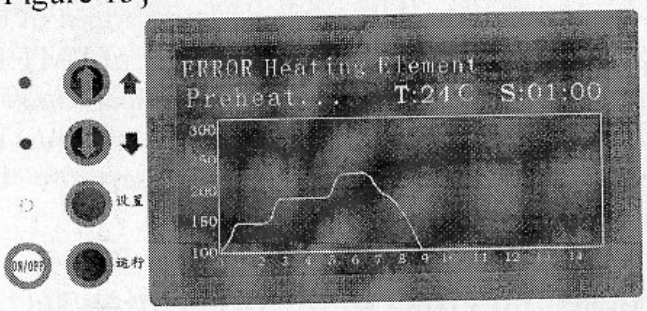


Figure 13

And buzzer alarm with the same frequency, the device automatically turn off to exit the current state. Can also press {SET} or {Run} button to exit and return to the standby screen. Such failures are generally back to the factory for repair or qualified maintenance personnel to replace the heating element.

Note: The fault alarm condition, if the fan does not turn on or heat pipe to continue working, should be immediately cut off the device power, and check the cause of the malfunction or repair in order to avoid unnecessary accident occurred.

Common alloy solder temperature curve adjustment parameters

Solder Type	proportion	Warm-up (℃/1min)	Heating (℃/1min)	Soldering ℃/30s	Preservation ℃	Cooling ℃
Low-temperature ,leaded	Sn43-Pb43-Bi14	100-120	130-150	200-210	170	150
Lead-free low temperature	Sn42-Bi58	100-120	120-130	180-200	150	150
Lead-free low temperature	Sn48-In52	100-120	120-130	180-200	150	150
Lead, mid- temperature	Sn63-Pb37	130-150	170-180	230-240	180	150
Lead, mid- temperature	Sn60-Pb40	130-150	170-180	230-240	180	150
Lead, mid- temperature	Sn62-Pb46-Ag2	130-150	170-180	230-240	180	150
Lead-free, mid- temperature	Sn96.5-Ag3.5	130-150	180-190	240-250	240	150
Lead-free, mid-temperature	Sn87-Ag3-Cu3-In7	130-150	180-190	240-250	240	150
Lead-free, mid-temperature	Sn91-Zn9	130-150	180-190	240-250	230	150
Lead-free mid-temperature	Sn95.4-Ag3. 1-Cn1.5	130-150	180-190	250-260	240	150
Lead-free mid-temperature	Sn99.3-Cu0.7	130-150	180-190	270-280	260	150
Lead-free high temperature	Sn94-Ag3-Cu3	130-150	190-220	240-250	240	150
Lead-free high temperature	Sn97-Cu3	130-150	190-220	270-280	250	150
Lead-free high temperature	Sn95-Sd5	130-150	190-220	270-280	250	150

Common alloy solder physical constant and characteristics

Solder alloy									Melting temperature	Mechanical properties			conductivity
Sn	Pb	Ag	Sb	Bi	In	Au	Cu	Zn	Liquidus (℃)	Push Strength (MPa)	Elongation (%)	rigidity (HB)	
63	37								183	61	45	16.6	11.0
60	40								183	60	45	16.6	11.0
10	90								299	41	45	12.7	8.2
5	95								312	30	46	12.0	7.8
62	36	2							179	64	39	16.5	11.3
1	97.5	2.5							309	31	50	9.5	7.2
96.5		3.5							221	45	55	13	13.4
	97.5	2.5							304	30	52	9.0	8.8
95			5						245	40	38	13.3	11.9
43	43			14					163	55	57	14	8.0
42				58					138	77	20-30	19.3	5.0
48					52				117	11	83	5	11.7
	15	5			80				157	17	58	5	13.0
20						80			280	28	-	118	75
	96.5					3.5			221	20	73	40	14.0
87		3			7		3		221	45	60	14	9.0
91								9	199				
95.4		3.1					1.5		217				
99.3							0.7		227				
95			5						240				

equipment installation and installation environment

1, the device should be installed at a convenient place where the exhaust pipe a short distance. High-current power supply with 25A three-pin sockets, grounding terminal must be grounded.

2, the exhaust pipe should be used φ120mm aluminum exhaust pipe, exhaust pipe exit height of the machine should be installed above the height of 1000mm or more. Conducive to the use of hot exhaust air chimney effect.

3, the short-term use of the machine from time to install the exhaust pipe. However, the machine should be increased back-end away from the wall (200mm) above.

4, the machine should not be placed on top of other items, especially flammable liquids. Such as "plate washer water, thinner, alcohol, methanol, gasoline," and so on.

5, the washing machine can cool off in the machine state. Machine with a clean cloth moistened with water or ethanol washer scrub the inside of the external water-based cleaning machine can be cleaned. To be completely dry before booting the machine to use.

6, the machine used at the beginning stages there will be some savor gas emissions, this is a normal phenomenon, in use for some time that the smell will disappear.

7, the machine behind the machine when not in use turn off the power switch. The software shutdown state, the machine control board is still working. Remove the machine when not in use for a long time, back in the original container packaged to save. To prevent moisture and small insects climb mice and the like inside the damaged machine.

8, reflow soldering small pieces in the back PCB or FPC board should be made using the high-temperature mica carrier plate, leaving at least four sides 30mm gap. To ensure temperature uniformity. Good reflow process to use the machine precision test Save. Machine built-in temperature adjustment of the curve used as a reference only. PCB reflow precision hot plate, be sure to open the system and the stage of time not to set too short, to ensure temperature accuracy and uniformity. Can be used as low temperature for a long time back and forth solder reflow

temperature profile of the precision of temperature-sensitive devices, such as "LED, laser, micro connector, soft package IC, the camera", etc. In the case of high temperature components, may be appropriate to improve the "welding section" to reduce the temperature reflow time.

9, in the open hot air systems, hot air vortex may occur swap area Pay attention to avoid this area. Without opening the hot air system may occur when the middle-temperature phenomena. At the same time will speed up the process temperature

Notes

1, used alone or more dedicated 15A outlet, do not share the same with other electrical outlet and power outlet must be grounded. Reflow oven should be 3mm high level or front of the machine placed to prevent the process of working with slide tray forward. Should be more than 200mm and the wall surrounding the gap.

2, Do not wet or high temperature environments reflow furnace.

3, Do not wash the body of water directly, so as not to damage the body's insulation.

4, Do not insert foreign objects such as wire or blocked air inlet and exhaust ports, to avoid burns or affect the ventilation and heat dissipation.

5, Do not inflammable and explosive dangerous goods close to the reflow oven; items with flammable gases can not be dried, to avoid danger.

6, avoid collision body to avoid damage to the heat pipe, heat pipes are found broken, you should turn off the power, and sent to repair.

7, at work or machine to a safe temperature is not cool, do not reach into the chassis, so as not to burn. "High temperature glass" part has a higher temperature. Not touch at work.

8, do not put the tablecloth on the reflow furnace used to prevent the air inlet blockage.

9, where infrared heating tube is damaged, must be equipped with special infrared heating tube factory.