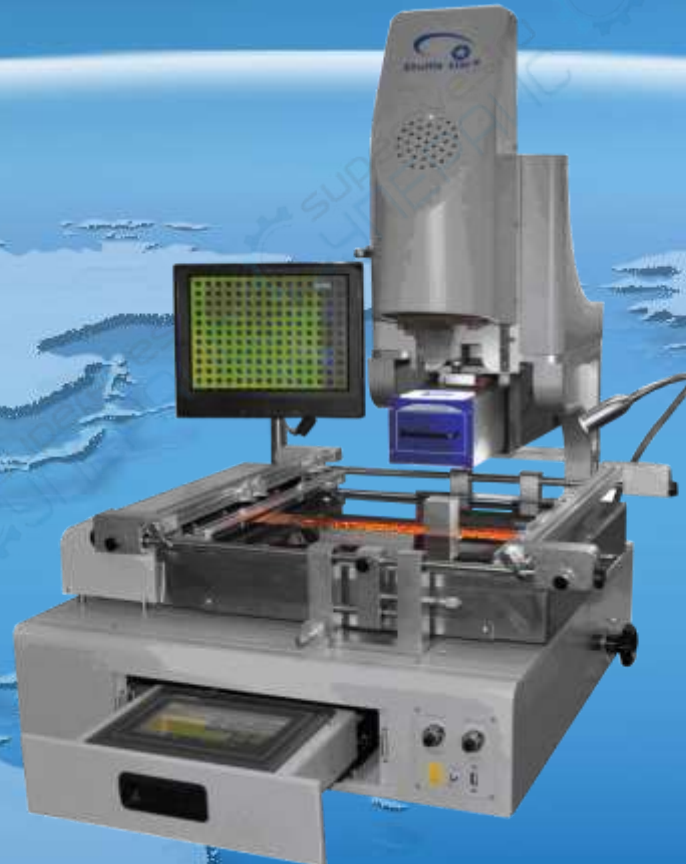




**Shuttle star®**

# ***BGA Rework Station SV-650 Introduction***



# ***BGA Rework Station SV-650 Introduction***

## ***Directory***

***1、 SV-650 General Introduction***

***2、 SV-650 Hardware Parts***

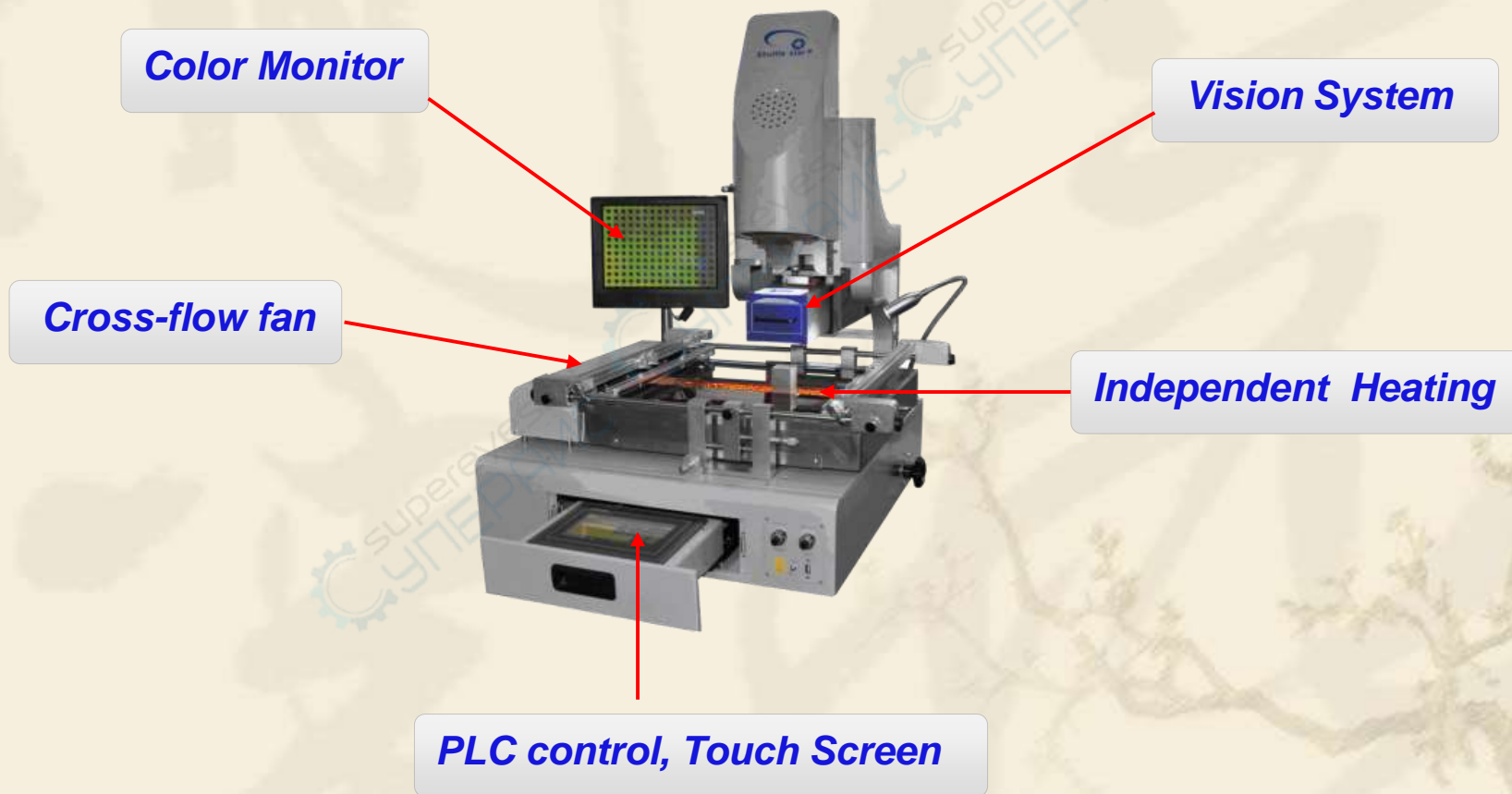
***3、 SV-650 Software Introduction***

***4、 SV-650 Precision***

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# 1. SV-650 Profile—Parts Introduction



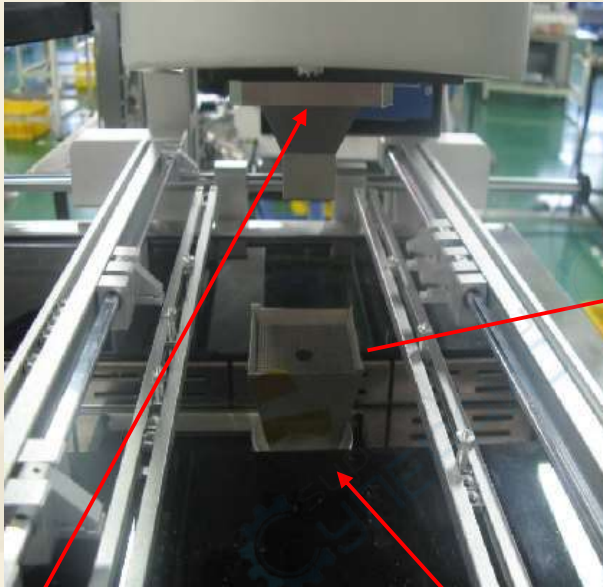
# 1.SV-650 Profile—Features

- Hot air heater head and mounting head are designed 2 in 1, have both the auto soldering and mounting function;
- Three heaters( top/spot hot air heater, bottom IR heater) heating independently, with auto protection function while heating abnormally ,time and temperature can be displayed digitally on touch screen;
- Top heating system and cooling system are designed 2 in 1, temperature controlled accurately and evenly.
- Bottom heater is IR wave gilding heater plate, with high temperature glass, temperature increasing and decreasing rapidly; profile setting accurate to protect the PCB from deformation, easy to solder, energy-saving and environment friendly.
- Powerful cross flow fans cool the bottom heating area rapidly with stable speed;
- Color optical system with functions of split vision, zoom in/out and micro-adjust, equipped with aberration detection device; with auto focus and software operation function,1.3 million pixel high-definition camera.
- 15" high-definition LCD monitor.
- Both top and spot hot-air heating head can move Z axis automatically, Optical vision system can move along with X、 Y axis automatically, install damping device ,easy operation.
- Large movable bottom IR heating area, PCB clamps can be adjusted along with X & Y table flexibly, the max PCB size it can handle up to 550\*500mm;
- Embedded industrial computer, touch screen interface, PLC control, real-time temperature curve display, able to display temperature curves and practical curves as the same time: can analyze the practically-tested profile, and compare them with the history saved profiles;
- Built-in vacuum pump, 60 ° rotation in  $\phi$  angle, mounting nozzle is micro-adjustable;
- 8 segments of temperature up(down) and 8 segments constant temperature control, profile saving is unlimited in the industrial computer;
- Suction nozzle can identify material and mounting height automatically, and can control the air pressure within a small range ;
- Big size splint, equipped with deformation-proof supporting device, suitable for the accurate rework of all kinds of PCB;
- This product has patents: (1.top heating apparatus ZL 2009 2 0262216.X utility model; 2. top heater component t ZL 2009 2 0162612.5 utility model; 3.suction nozzle device ZL 2007 2 0127185.8 utility model; 4. top heating apparatus ZL 200910238919.3 inventive patent.)



## *2.SV-650 Hardware Compose—Heating System*

**Heating system: Three independent temperature zones, (top hot air heating, under hot air heating, and bottom IR heating), temperature and time can be displayed digitally on the touch screen, able to rework CGA**



**Top heater**

**Bottom IR heater**



**Under heater**

## 2.SV-650 Hardware Compose—Heating System

**Nozzle:** Different-sized nozzles for different-sized BGAs, for particular component, nozzle can be custom-made.



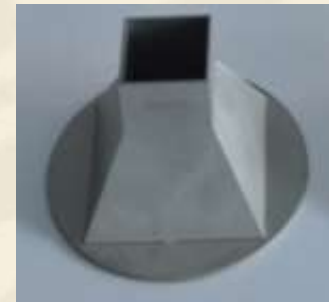
44x44mm



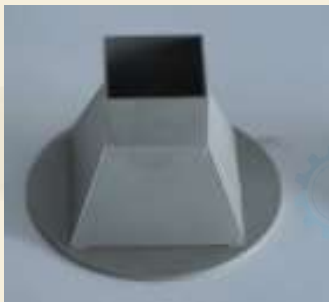
38x38mm



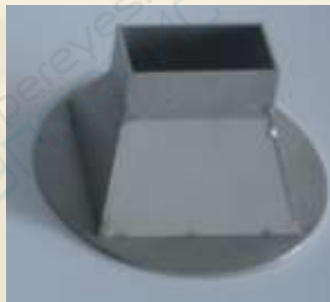
31x31mm



24x24mm



28x28mm



44x28mm



18x8mm

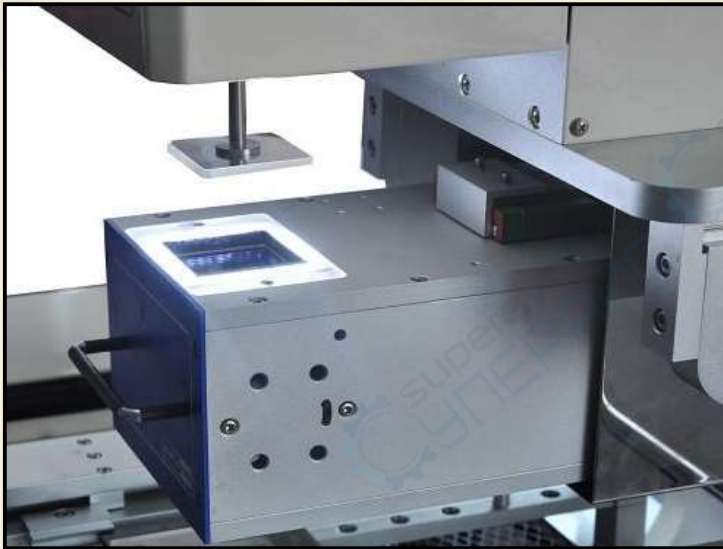


7x7mm

## 2.SV-650 Hardware—Alignment & Placement System

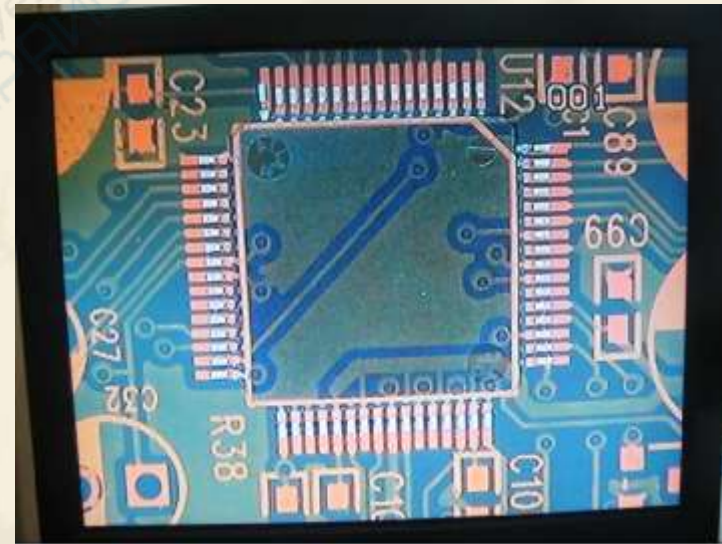
**Alignment & placement:** Color optical system with functions of split vision, zoom - in and micro-adjustment, equipped with aberration detection device; with auto focus and software operation function, 1.3 million pixel HD Camera, 27X optical focus, applying the prism optical principle to make both up and down image clear and accurate.

Alignment system



Can be moved all round,  
large visual area

Alignment image



Blue image for IC,  
yellow image for PCB

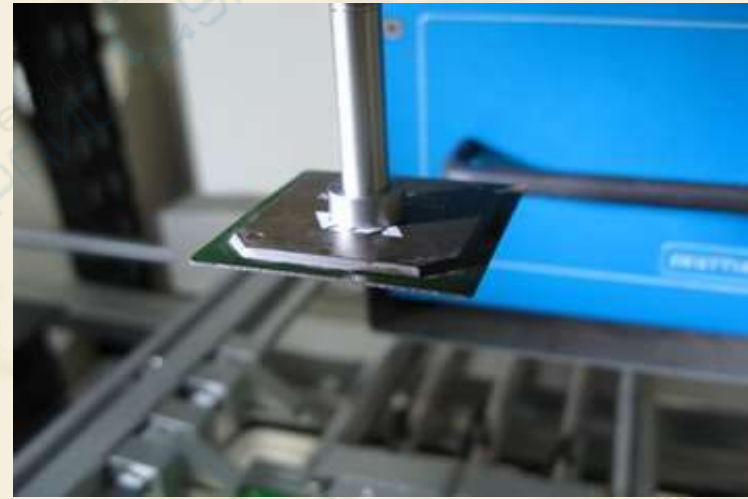


## *2.SV-650 Hardware—Alignment & Placement System*

*Hot air head and mounting head are designed 2 in 1, and have both the auto soldering and mounting function, easy to operate.*



***BGA placement***



***BGA Removal*** 拆焊



## 2.SV-650 Hardware—Alignment & Placement System

**Pressure from the suction to the IC can be micro-adjusted, minimum pressure less than 30g,ensure BGA not leak lead while heating.**



压力测试



配套吸杆

## *2.SV-650 Hardware—clamping Device*

**Clamping device: Specially designed with flexibly-moving clamping device to clamp all kinds of PCB, also equipped with particular clamps for laptop motherboard**



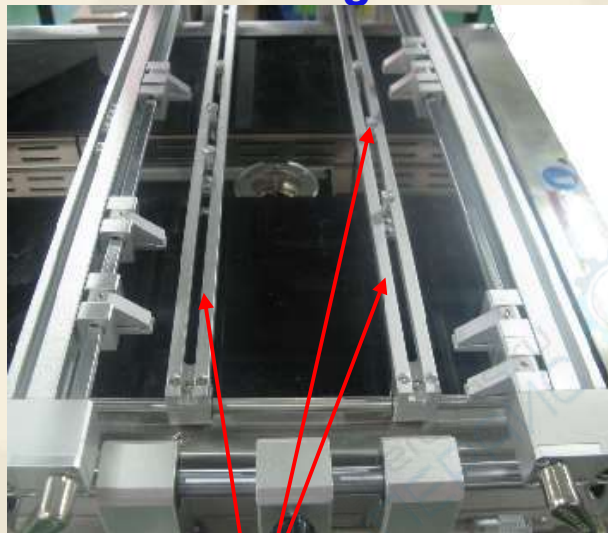
***flexibly-moving  
clamping device***



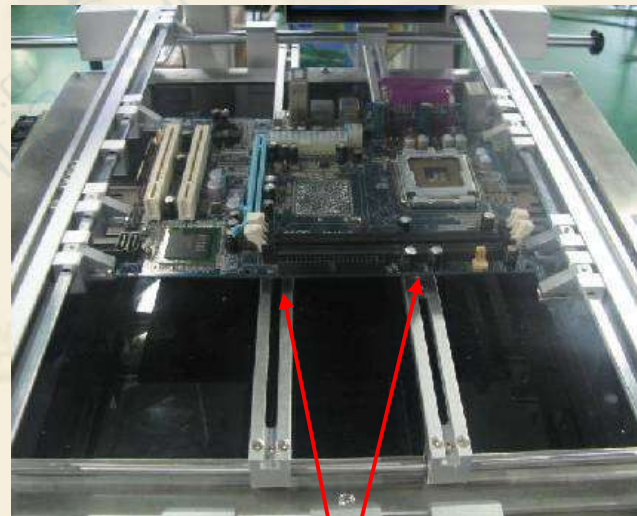
***Particular clamps for  
laptop motherboard***

## 2.SV-650 Hardware—clamping Device

**Clamping device: Special anti-warpage design ,the support pillars can be adjusted up & down to support the board to prevent the PCBA from sinking while heating.**



**Anti- Warpage support**



**Anti- warpage support working diagram**



### 3.SV-650 Software Introduction—Adjustment Interface

**Control interface: RW-SV650 with touch screen interface, PLC control; able to display real-time temperature curves and detecting temperature curves at the same time**



**Startup screen**



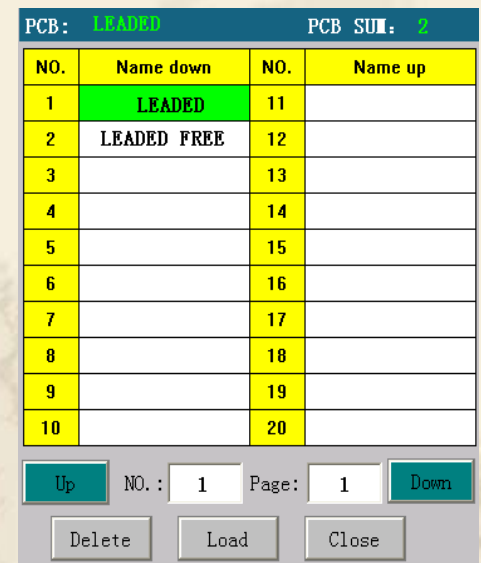
**Main operation screen**

### 3.SV-650 Software Introduction—Adjustment Interface

**Adjustment interface :** Able to arrive at three independent temperature zones, temperature and time can be displayed digitally on the touch screen, 8 segments of temperature up (down) and 8 segments constant temperature control, more than 50000 groups of profile can be stored.



**Parameter Setting**



**Profile Name Setting**



### 3.SV-650 Software Introduction—Analysis Interface

**Analysis interface: able to display 1 practically-tested temperature curve at the same time, and auto-calculate the preheat time, reflow time and max temp, so to control temp. of every point of BGA overall; can create profile for every kind of BGA accordingly.**



*profile analysis column*



*Analysis for points*



### 3.SV-650 Software Introduction—Instant Regulation

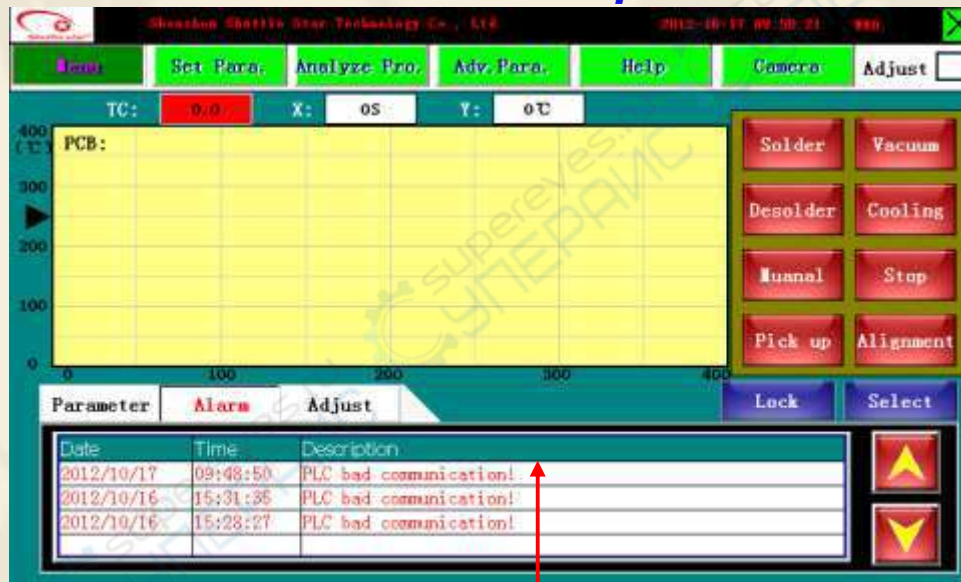
**Instant regulation:** During heating, if find the TC temperature too low or too high, parameters can be changed while it is heating under the Instant Regulation function to avoid repeat heating.



**Click “L” or “T” in the down column to change parameters while heating**

### 3.SV-650 Software Introduction—Alarm Interface

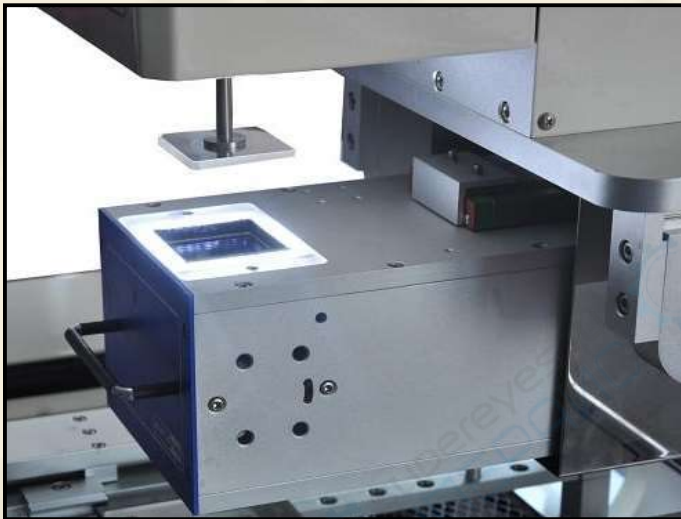
**Alarm Interface:** Under this menu, it points out troubles and error while machine is working. By this caution, we may know what problem the machine faces and make quick trouble shooting.



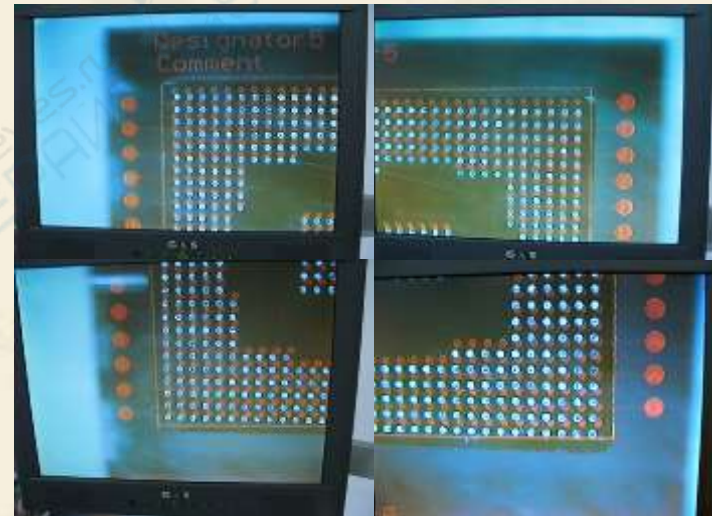
**Abnormal alarm event description**

## *4.SV-650 Accuracy Testing —Placement Accuracy*

**Optical Alignment System:** Color optical vision system, with auto focus, 27X optical focus; 220X digital focus; able to rework BGA sized up to 70mm\*70mm



*Alignment through camera*



*Color image in display*



## 4.SV-650 Accuracy Testing —Placement Accuracy

**Alignment accuracy: auto servo system controls placement, desolder and solder; placement accuracy reaches 0.01mm, which is suitable for the smallest IC with pitch of 0.30mm**



**Desolder & Solder**



**Placement**

## 5.SV-650 Specification

Max.control area	120mm x 120mm
Max.PCB thickness	4mm
Max.BGA size	70mm x 70mm
Min.BGA size	1mm x 1mm
Max. BGA weight	80g
<b>Vision System Specifications</b>	
Max. visible area	40mm x 40mm
Min. Pitch	.30mm
Micrometer Adjust Range	Front/Rear $\pm$ 10mm Left/Right $\pm$ 10mm
Rotation Angle	60°
<b>Thermal Specifications</b>	
Max.temp.for hot-air heater	350° C
Max.temp.for IR heater	400° C
Temperature control	8-Stage Programmable Temperature Settings
Top heater power	1200W
Spot heater power	800W
Bottom IR heater power	3600W
<b>Dimensions &amp; Power Requirements</b>	
Machine Dimension	850mm (L) 750mm (W) 630mm (H)
Weight	Appox 92Kg
Power Supply	Single Phase, 220VAC, 50/60 Hz,

# 6. SV-650的专利与获奖

