

Preface

- A copy of this "Operating Instructions" is included with the machine.
Please keep this manual for reference at all times.
- Please read this manual carefully before operating this equipment.
- Due to the update of technology and the special requirements of the product, the actual product may differ from the manual, please refer to the actual product, we will try to add additional instructions.
- When the equipment is in normal use, please reserve a certain amount of space in front of and behind the equipment as space required for operation and maintenance. In addition, please do not set up the equipment in such a way as to obstruct the space for heat emission.
- Equipment use environment: temperature: 5 ~ 25°C , relative humidity: 20 ~ 95%, not subject to direct sunlight, no dew, no splashing of water, oil, chemical liquid place.
- Operation and maintenance of this machine technicians must be able to use the computer.
- The computer configured on this machine can only be used for this machine, it is strictly prohibited for other uses, it is strictly prohibited to carry a virus of other mobile memory into this machine, so as not to damage the control system.

- The randomly configured U disk should be strictly prevented from virus intrusion, and it is strictly forbidden to use it on other computers.
- For personal safety, when the equipment is running or standby, please do not open the front door and chain as well as the station head guard without taking any safety measures, and it is strictly forbidden for clothing and limbs to be close to the moving parts of the machinery, otherwise, it may bring accidental injury to the person.
- Repeatedly switching the power supply can be one of the reasons for the equipment to produce malfunction. After power OFF (cut off), please power ON (turn on) again after 20 seconds or more.
- Do not subject the equipment to impact or strong vibration, as this may cause malfunction.
- When you cut off the power of the device, please follow the following order for the system exit/shutdown process. If the power is cut off or restarted directly without executing this process, the data will not be saved intact and the hard disk may be damaged at the same time.
Exit/shutdown process: Exit the application, exit Windows, and power off the device.
- If the use of the device is suspended, please store the device in the following place: the ambient temperature is (0-40)°C, the relative humidity is (20-95)%, not subject to direct sunlight, no dew, no

splashing water, oil, chemical liquid place. In order to prevent dust, cover measures (such as phi cover) can be considered, but moisture-proof.

- Please contact us if you do not understand, do not operate blindly.

Note: Please pay attention to the above matters!

Machine overview:

S-7000 Odd-Form Insertion machine is a high speed, high precision and high performance equipment, which is a insertion equipment developed by our company specially for large capacitor-resistor and other components that should not be inserted with ordinary insertion machine. It integrates four insertion heads, which can selectively realize selective insertion such as vibration reel bulk material, vertical braiding tape, vertical braiding tape to axial, axial braiding tape. The insertion head is responsible for the acquisition of components, by the movement of X, Y mechanism, to achieve precision insertion in each area of the PCB board, the angle of insertion is achieved by the steering axis control. The series control software and operation software are also developed by our

company, and all operations are controlled by one computer.

This series of machines has the following advantages:

△ full computer control, full Chinese version of the operating system, based on the Windows platform, easy to operate, fast, easy, easy to learn.

△ use machine vision technology, online automatic programming, automatic correction, automatic identification of MARK points, improve the degree of automation.

△ adopt AC servo system to optimize the line, eliminate the instability caused by the line fault, and achieve a stable high speed and energy saving.

Software operation

1. Safety inspection before the operation.

Please note: when the machine is newly installed or long-term idle state, before the power and ventilation of the machine, must carefully do the following safety checks:

1) Check whether the power supply is the specified rated voltage.

- 2) Check whether the main power supply is connected to the machine, the insurance is intact, and the branch circuit breaker is closed.
- 3) Whether the equipment is properly grounded.
- 4) Determine that no irrelevant items remain in the electric control box and on the movable parts of the machine.
- 5) Whether the conveyor belt and synchronous belt fall off in transportation.
- 6) Check whether the heavy load and high-speed operation mechanisms such as wire rod, slide rail and Auto Insertion shaft are well connected.
- 7) Push and pull X, Y, H1, H2, H3, H4 and D organizations by hand to see if the activity is moving smoothly.
- 8) Check whether the limit detection and limit mechanism are dislocated.
- 9) Check whether the emergency switch is pressed down, and check whether the main gas source and power switch are in OFF state.
- 10) Check whether the wiring plug and air pipe between the computer, electric control box and main and auxiliary machine are well inserted.

2. Operation interface description, divided into the following three areas.



1) Production operation area: This area controls the operation and production of the machine (as shown in the figure above):

Button and selection explanation:

Start: start the Auto Insertion program, each part of the machine to complete the Auto Insertion task.

Stop: The machine stops working and enters the standby state.

Zero: Return the workbench and turntable to the starting zero position.

This is a necessary move before the first shift and Auto Insertion.

Alarm reset: When the machine encounters a Auto Insertion error in the production process, it will stop working and display the error information

in the shutdown information. When the information is repaired, click the alarm reset and start the production.

Production operation mode:

1. Continuous: that is, the continuous execution of the action, directly complete the production quantity.
2. Single step: that is, to complete a complete Auto Insertion cycle action.
3. Step-by-step: decompose the Auto Insertion action into several steps, completing only one step at each startup.

Mark check

1. Detection: perform MARK point correction with the MARK point correction command in the PA sequence command.
2. No detection: No MARK point correction command is executed.

Load the PCB board:

1. Load PCB board: search the board up the computer according to the normal process.
2. Not loading the PCB board: Skip the process of loading the PCB board, and directly start the Auto Insertion, suitable for manual template placement.
3. Just over the board: no Auto Insertion action, only flow through the PCB board.

Material feeding selection:

1. Feed Auto Insertion: in the Auto Insertion process, the head first to take the material and then Auto Insertion.
2. No feed presentation: perform futile insertion action.

Discharge selection:

1. Automatic feeding: in the process of Auto Insertion, if the Auto Insertion fails, first move to the feeding position, and then to the feeding position to replace the material feeding
2. Manual feeding: in the process of Auto Insertion, if the Auto Insertion fails, stop the alarm, manually remove the alarm, to the feeding position

Times of discharge:

1. One time; if the Auto Insertion fails, the number of re-insertion is 1. Whether the insertion is successful or not, the Auto Insertion in the next position is skipped.
2. Two times; if the Auto Insertion fails, the rate of re-insertion is at most 2 times. No matter whether the insertion is successful, the Auto Insertion in the next position is skipped.
3. Two times; if the Auto Insertion fails, the number of replacement is up to 3 times. Whether the replacement is successful or not, the Auto Insertion in the next position is skipped.

Material feeding test:

1. Detection: In the process of feeding, it is necessary to detect whether

the material is accurately delivered to the position, and then notify the Auto Insertion head to collect the material

2. Non-detection: the station in the process of feeding, when the implementation of the material transport action, do not detect whether the material is in place, all notify the Auto Insertion head to take the material

End of the whole board work: after inserting the current board, stop the Auto Insertion work;

The speed of manually moving the workbench.

Running speed

Adjust the speed of each axis during the Auto Insertion process.

生产操作

启动

停止

归零

报警复位

紧急停止

生产模式

连续 单周 单步

加载PCB板

加载 不加载 只过板
Pcb Pcb

送料检测

检料1 检料2

检料3 检料4

手动移动工作台速度

Mark检测

检测 不检测

送料选择

送料插件 不送料演示

抛料选择

自动抛料 手动抛料

抛料次数

1次 2次 3次

整板结束
 安全门

2) List of Auto Insertion sequence

Without reading the plugin data, display the company Log,

when Auto Insertion data, display insertion data;

Display the CCD image when the MARK point correction is encountered during production;

3) Operation information area

This area displays the current production information.



安全门被打开，机器暂停运行

运行信息

程序名称: 预设产值: 板

1#: 3#:

2#: 4#:

已加工(颗): 已加工(板):

F3000-4-02 ver1.0.0.1

Downtime information

Showing the shutdown during production, it may be alarm information, it may have completed the production task arranged.

Program name

Display the program name that is about or has run. It changes with "opening" different programs.

Preset output value

That is the number of PCB boards to Auto Insertion in production. It stops automatically when the quantity value is reached.

Single component time

Display the average time spent on inserting an item

Single board time

Displays the average time spent after inserting a PCB board

1 #, 2 #, 3 #, 4 #: Display the number of successful and thrown items of each Auto Insertion head

Materials completed: displays the number of completed Auto Insertions

Processed board: displays the number of completed Auto Insertion units

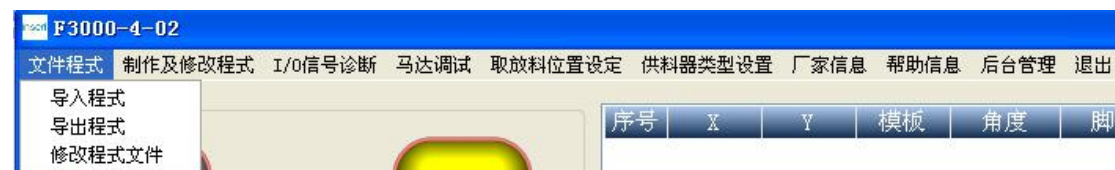
1. Menu bar instructions



graph 4

1) File program

Import program



graph 5

Click on the file import program and it will popup with all the file names

The dialog box (as shown below), then click the program name that you need to "open" inside, and then click "Open", the machine accepts the "task" that will perform the program, and overwrites the previous

program.



Export program

Click on the file program import program, it will pop up a dialog box to please choose the file name, (as shown below), you can also enter the file name you need in the file name bar, click "Save" .



Modify the program file

Click on the file program to modify the program file, and it will pop up a dialog box to please select the file name (Figure 6). Then click on the program name that you need to "Open" inside, and click on "Open" again,

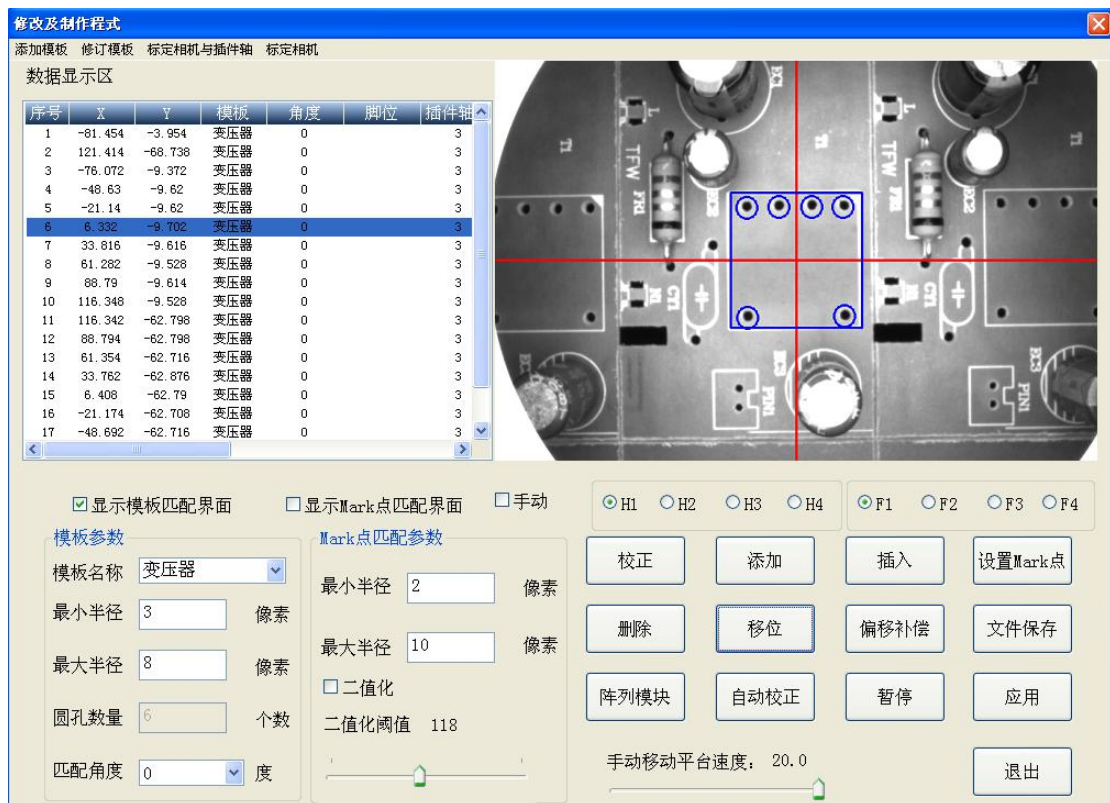
and it will be in the office with. Open in the xls format.

2) Make and modify the procedures



Make and modify procedures Create or modify the Auto Insertion data with the help of the camera.

Click to Make and Modify the program to make and modify the program, and it displays the following dialog box.

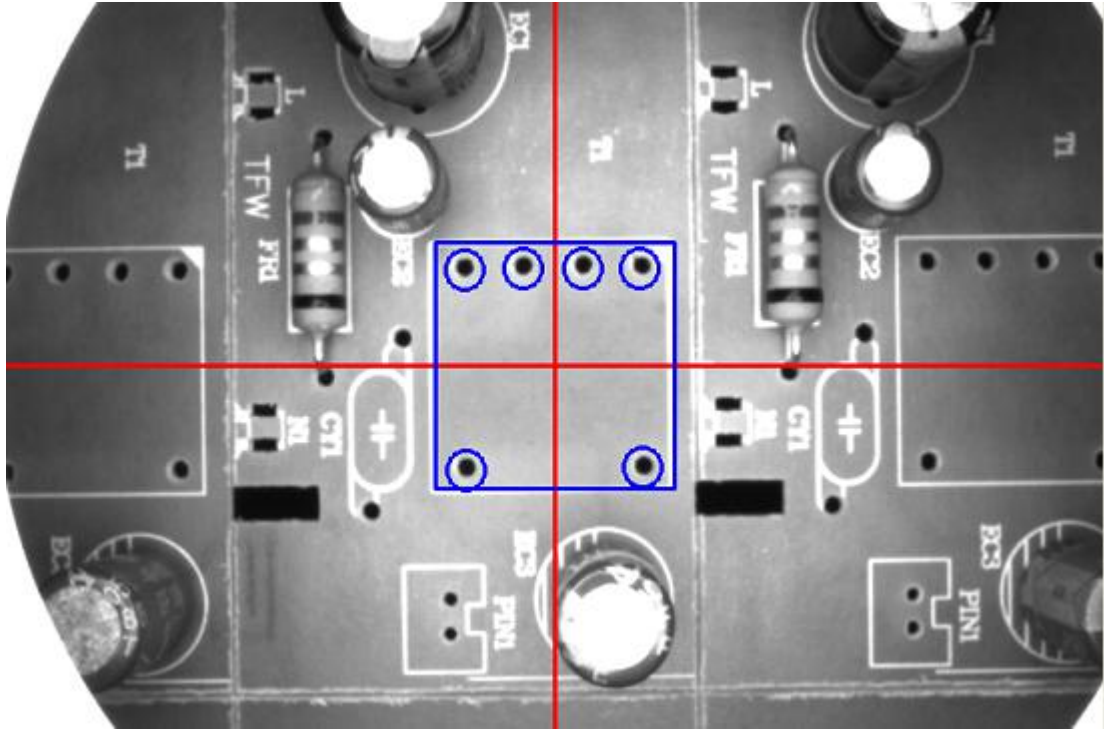


I Data Display Area: display the Auto Insertion data already generated

数据显示区

序号	X	Y	模板	角度	脚位	插件轴
1	-81.454	-3.954	变压器	0		3
2	121.414	-68.738	变压器	0		3
3	-76.072	-9.372	变压器	0		3
4	-48.63	-9.62	变压器	0		3
5	-21.14	-9.62	变压器	0		3
6	6.332	-9.702	变压器	0		3
7	33.816	-9.616	变压器	0		3
8	61.282	-9.528	变压器	0		3
9	88.79	-9.614	变压器	0		3
10	116.348	-9.528	变压器	0		3
11	116.342	-62.798	变压器	0		3
12	88.794	-62.798	变压器	0		3
13	61.354	-62.716	变压器	0		3
14	33.762	-62.876	变压器	0		3
15	6.408	-62.79	变压器	0		3
16	-21.174	-62.708	变压器	0		3
17	-48.692	-62.716	变压器	0		3

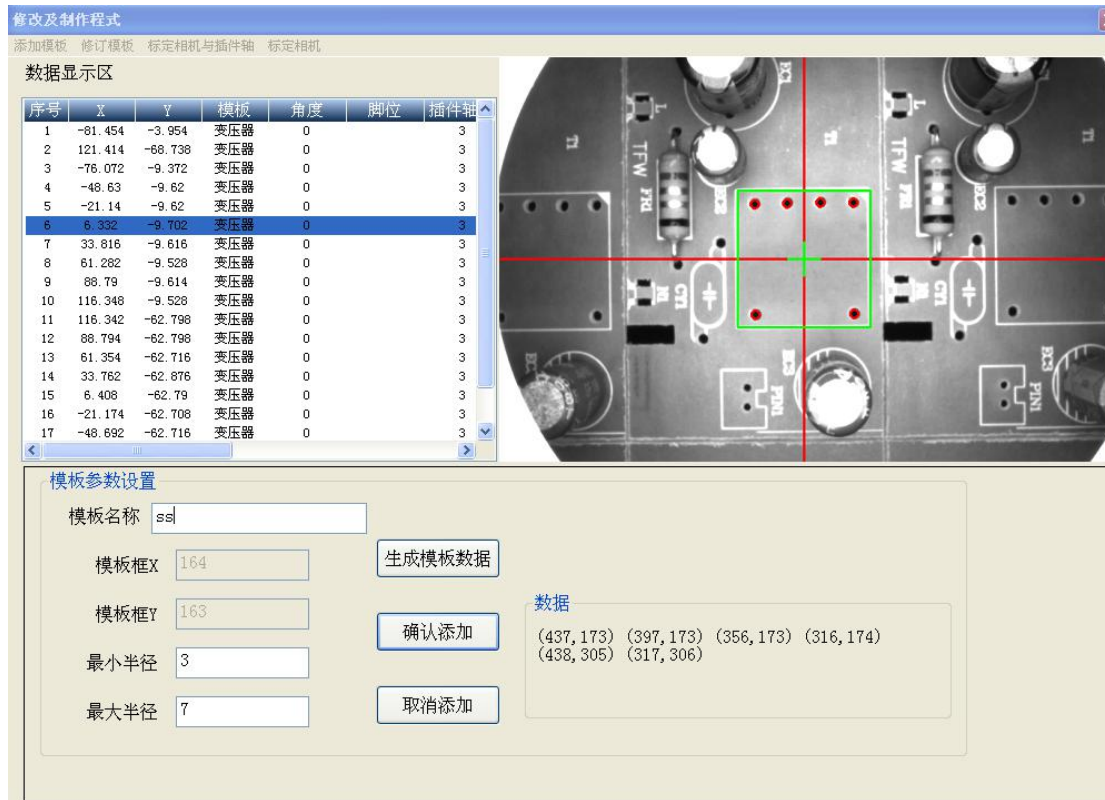
II CCD image area: display the position where the camera capture image has had the Auto Insertion match, to help generate the Auto Insertion data, modify the matching difference, and the image responds in real time.



Menu bar:

添加模板 修订模板 标定相机与插件轴 标定相机
新建显示区

Click Add Template to pop the Add Template dialog:



Method of operation:

First move the template image to be generated to the camera view through the keyboard direction key.

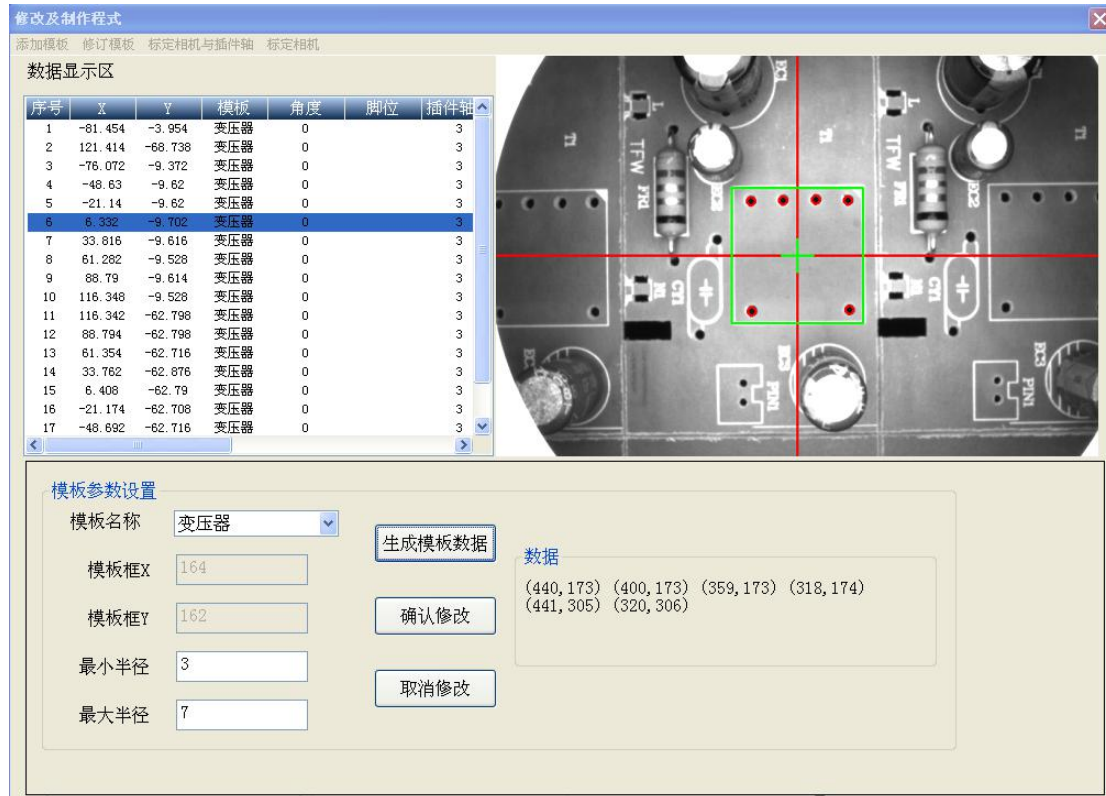
Then, move the mouse cursor to the green rectangular box. When the cursor is on the edge of the rectangular box, press the left mouse button and move the mouse to change the size of the rectangular box. When the cursor is in the middle of the rectangular box cross, press the left mouse button and move the mouse to change the position of the rectangular box.

Now through the above operation, make the rectangular frame just frame down the border of the template, generally the position of the PCB board has the outer frame identification.

Adjust the minimum and maximum radius and click to generate the

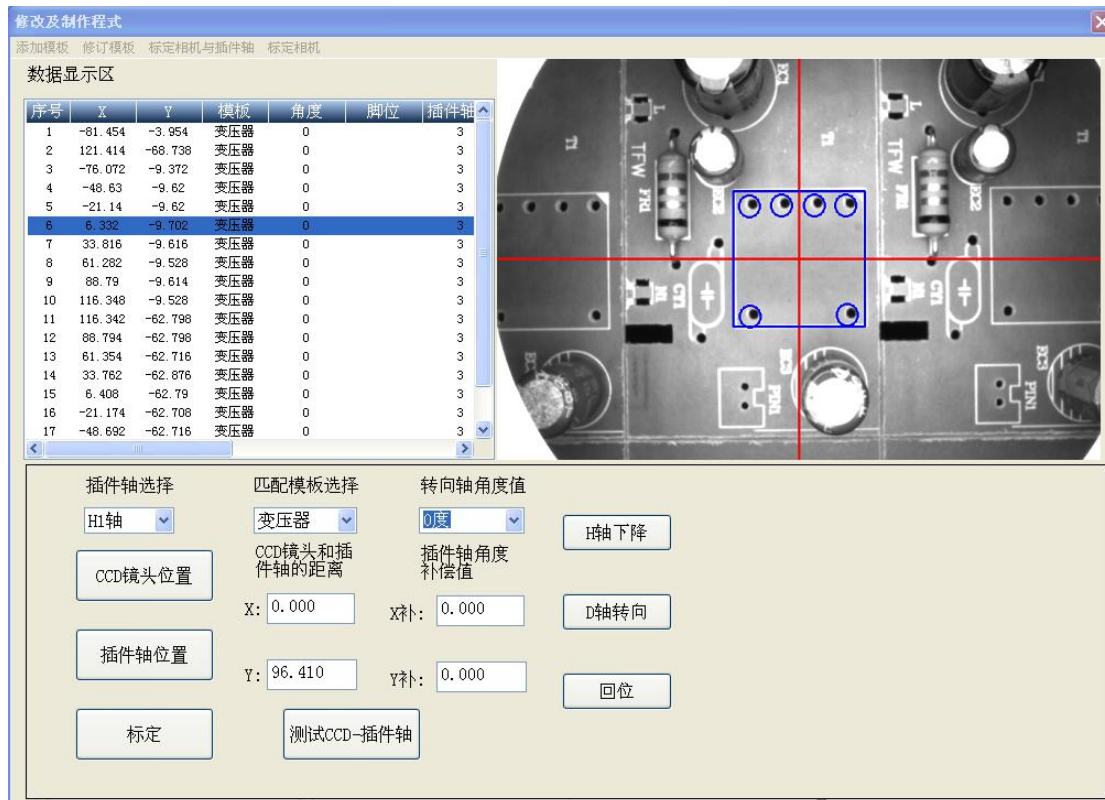
template data. The foot position data inside the template box is read and generated. Then name the template, click Add, and you add the template.

Click Revision Template to pop the Add Revision Template dialog:



Select the template name to revise in the template name, with the diagram showing the original template shape and data, then fine-tune the rectangular box position, or change the minimum radius and the maximum radius, and then regenerate the data.

Click Calibrate Camera and Auto Insertion shaft, popping up add calibrate camera and Auto Insertion shaft dialog box:



Calibrate the camera position

Move the one-Auto Insertion location to the ROI area of the camera image, click to scale the camera position, and the program matches and records the location of the current platform.

Calibrate the Auto Insertion shaft position

Move the Auto Insertion position used to calibrate the camera position under the Auto Insertion shaft, fine-tune the XY axis, and manually move H, so that H can be inserted in this position, click the calibration Auto

Insertion shaft position program to record the location of the current platform.

The mark is completed

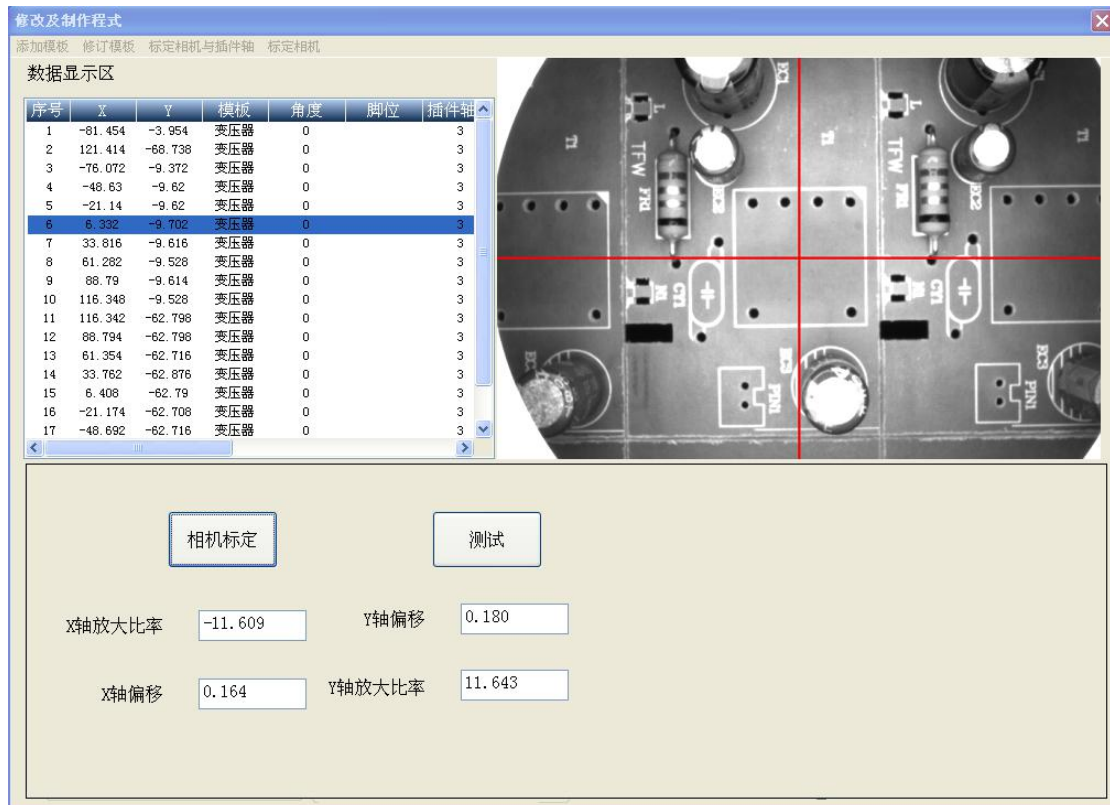
Complete the calibration of the camera position and the calibration of the plugin shaft position and, click, the calibration is completed, the program will calculate the relative position of the insertion position under the camera image and the Auto Insertion axis, and fill in to the two editing boxes on the right.

Test

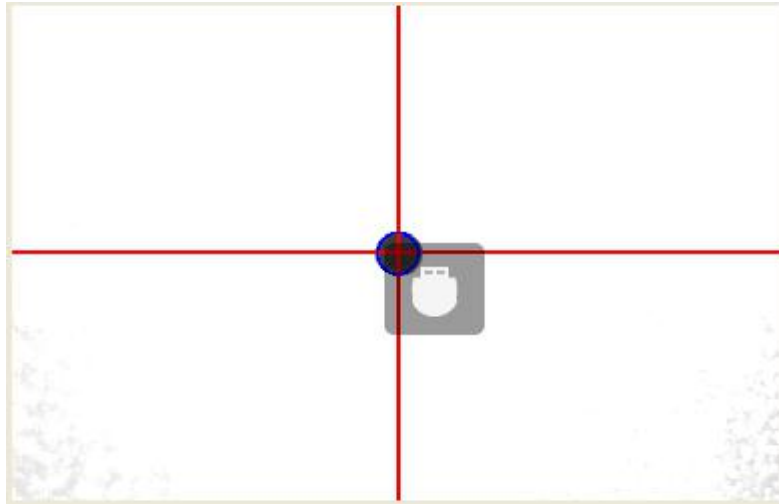
First move the Auto Insertion position to the camera image ROI area, click on the test program will first correct the specific location in the ROI area, and then automatically move to the Auto Insertion axis below, then you can see whether the data is accurate.



Click Camera Calibration and pop up the Camera Calibration dialog box



Regions with only one matching target were selected on the matching board, as shown in Fig.



The program calculates the number of pulses moved by the XY axis and the number of pixels moved by the XY axis on the image, and determines the ratio of the distance on the image to the actual distance.

Test camera platform

Move the matching target to any position in the image, if it can automatically return to the center of the camera, to prove a successful calibration.

Match the parameter setting zone

显示模板匹配界面
 显示Mark点匹配界面
 手动

模板参数

模板名称 ▾

最小半径 像素

最大半径 像素

圆孔数量 个数

匹配角度 ▾ 度

Mark点匹配参数

最小半径 像素

最大半径 像素

二值化

二值化阈值

Display the template matching interface: display the image shape of the selected template;

Display the Mark point matching interface: display the shape of the Mark point matching

Template Name: select the completed template name

Template minimum radius: the minimum matching radius of this template pin circle

Template Maximum radius: the maximum matching radius for this template foothole circle

Number of round holes: number of pin hole circles in this template

Match angle: The match angle for this template; there are four, 0, 90, 180, 270

Mark minimum radius

Minimum target size radius sought within the matching ROI region.

Mark maximum radius

Maximum target size radius sought within the matching ROI region.

Binarized images

Divide the image according to the threshold, into a black and white gray scale map.

Image binarization of the valve values

Adjust the size of the threshold of the segmentation diagram.

Calibration camera platform

IV Matching Area:



Manual coordinates

Move the Auto Insertion coordinates to the image ROI area and directly record the XY coordinates. For PCB plate imaging extremely irregular failure to match, obtain the Auto Insertion location.

Check

Replace the resulting Auto Insertion data with the selected row data in the current image ROI region.

Add

Add the resulting insertion data obtained in the current image ROI area to the end of the insertion data list.

Insert

Insert the resulting Auto Insertion data found in the current image ROI region into the location of the currently selected row.

Shift

If the current platform position does not reach the corresponding position of the focus line, then move to the corresponding position;

If the current platform position is in the corresponding position of the focus line, move to the corresponding position of the next line of the focus line.

Delete

Delete the rows rotated in the insertion data list (multiple consecutive rows).

Set up the Mark point

Add the MARK point position correction to the program.

Auto-correction

View from the focus line and correct the insertion data list for the

insertion data.

Suspend

Temporarily stop the browsing correction for the Auto Insertion data.

Offset compensation

Select a row, and then click the shift to move to the corresponding position of the focus row, and click the offset compensation to fine-tune the multiple lines of data before knowing the turntable rotation command or stopping the command after this row.

Array module

After editing an area, you can list several similar modules through this command array.



Matching a location within the first module and the same location within the last module, then entering the number of modules in the X direction and modules in the Y direction, can generate several parallel module of

Auto Insertion data.

File saving

As with the export program on the menu bar, save the Auto Insertion data of the Auto Insertion data list to a disk file, and automatically add the Stop command if the list does not finally have the Stop or Continue command.

Apply

Save the match parameter to the disk file to automatically load at the next startup.

List of station position information

IO诊断		DI		DO	
<input checked="" type="checkbox"/>	[[N01 -01] 1号有无料检测	<input checked="" type="checkbox"/>	[[N32 -02] 4号插件检测	<input type="checkbox"/>	OUT01 -01] 夹爪1
<input checked="" type="checkbox"/>	[[N02 -01] 2号有无料检测	<input checked="" type="checkbox"/>	折弯气缸折弯时间: 0 ms	<input type="checkbox"/>	OUT02 -01] 夹爪2
<input checked="" type="checkbox"/>	[[N03 -01] 3号有无料检测	<input checked="" type="checkbox"/>	夹料气缸夹料时间: 100 ms	<input type="checkbox"/>	OUT03 -01] 夹爪3
<input checked="" type="checkbox"/>	[[N04 -01] 4号有无料检测	<input checked="" type="checkbox"/>	夹料气缸放料时间: 150 ms	<input type="checkbox"/>	OUT04 -01] 夹爪4
<input checked="" type="checkbox"/>	[[N09 -01] 位置1有无板检测	<input checked="" type="checkbox"/>	定位气缸定位时间: 200 ms	<input type="checkbox"/>	OUT05 -01] 轨道马达
<input checked="" type="checkbox"/>	[[N05 -01] 位置2有无板检测	<input checked="" type="checkbox"/>	挡板气缸动作时间: 80 ms	<input type="checkbox"/>	OUT06 -01] 挡板1
<input checked="" type="checkbox"/>	[[N06 -01] 位置3有无板检测	<input checked="" type="checkbox"/>	夹板气缸动作时间: 1000 ms	<input type="checkbox"/>	OUT07 -01] 挡板2
<input checked="" type="checkbox"/>	[[N07 -01] 位置4有无板检测	<input checked="" type="checkbox"/>	送料气缸送料时间: 100 ms	<input type="checkbox"/>	OUT08 -01] 挡板3
<input checked="" type="checkbox"/>	[[N11 -01] 安全确认	<input checked="" type="checkbox"/>	切纸气缸切纸时间: 100 ms	<input type="checkbox"/>	OUT09 -01] 红灯
<input checked="" type="checkbox"/>	[[N12 -01] 停止生产	<input checked="" type="checkbox"/>	轨道加载板延时时间: 300 ms	<input type="checkbox"/>	OUT10 -01] 绿灯
<input checked="" type="checkbox"/>	[[N13 -01] 紧急停止	<input checked="" type="checkbox"/>	辅助折弯气缸动作时间: 100 ms	<input type="checkbox"/>	OUT11 -01] 黄灯
<input checked="" type="checkbox"/>	[[N14 -01] 安全门	<input checked="" type="checkbox"/>	顶板上升动作时间: 200 ms	<input type="checkbox"/>	OUT12 -01] 相机开关灯
<input checked="" type="checkbox"/>	[[N15 -01] 启动	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT13 -01] 蜂鸣器
<input checked="" type="checkbox"/>	[[N16 -01] 下一段要求送板	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT14 -02] 3号送料气缸
<input checked="" type="checkbox"/>	[[N01 -02] 1号顶料升到	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT15 -02] 3站折弯气缸
<input checked="" type="checkbox"/>	[[N02 -02] 1号顶料降到	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT16 -02] 3站辅助折弯气缸
<input checked="" type="checkbox"/>	[[N08 -02] 2号顶料升到	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT17 -02] 3站切脚气缸
<input checked="" type="checkbox"/>	[[N09 -02] 2号顶料降到	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT18 -02] 4号定位气缸
<input checked="" type="checkbox"/>	[[N17 -02] 3号顶料升到	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT20 -02] 4站折弯气缸
<input checked="" type="checkbox"/>	[[N18 -02] 3号顶料降到	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT21 -02] 4站辅助折弯气缸
<input checked="" type="checkbox"/>	[[N24 -02] 4号顶料升到	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT22 -02] 4站切脚气缸
<input checked="" type="checkbox"/>	[[N25 -02] 4号顶料降到	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT23 -02] 夹板气缸
<input checked="" type="checkbox"/>	[[N15 -02] 1号插件检测	<input checked="" type="checkbox"/>		<input type="checkbox"/>	OUT24 -02] 定位气缸
<input checked="" type="checkbox"/>	[[N16 -02] 2号插件检测	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
<input checked="" type="checkbox"/>	[[N31 -02] 3号插件检测	<input checked="" type="checkbox"/>		<input type="checkbox"/>	

DI

1, 2, 3, 4 Material detection: detect the material delivery signal at the feeding station

Position 1, 2, 3, 4 Board signal detection: plate signal detection at 4 positions on the guide rail

4.1) Motor commissioning



Set the movement amount and movement speed of each axis, and then move the axes according to the arrow direction on the button, test whether the time movement direction of each axis matches the direction indicated on the arrow; test whether the positive and negative limit successively is valid and installed.

Test whether each axis can return to the origin and the origin position is correct.

The positive and negative limits are the abbreviation of the photoelectric switching signal in the maximum limit position of the positive and negative direction of each axis.

The "Zero Point" detection signal is set by the origin.

Platform shutdown X: the actual position of the X axis after the bench "zero"

Platform downposition Y: the actual position of Y axis after the bench "zero"

Feed throwing position: Platform position of the Auto Insertion head throwing when the Auto Insertion fails

XY shaft material pickup speed: XY is the speed when it drives the Auto Insertion head to fetch the material.

XY axis Auto Insertion speed: XY drive Auto Insertion head take Auto Insertion speed.

5) Material collection position setting



Set the feeding height of each feeding shaft and the position of XY shaft, feeding height 1, and discharge height 2.

Each insertion axis and each feed station corresponds to a set of data.

The setting method is to press the movement direction icon of the corresponding axis with the mouse, and the corresponding axis moves in the corresponding direction. When the movement is in place, release the mouse, and then record the current position.

6) Feeder type setting

供料器类型设置

供料器1#	供料器2#
<input checked="" type="radio"/> 振动盘供料	<input type="radio"/> 振动盘供料
<input type="radio"/> 立式编带供料 (折弯)	<input checked="" type="radio"/> 立式编带供料 (折弯)
<input type="radio"/> 立式编带供料 (不折弯)	<input type="radio"/> 立式编带供料 (不折弯)
<input type="radio"/> 卧式编带供料	<input type="radio"/> 卧式编带供料

供料器3#	供料器4#
<input type="radio"/> 振动盘供料	<input checked="" type="radio"/> 振动盘供料
<input checked="" type="radio"/> 立式编带供料 (折弯)	<input type="radio"/> 立式编带供料 (折弯)
<input type="radio"/> 立式编带供料 (不折弯)	<input type="radio"/> 立式编带供料 (不折弯)
<input type="radio"/> 卧式编带供料	<input type="radio"/> 卧式编带供料

确定 退出

7) Manufacturer information

After clicking on the manufacturer information, the FactoryInfo.pdf document in the application directory opens.

If this file does not exist, prompts appears.

Help

Click Help for S7000 E L P in the application directory.pdf document.

If this file does not exist, prompts appears.

Softdog

After clicking on Help, the dialog box pops up.

加密狗
✕

若加密狗不正确，请将读取的机器码发送给
厂家，再向厂家索要新的加密狗

机器码：

分期本期累计使用时间： 小时

分期本期剩余使用时间： 小时

若本期加密狗已经过期，请支付下一期款项并向厂家
索要密码解锁

本机编号：

分期付款总期数：

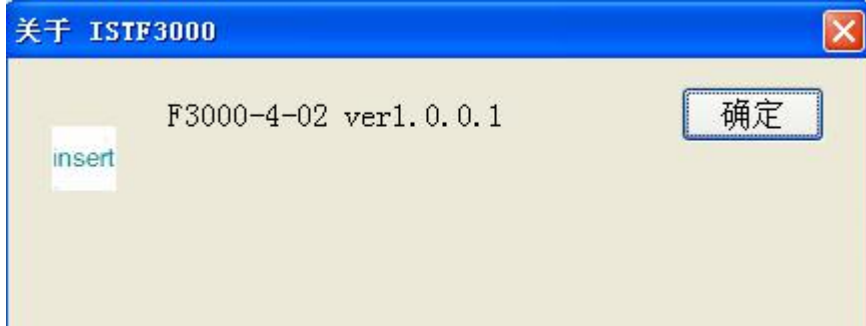
已经支付的期数：

解锁密码：

If the dongle of the current machine is not correct, please read the machine code and send it to the manufacturer for a new dongle.

If the installment payment method is adopted, the installment valid use time has arrived, the dongle lock, please send the machine number and the period number to be paid to the manufacturer, and ask for the unlock password to unlock.

8 Background management



Exit

Click to exit, then exit the program.