SV550C Rework System

Operation Manual

SV550C
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Safety measures

When use and maintenance of LY products, the user must know and observe the following safety precautions.

1. When potential shock hazard- LY products, the maintenance procedures must be carried out by professional service personnel. After take apart equipment, some parts may be with electrification, so maintenance personnel is repairing the product to avoid contact with them.

2. To prevent accidental injury, we must abide by your country or region of OSHA and other relevant safety standards and guidelines.

3. Always ensure good ventilation in the LY product environments.

4. Using of chemical products (eg paste), the appropriate precautions are required, it can be found in the specific chemicals of the "material safety data sheet"; manufacturers of all security measures recommended must be adhered to it.

5. We must always follow these safety precautions:

A. In the presence of flammable substances environment, should be careful when using this product.

B. Prohibition in the air that containing the explosive nature when use of this product.

C. After recycling using for a while, the heating system and the nozzle will be a normal fever.

D. Do not touch the heating system and its nozzle holes which is hot. Also, keep the hands and other parts of the body away from direct heat flow, or may cause burns.
Overview

Thank you for purchasing the LY SV550C BGA / CSP Rework System. Area array (SMT Rework System) device to use more and more popular now, because circuit board repair and maintenance needs of a challenging work to handle these machines. Repair devices with overlapping visual optical systems, to ensure correct assembly of board rework of SMD process and high level of process control, thus ensuring the success of the whole process. LY SV550C is designed to rework SMT assembly components, can be used to repair a variety of other SMT components.

SV550C PACKING LIST

LY SV550C Packing list

1. LY SV550C Main Body Host machine* 1EA
2. S-VIDEO (Video cable) * 1
3. K-TYPE (test temperature line) * 1EA
4. LY SV550C software CD software CD * 1EA
5. Vacuum nozzle(size of 1)
6. Bottom nozzle (a)
7. Top nozzle (the standard contains three parts, the actual number of installed capacity refers to the receipt bill)
Feature

1. Heating System  LY SV550C system installed three heaters. Two of them are hot type, from the upper and lower to heat precisely target components and circuit boards, and the third is a local heater, according to the different systems you buy, which consists of two or six infrared heating zone. Local heating zone gradually heated from the bottom of all printed circuit boards. When heated in the rework station, which will prevent board deformation. The heater forms the core of LY SV550C, for these reasons, it can accurately and effectively produce a standard curve or near the lead-free soldering. Effective performance of the machine will not even be caused by air-conditioning effect.

2. Reflow temperature profile is divided into six zones, two hot air heaters can be independently set the temperature of each zone, because they can operate independently. the temperature curve of LY SV550C can be precisely adjusted, and for each of the panels or components to create a perfect temperature curve. Local infrared heater is set at a specific temperature, to be stability of the overall heat.

3. Curve Set

   LY SV550C is a basic feature of the curve set in the software functionality. Previously, this feature is only for the expensive machines. Now, LY SV550C can use this time-saving feature for users create a more accurately ideal temperature curve.

4. Semi-automatics ---- through a semi-automatic operation can be done on the components of the movement and displacement.

5. The flexibility of local heating area

   LY SV550C-has a large local heating area, if the PCB is less maintenance, with the right of the switch can easily turn off the two outside heaters.

6. Temperature sensors management-software for management and operation of the temperature
curve. By the input of temperature sensor, operate and observe the temperature curve. This unit of K-type thermocouple can be placed anywhere on the PCB. When the temperature curve running, LY SV550C will capture the record information coming from the thermocouple.

1. The installation

The following explains how to properly install and run LY SV550C

A. Connected to the main power line. There are two ways to connect lines

1) 3Ø 380V Sline
2) 2Ø 220V 3-wire

B. PCB installation bracket. Check whether the bracket is balanced.

C. installation of flat panel displays

D. power connection

Make sure the power has been off. Corresponding plug into the power outlet. Connected PC power supply, Note: Before connecting the power supply, ensure that the device voltage is correct. Improper power supply is easy to put these components broke.
E, initial power

Check the PC power supply is normal. When sure that all settings are correct after, press the "RUN" switch

After the gas quickly discharged from the bottom and top of the heater. If this occurs, note all the couplings have been installed.

Next, select the language, start the LY SV550C program.

2, the capabilities and applications of LY SV550C

2.1 Main machine

A. The main power switch - the main power switch to provide power only to the host. It does not control flat panel displays,

B. the emergency power switch (STOP) - when press the emergency switch, LY SV550C stops.

C. Instruments sensitive controls - With the first image, this button can adjust the light aimed at the instrument.

D. PCB light sensitive controls -- with the first image, you can adjust the light aimed at the PCB.

E. θ controls - placed in the process of parts, can use this button to adjust the parts of θ.
2. 2 Local heating

A. The function of local heater is heated in the block reflow when circuit boards, and to prevent circuit board due to uneven heat and deformation.

B. The reflow temperature in PCB surface is between 110 and 130 degrees Celsius that is the most safe and effective. To obtain this effect, set the local heater temperature reached 150-180 degrees Celsius. Temperature in the LY SV550C software "Settings" column set. Note that these only indicate the temperature of the infrared heating plate surface temperature. Actually the temperature distributed to the PCB is lower.

C. If the PCB is less than the total area of local heating, the right hand side of local heating of the switch box can turn off three external heater.

Figure 2-3
3. LY SV550C software features and usage

3.1 Welcome Screen

1. Turn on the power to enter into the control program.
2. In the language selection screen select the appropriate operating system to operate. (Example: Chinese)
3. Click on the "Chinese" → "Into the" main interface → parameter changes.

![Main Interface Diagram]

3.2 Parameter settings and download

Click: Time, TOP, Bottom, IR, alarm at the space of temperature
In turn set the parameters of the input value (this parameter is entered automatically saved in the PC)
Note: "Alarm temperature" When the actual temperature is greater than the end cap SV550C, it will automatically stop the heating process, which effectively protect the PCB and the chip is not prepared to burn hot.

3.3 Curve Selection

Click on the "<" ">" Select the required parameters and BGA solder
Select and click 'parameters to download'

3.4 Current parameters

The main interface point "the current parameters" can query the current run of the curve parameters.

3.5 Start running

At this point we can choose the lower left corner of the screen shortcut menu "Fast Sel" pop up
"Startup" and switch interfaces
Or in the main interface, directly select "Run Monitor" to pop "start" and switch interfaces
A. "Start" button is pressed, the program starts running
B. "Stop" button is pressed, all the process stop running.
C. "On the vacuum" button is pressed vacuum suction pen can be adsorbed to produce chips
D. "Open cooling" button is pressed to open cross-flow fan for cooling the PCB and chip
E. "Process hold" button is pressed, the temperature curve in the "back 2 zones" delay, until once again click on the "process hold" button to stop the delay

4. Repair program
The complete steps of rework BGA is like this:
The first step: PCB and BGA baking.
   Baking purpose is to remove PCB and BGA moisture, because exposure to PCB and BGA easy to absorb moisture in the air. At high temperatures, moisture from the PCB and BGA in the overflow, resulting in PCB and BGA burst bubble phenomenon.
   In general, PCB or BGA components exposed to air for 24 hours or more, you need to bake, baking temperature is generally 80 ~ 120 ℃, time 24 to 16 hours.
   Note: PCB and BGA baking times can not exceed four times.
Step Two: Programming on the SV550C, to determine the temperature - time parameters. Of the test profile curve. See 4.1 testing.
The third step: split the BGA.
   Open the parameter settings, download parameter , Run like this: press 'start' after the heating start --- --- --- after the end of the heating nozzle on the rise, away, creating a vacuum suction pen --- - suck away BGA - cooling - - end of the process.
Step four: Ball. See 4.2
Step five: welding BGA.
   Open the parameter settings, parameter download.
   Run like this: bga on a good bit, see 4.3.
   Press 'Run' after the beginning --- --- heat after heat - start cool - --- end cooling - removing heat on the head end of the process ---

4.1 To set the temperature - time parameters
4.1.1 Preparation: fixed temperature probe.
   Fixed temperature probe in two ways. One way: permanently fixed way: temporary fixed.
   A. One way
      Take a template and parts, the parts should be connected with the circuit board, and then identify the target beads.
      Drilling procedure
      If the beads inside the target line, it need to drill the hole through the bottom plates and beads
To put a thermocouple into the hole, do not cross the line, if they touch with each other, the result is read out at their first point of contact data, which will read an incorrect result.

Glue or hot red tape fixed

Carefully solder a small part of the welding in the vicinity of the ball.

The thermocouple as close as possible to push the ball into the paste
Electricity ferrochrome melting solder paste (use to just put ointment and thermal coupling where the tip),

High temperature thermocouple wire fixed tape the rest of

Use high-temperature adhesive to the corners of the fixed parts on the PCB, which will ensure that the component will not slip during the test curve.

B. The second way

Remove a BGA.

Clean up the BGA solder pad on the PCB and the BGA component solder pad;

High-temperature tape with put the thermocouple attached to the pad, the temperature measurement point touch with pad.

Put the BGA components attached to the PCB pads, with high temperature tape.

4.1.2 Test temperature curve

The thermocouple circuit board with components be placed on SV550C bracket.
Select the appropriate nozzle and screw it on. Experience: nozzle diameter, length and width dimensions than the size of large BGA 2mm.

The thermocouple on the PCB panel socket before inserting SV550C.

Open the file, select the 'solder BGA', download; press 'start'. Adjust PCB, so that the middle component nozzle living. Enter into the test interface.
press 'start', start measuring curve.

After the program, press the 'end' analysis of the curve.

Test temperature requirements:

Lead Soldering Temperature: 183 °C Time 60-120 MAX °C 220-230
Lead-free soldering temperature: 217 Time 40-90 MAX °C 240-245

Such as temperature-time curve is not satisfactory, then the amendment. Increase or decrease the top of the heater temperature and time, increase or decrease Reflow the bottom of the heater temperature and time.

4.1.3 Temperature confirm

To confirm the temperature curve, PCB board and to be cooled to room temperature as high.

Measured once again.

With the previous comparison. After confirming the temperature curve ok, save.

4.2 Ball

The BGA component on the tin addition to the net. Washer clean with water.
Into the fixture, brush a thin layer of BGA solder paste to help. Cover fixture. Clean water with steel washer

Pour into the solder balls.

Gently shake the jig.

Gently removed fixture cover. Come up with BGA components.
Ball cure. Hot air gun can be cured. Hot air gun curing, hot air gun to even move, to prevent heat damage to the BGA component.

Welding station curing

Neat ball after curing, the same height.
4.3 pairs of bits

The PCB into the SV550C stent. Manually adjust the distance out of the optical lens position, rotate the light button to enlarge the image, the effect of PCB pads adjust to the most clear image.

BGA placement

Adjust the best focal length, so that parts can be placed to fill the screen. Then lift, so that the BGA ball can be seen most clearly, the use of the board on the XY axis of the clamp body fine-tuning knob to the right parts, and PCB pad bits, if desired, can also use the top of the heater on the button to adjust the angle \( \theta \) of position adjustment, adjusted to coincide.

Experience: optical lens can be moved front, back, left and right side to observe the four corners of the BGA can be quickly adjusted. Do not look at each point.

4.4 Rework process instance

PCB and BGA have been baking. Temperature - time parameters of the saved file.

4.4.1 BGA demolition

The panels into the SV550C-stent
Open the file, download,
SV550C will automatically reflow (experience: when the end of heating, using clamp touches the BGA, see the tin whether is melted completely) when the end of the cycle finished, it need to remove the hand-held suction pen components.

Use solder wire to clean PCB. The electric iron adjusted to a certain temperature. If you have just moved element
Began to clean, it is necessary to lower the temperature, because the board still sweltering. Taken to the suction line with a soldering iron tin gently squeeze. Desoldering wire pick up the excess solder.

Washer to clean the pad with water.

4.4.2 BGA components clean up after planting the ball. (See 4.3)
4.4.3 BGA solder
Welding preparation: Coating help solder paste - the PCB BGA pad coated with paste special help, or coated with solder paste - solder paste coated pads on the PCB
or BGA components in the coating of tin on the solder ball cream
Coating help solder paste
Pad on the PCB coating a thin layer of special help BGA solder paste, solder paste at each point to be helped, the amount of no more.

Coated with solder paste
Coating on the PCB solder pad, with a small steel on the PCB, solder paste printing.
The BGA component solder ball coated with solder paste

The panels into the SV550C stent, to open the file, download SV550C will automatically reflow.

5, maintenance
5.1 Preventive Maintenance
SV550C axis and the slide is made of high carbon steel precision. This substance can rust. As the whole machine skateboards have to spend the same material, so from time to time when it needs lubrication. This can
make all the parts are running smoothly, and so they do not rust. These machines are used in the electronic environment, do not rub too much on oil. Oil as likely to get repair parts are on. If in doubt, please refer to placement machine, screen printing machines, AOI, or other similar machine lubrication and maintenance methods.

5.2 Image Adjustment
In a few cases, such as crude shipment, the aligned prism may need calibration.

Clamping correction film.

Draw a calibration sheet.

Pull out the lens optical alignment, rotate the light button to see the effect shows whether the image up and down OK.

From the point of view on the monitor until the next chip on the cross line overlap correction. If the difference between the larger need correction. When correction, it can not be moved towards X, Y sides.

If it is misalign, it needs to overlap correction. First release the fastening screws, press the adjustment screw, then twist the adjustment screws
slightly, from the point of view on the monitor, the calibration chip cross lines overlap. OK, after adjustment, tighten the screws firmly fixed.

6 TROUBLES SHOOTING
A, the following steps for the operator to perform a basic visual inspection system components (such as loose fitting, equipment misalignment, etc.). If you have any questions, please contact the FSE or contact your local dealer.

1. Check AC power input
2. Are Circuit Breakers tripped?

1. Is Knob open at Flow meter?
2. Alarm temperature whether accommodation?

7. Temperature setting

Northbridge: lead free

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