FST200 MANUAL

On-Line High Precision Coating Machine Manual

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COWAiN

Thank you very much for choosing the FST-200 Coating Machine developed by FSTW. This equipment is characterized by easy operation and high working efficiency and is suitable for batch production of various products.

This manual is intended for production operators. Please be sure to read this manual carefully at before installing and operating the machine, and familiarize yourself with all equipment knowledge, safety and precautions before starting to use the machine, and follow the operating instructions in this book.

The contents of this manual are subject to change without prior notice.

We hope that the contents of this manual will be perfect, but if you have any questions or find any errors, please feel free to let us know the version of the manual.

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1. Safety Warning

CAUTION

Before using the equipment, you should carefully read the instruction manual of the equipment as well as other relevant information in order to operate and use the equipment correctly. The equipment operators and maintenance personnel must be professionals or technically trained personnel who have specialized knowledge of the corresponding equipment and must operate the equipment in accordance with the safety operation regulations and safety operation rules.

CAUTION

Before opening any panel for maintenance, it is common to unplug the power and air supply to the machine and disconnect the main air line from the system. When the machine is disconnected from power and air, the electrical cords and air lines must be kept out of sight of the maintenance worker and a sign board must be in place to prevent unintentional activation of the energy source.

DANGER

Do not place your hands under any moving actuator during operation as the machine undergoes automatic motion that could cause serious personal injury. It is prohibited to put your hands inside the machine during operation. In the event of any possible personal injury, the red emergency stop button must be pressed immediately.

DANGER

Except for some parameters which are for user's use and can be changed, other system parameters, servo parameters, etc. cannot be changed by the user privately, otherwise it may bring injuries to the equipment, workpieces, and human beings.

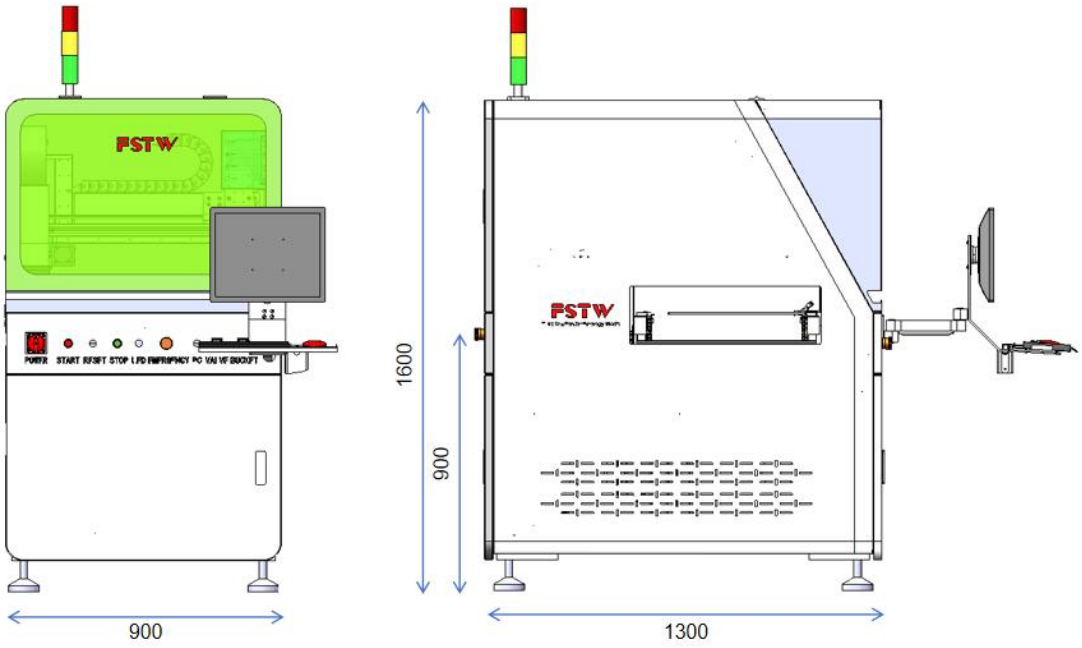
2. System Introduction

This equipment is an online coating equipment. The products are transported to the fixed platform through the rail, and the platform is moved to the working position by the motor and the screw, and then the CCD vision is aligned, and the products are coated after the position is corrected. The coating track can be customized to meet the requirements of different products, and carry out the conventional coating process, such as marking, scribing, etc.; it can produce a variety of specifications at the same time, and can be programmed with the length, position and speed of each track route, and can be adjusted by a variety of parameters to adjust the width and thickness of the glue on the surface of the product, so as to achieve the effect of stable coating; after the completion of the dispensing process, the belt will be transported out of the carrier plate, and this is a cycle. The equipment adopts friendly human-computer interaction interface, CCD visual alignment system and laser height compensation, and supports multi-axis linkage dispensing.

3. Specifications

Function Configuration	Technical parameters and description	Function configuration	Technical parameters and instructions
Model	FST-200	Z bearing weight	6kg
Overall Dimension	900mm(W)x1300mm(D)x1600mm(H)	Equipment Alarm	Menu + sound and light alarm
Equipment weight	550kg	Rail height	900± 20mm
Control mode	Industrial computer + motion control card	Maximum speed of track	13m/min
Running Software	Software + Windows	Rail Load	5kg (including fixture)
Programming method	CAD file importable or online visual programming	Power supply	220V,50-60Hz
Number of spindles	X, Y, Z, (X2, Y2)	Air source requirement	↗0.5Mpa
Spindle drive	Servo motor + precision screw	Safety standard	CE
Coating range	450*450mm	Total power	Without bottom heating 2.5KW (optional with bottom heating 5KW)
Maximum speed	800mm/s	Valve nozzle cleaning device	Alcohol cleaning
Maximum acceleration	0.5g	Weighing accuracy	0.1mg
Positioning Accuracy	± 0.02mm@3б (X/Y/Z)	Standard Function	CCD Visual Positioning
Repeatability	±0.01mmmm@3б (X/Y/Z)		LED machine internal illumination
Camera Resolution	1.3 million pixels		RS232 interface
Working direction	■Left→Right (standard)□Right→Left		Top plate device

4. External Dimensions



5. Functions

5.1 Standard Functions

Image recognition function:

The visual recognition template is not only applicable to specific graphics (such as circle, rectangle, right angle), but also can be directly trained on cross shape, T-shape and various irregular graphics, which can be uniformly processed as MARK.

Mark recognition function:

When the product can only clearly have a feature point, and the feature point has an angular feature (such as triangles), you can determine the actual coordinates of the product according to the coordinates of the mark point and the angle of offset for calculation and compensation.

Ontology identification function:

Provide rich identification modes to adapt to the ontology identification of different materials, including templates, feature points, contours, etc., and provide customized extensions.

Visual edge inspection function:

Adapt to products without mark or unclear mark. The patrolling algorithm developed by FSTW is used to locate the linear features within the field of view by capturing them.

Matrix Copy Function:

Adapt to the products which are regularly arranged in large quantities. Taking the sub-programs (or track points inside the sub-programs) that have been debugged and completed as the base array copy, it realizes the execution of dispensing action for all the products on the fixture according to a specific order.

Process library function:

The process library can store 10 groups of point and line process, can set a variety of commonly used parameters, in the process of writing the dispensing path, can quickly select the corresponding process number to set up, can meet a variety of different process requirements.

Three-color light source function:

Support for red (R), green (G), blue (B) three-color coaxial light source, the software can be adjusted through the changes in the three color channels and their superimposition on each other to get a variety of colors needed.

Calibration function:

The whole machine comes with a platform calibration function, which compensates mechanical errors through algorithms, improves positioning accuracy and guarantees the ability of multi-machine engineering files to copy each other. Relative position calibration of cameras, valves and lasers supports one-key automatic mode, which is simple and easy to operate.

5.2 Optional Functions

3D positioning function:

use the 3D shape of the target to judge the position and adjust the corresponding 3D running track. Compared with 2D mark, it can better ensure that the height of the dispensing valve to the target remains unchanged. For dispensing, this is an important parameter to ensure high yield.

Laser Height Measurement Function:

The height of the working area is measured by a high precision laser height measurement sensor, and the distance between the dispensing head and the surface of the working area is kept relatively constant by means of Z-axis coordinate compensation, so as to maintain the yield and consistency of dispensing.

Automatic needle alignment function:

The Automatic needle alignment function can compensate the relative coordinates of the old and new needles, so that the coordinates of the dispensing head and the dispensing area are relatively constant to ensure the yield and consistency of dispensing, and the time of needles alignment function is about 3 seconds.

Heating function:

According to different glue characteristics and actual needs, can be enabled to pre-heating and working position heating.

Vacuum suction function:

According to different products fixing needs, can be installed with vacuum generator to fix the products.

Dual-valve function:

According to the needs of different products, to improve production efficiency, dual-valve interval automatic calculation as well as movement, single and dual-valve mode switching is simple.

Valve body tilt function:

According to the needs of different products, to meet the production requirements.

Flying photo function:

Use the self-contained software algorithm and modified controller to realize the flying photo function, scanning MARK without stopping, greatly improve the efficiency of multi-product dispensing.

6. Installation instructions

This section mainly introduces some basic safety knowledge for better operation and maintenance of dispensing equipment.

6.1 Installation steps:

6.1.1 Adjust the level of the foot

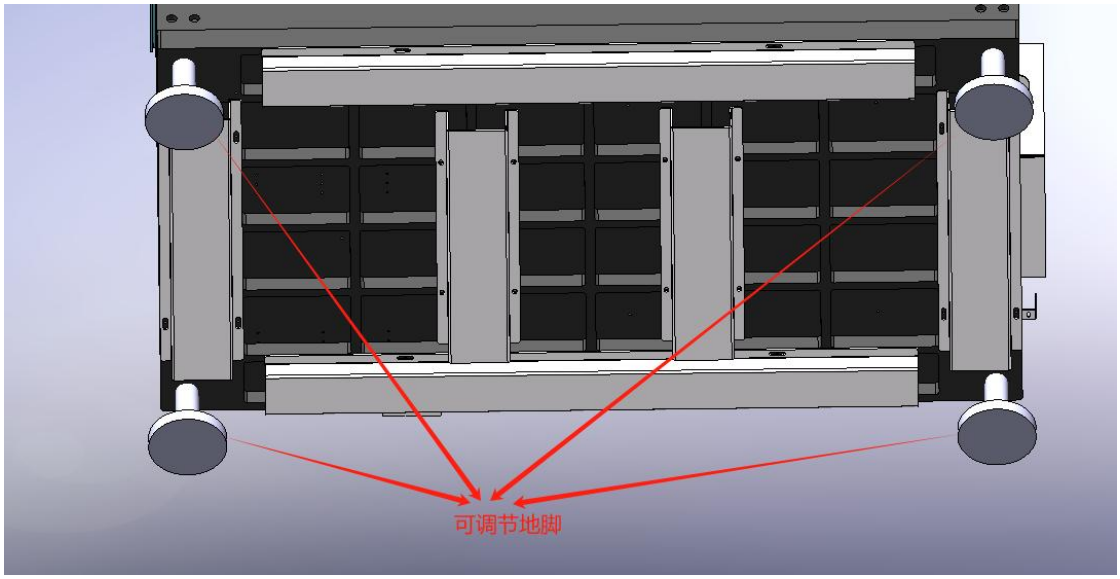
6.1.2 Turn on the power supply

6.1.3 Turn on the air source

6.1.1 Leveling Adjustment

Adjust the adjustable feet as shown in the figure below to ensure that the large plate of the machine is leveled as measured by a leveling instrument.

- Adjustable feet



- Leveling Instrument

6.1.2 Power On

Plug in the power cord, the power switch on the rear side of the machine is ON, see 4.5 System Components - Rear View, and the emergency stop switch on the machine control panel is raised.

6.1.3 Turn on the air source

The air source air pipe is connected to the pneumatic two couplings, the red knob switch rotates counterclockwise for the ventilation state, clockwise rotation for the air state, the regulator can adjust the air pressure.

Affirmation: It is necessary to equip a lockable air source switch beside the equipment.

7.Safety knowledge

7.1 Summary

This section describes some basic safety information to better operate and maintain the FST-200 Dispensing System. This section includes the following:

- Equipment usage
- Basic safety precautions
- Fluid Material Safety
- System Safety
- Waste
- Handling Precautions
- Emergency shutdown
- Shutdown Maintenance
- Buzzer

7.2 Equipment Usage

Please be sure to familiarize yourself with the use of the equipment. If you accidentally use the FST-200 in a way and for a purpose that is not normal for the equipment, then damage to the equipment may result. What are the approximate non-normal uses and applications? They are listed below:

1.Use of fluids other than those for which the equipment is designed;

2. Making random changes to equipment hardware without manufacturer's approval;

3. Excessive operation beyond the maximum rated value of the equipment;

4. Continued use of damaged parts or replacement with mismatched parts.

7.3 Basic safety precautions

To prevent injury to personnel or damage to the equipment, strictly observe the following precautions when operating, using, and maintaining the FST-200:

1. Only specially trained personnel are permitted to operate and maintain the system.

2. Someone else must be present if maintenance is to be performed on the system without the power supply being disconnected.

3. Before using the system for the first time, you must familiarize yourself with all the safety warning signs on the system and strictly observe the safety knowledge.

4. Press the emergency stop button first for any situation that could result in injury to personnel.

5. When performing maintenance on the system, provide appropriate warnings to prevent others from touching the system.

6. Before starting the system, make sure the main power cord and main air line are securely connected.

7. Do not touch the dispensing mainframe while the system is running.

8 Ensure that the working environment has enough air flow and heat exchange, which can relieve the pressure of the environment to the personnel and the system.

9. Check system electrical and air circuits periodically to ensure safety.

7.4 Fluid Material Safety

1. Use fluid materials in the proper manner as recommended in the literature supplied by the fluid manufacturer.

2. Wear appropriate protective equipment (e.g., rubber gloves, masks, etc.).

3. Familiarize yourself with the emergency treatment of fluid-related injuries.

4. Know how to store the fluid material.

7.5 System Safety

1. Press the emergency stop button when the system may be damaged.

2. make sure all parts of the system are working properly when the system is in operation.

3. Take care to properly clean any fluid that splashes onto the system and to keep the system dispensing area clean.

4. Strictly observe system maintenance safety.

7.6 Waste

Dispose of system and material waste generated during production and maintenance in accordance with relevant environmental regulations.

7.7 Handling Precautions

Before handling heavy objects, the following points should be considered:

1. can the handling of this system be more favorable to achieve the final destination more safely and quickly?

2. Are the conditions at the destination of the handling compatible with the safe operation of the system?

3. What is the manner of handling without damaging the System?

4. Has a suitable route been determined prior to moving the system?

5. Is the system to be moved securely prepared?

To ensure the safety of the system and personnel during the handling process, the operator should strictly observe the following specifications:

1. Ensure that the system is smooth during handling.

2. When putting down heavy objects, they should be put down slowly and gently, taking care that the hands and feet are not under the heavy objects.

7.8 Emergency shutdown

In the event of an emergency or machine malfunction, the emergency stop button should be pressed immediately.The emergency stop button for the FST-200 system is located on the control panel. Once the Emergency Stop button is activated, power to all components except the computer is also cut off.

Emergency Stop Conditions:

1. Any personnel are in a situation where they could be injured by moving parts, hazardous materials, or in danger of electric shock.

2. There is a risk of damage to valuable objects or workpieces of the system, e.g., movement of a dispensing head that is not expected may cause damage to the dispensing head or workpieces, and electrical damage to the system.

Procedure for responding after an emergency shutdown:

1. Check and eliminate possible causes of the emergency stop condition.

2. Twist the Emergency Stop button clockwise until the Emergency Stop button pops up.

3. Restart the system and return to the home position.

7.9 Shutdown Maintenance

Before performing maintenance on this system, ensure that the system is shut down.

System shutdown :

1. Stop the system through the software.

2. Shut down the software.

3. Turn off the industrial computer.

4. Press the emergency stop button on the control panel.

Turn off the power and air supply:

1. Turn the main power circuit breaker on the back of the system to the OFF position.
2. Unplug the main power cord.
3. Turn the main air intake regulator knob on the back of the system to the 0 psi position.
4. Turn off the main air inlet switch.

7.10 Buzzer

The buzzer alerts the user and, in non-routine situations, the operator.

8. Software Introduction

8.1 Getting Started

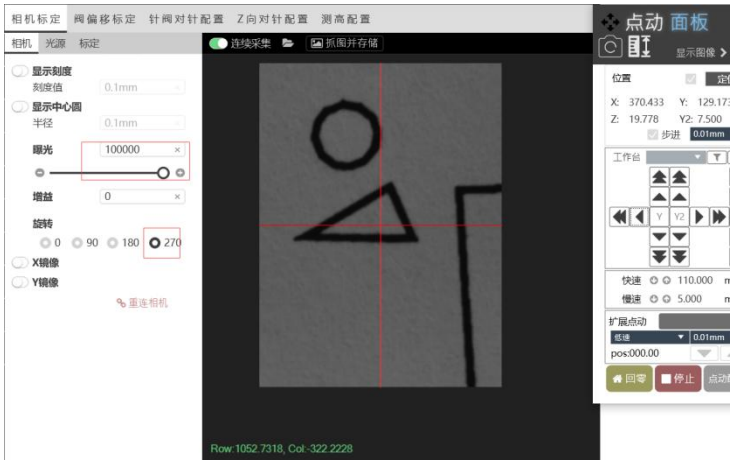
Beginning quick use is mainly based on the equipment track and each I / O configuration is normal, a variety of peripheral configuration is normal, through the rapid operation process, in order to complete the corresponding operation, you can let the equipment for a simple processing operation.

The following single-valve and double-valve two application scenarios as an example, from the camera calibration - valve offset calibration - new files to draw the track - template new - array - process parameter group configuration - debugging Processing of these steps in the conventional process is introduced in turn, in which single-valve and double-valve operation is identical to the contents of the single valve only to be described.

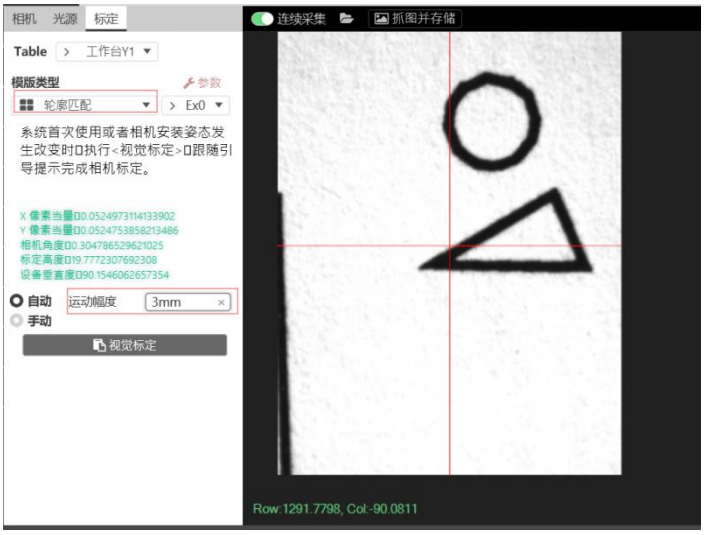
8.1.1 Single valve

Camera Calibration

Step 1: Move the camera to the top of the feature element and adjust the focus, exposure, rotation direction and Z-height of the camera to make the feature image clear in the viewport, as shown in the figure below.



Step 2: Select the template type for the calibration interface, recommend the use of contour mode, select the automatic mode, as well as the amplitude of movement, the amplitude of movement is associated with the size of the calibrated feature object and the entire scope of the viewport, to ensure that in the current center of the camera to move up, down, right and left, respectively, can be correctly identified to the selected feature graphics.



Step 3: Select the template type of the calibration interface, recommend the use of contour mode, select the automatic mode, and the amplitude of motion, the amplitude of motion settings and the calibration of the size of the feature object as well as the entire scope of the window associated to ensure that the center of the current camera up and down, left and right, respectively, to move the distance can still be correctly identified to the selected features of the graphic.

Step 4: Perform calibration, according to the prompts to select a region of interest to draw, and then the device automatically completes the calibration, calibration is complete, the X / Y pixel equivalents and the calibration of the height of the camera angle and other information will be updated, calibration is complete, the left mouse button click on the screen, the camera's red crosshair cursor will be ready to move to the specified position. If you can not accurately move to the specified position, it means that the selection of the region of interest may be anomalous, check the image to repeat the first step to the fourth step of the operation, the calibration is successful after the mouse click dynamics must be able to move correctly to the specified position.

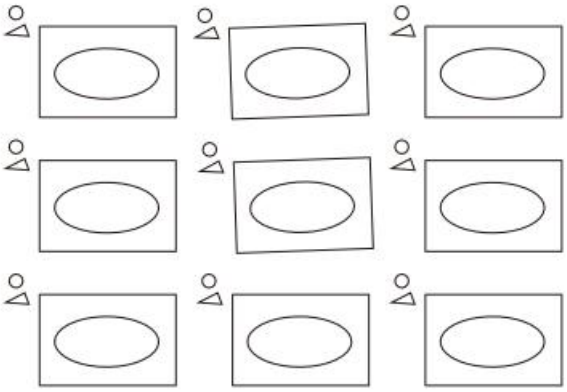
Note: Theoretically, the camera calibration in the template height remains unchanged, the camera installation position remains unchanged, only need to be completed once correctly. Subsequent use does not require frequent camera calibration operations.

8.1.2 Valve Offset Calibration

Move the valve to the specified position, select the appropriate height (shown in the figure in order to facilitate the marking of the sharp corners of the feature rectangle in advance of the marking), and then dispense, after the completion of the glue to carry out the next step, at this time, prompted whether to move the Z-axis to the height of the visual calibration, click on the "Yes".

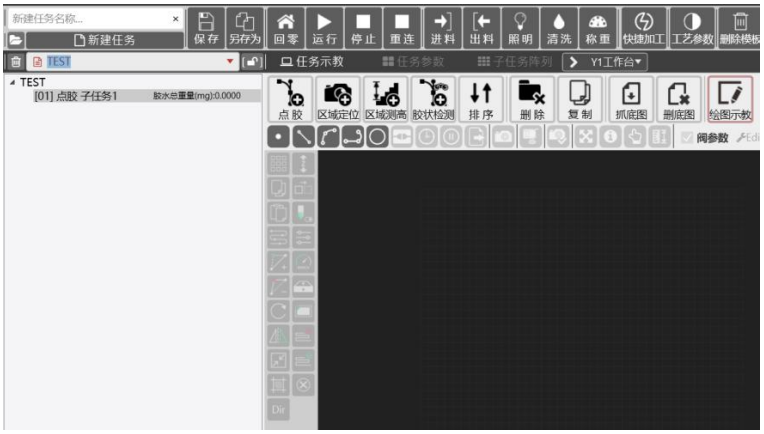
The center of the camera will be moved to the previous head of the designated mark position, as shown in the figure above, here in order to accurately align the position, you can use the mouse wheel to zoom in on the image after the mouse click the image to make the camera cross the center and the center of the glue point aligned. Alignment after the implementation of the "next step", if the calibration surface and processing surface is not the same height, you can check the third step in the calculation of XY deviation only, if the calibration surface and the product processing surface for the same height, it is recommended that do not check. Finally, perform the deviation calculation, record the deviation between the center of the camera and the center of the valve in the calibration result, and click Confirm after the calibration is completed.

8.1.3 Create a new file to draw a trajectory



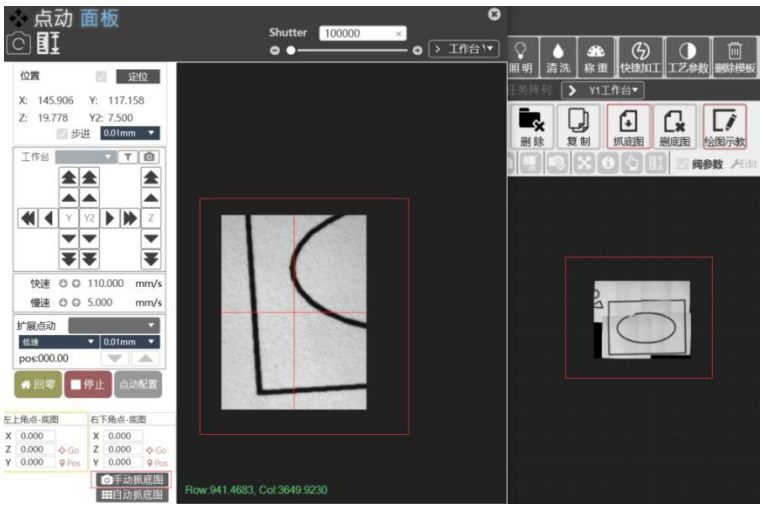
The following is an example to demonstrate the process of new file creation and trajectory teaching.

Step 1: After inputting the file name, click New Task, and insert the sub-task of dispensing glue after completing the new task.

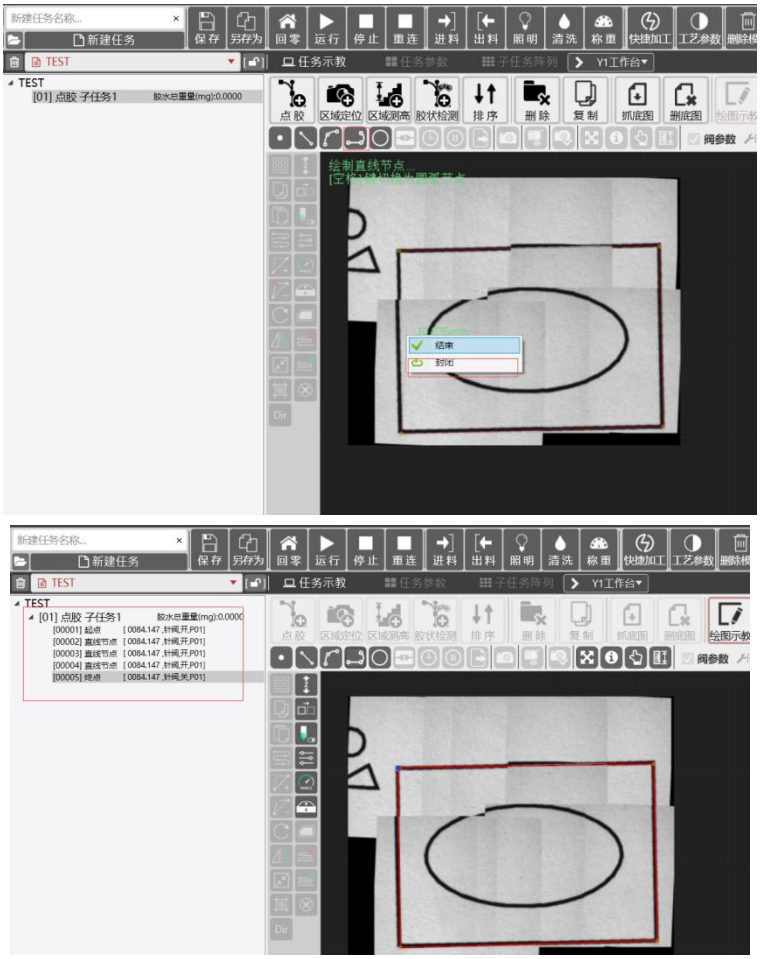


Step 2: There are two types of trajectory teaching methods

Drawing teaching:



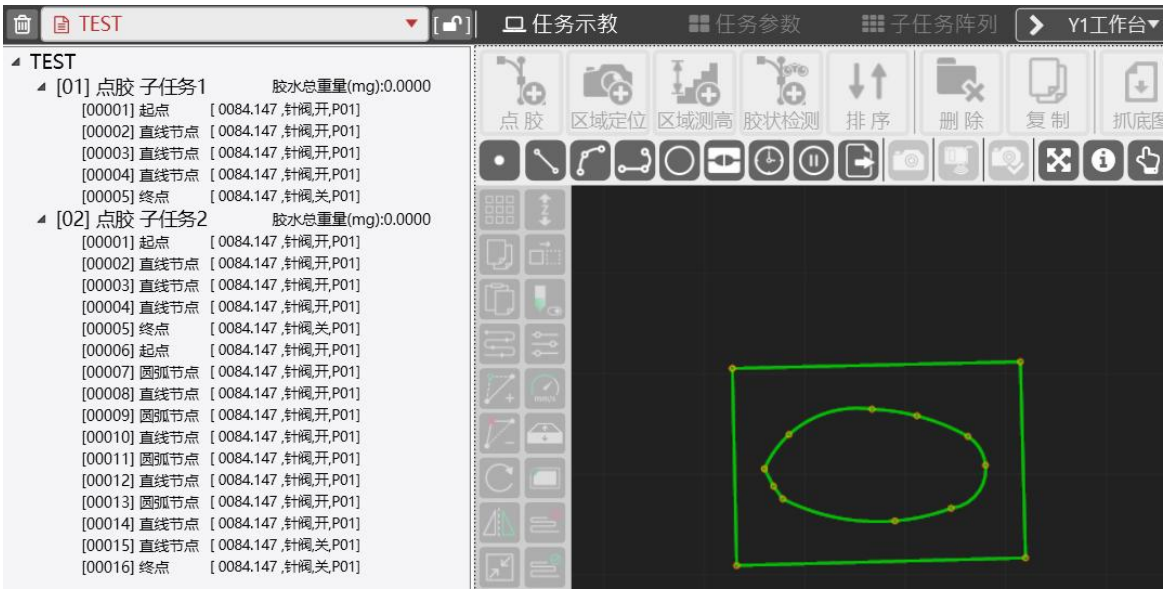
Execute the capture of the base map, pop-up panel, the implementation of manual capture of the base map, the capture of the base map displayed in the task teaching window, the window can not be displayed once all the processing objects of the scene can take the camera after moving the way to capture the base map for many times;



Choose to draw a polyline, and then, as shown in the figure above, select the polyline starting node in turn clockwise, and then click the right button to select the closed, after drawing the dispensing sub-task element list automatically shows the dispensing path.

The same method of selecting the polyline to draw an ellipse trajectory, polyline mode through the space to switch the straight line node for the arc node, that is, you can continuously draw the arc.

Tap to teach: Select tap to teach, and then select the multi-segment line, the following figure will pop up, the teaching method can be selected from the camera or needle, in order to complete the trajectory teaching. After completing the teaching of multi-segment line, you can select other types of element types in the upper left corner to continue teaching.

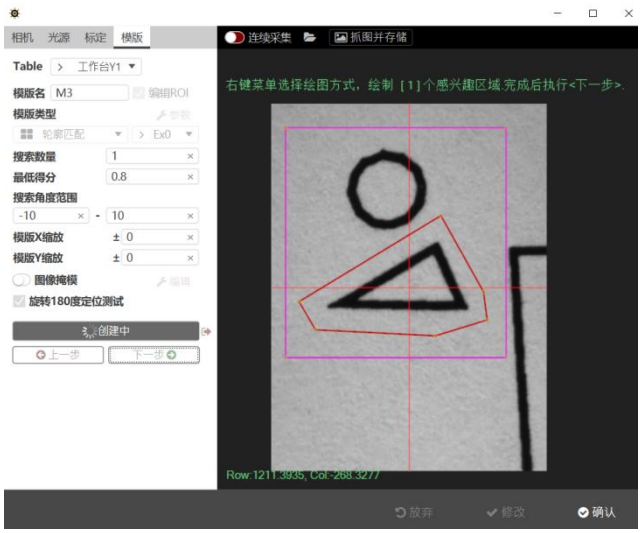


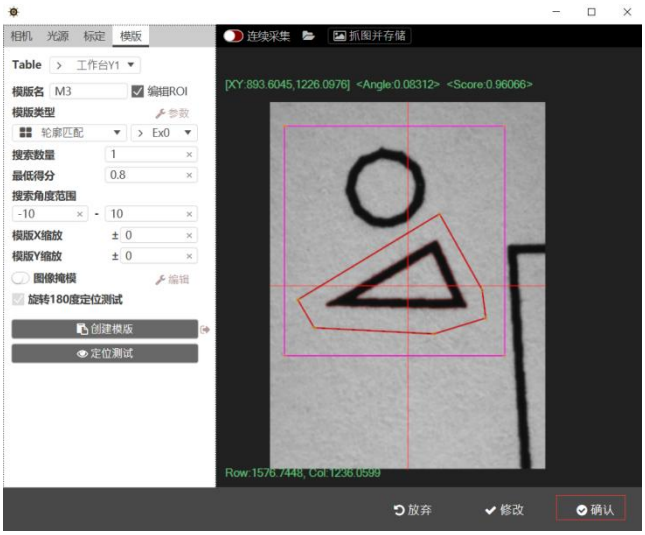
If you choose the needle mode, you can move the needle to the dispensing position in order, and in the scene with valve rotation axis, you can choose the corresponding valve attitude, and then execute the teaching in order.

The demonstration of the machining trajectory corresponding to an array point is completed by 8.1.3.

8.1.4 Template

Move the camera to the top of the feature element of the newly created template, then execute POS, record the current position as the datum point, then execute visual template, then the template new interface pops up and automatically assigns a template name M3, then select the template type "Contour Mode", and then execute the search area and range of interest settings according to the prompted wizard step by step. and the range of interest in the wizard step by step to perform the search area and the settings, and finally complete the new template, the completion of the new click to confirm the success of the binding template can be. Here you can locate the test method to see whether the new results meet the expectations.



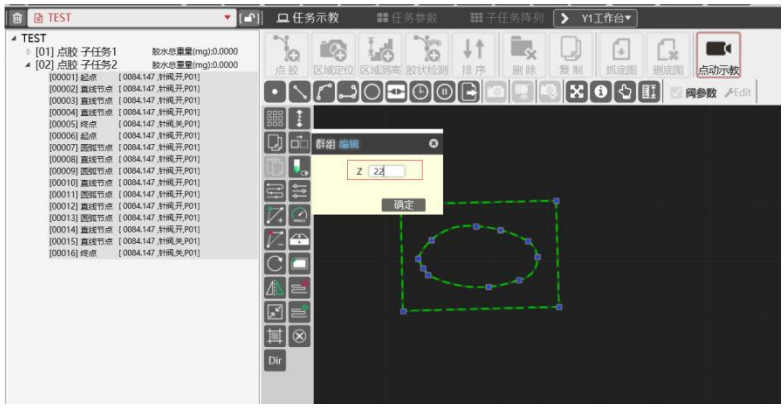


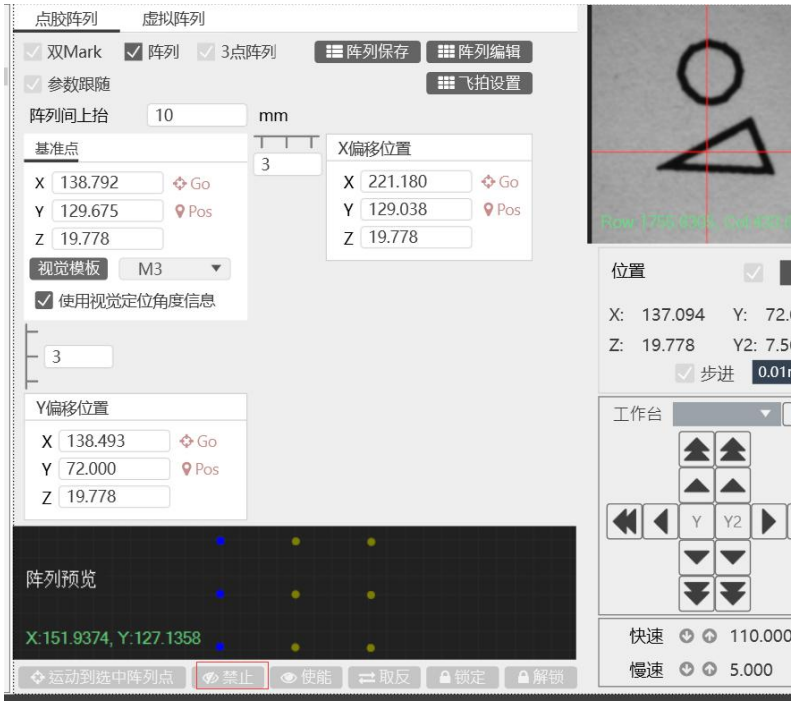
Note: Here you need to search the range of the default range of ± 10 degrees can usually be set, the minimum score is usually set to 0.8, special scenes outside the characteristics of the elements of the interference factors are too many, you need to carry out the image mask.

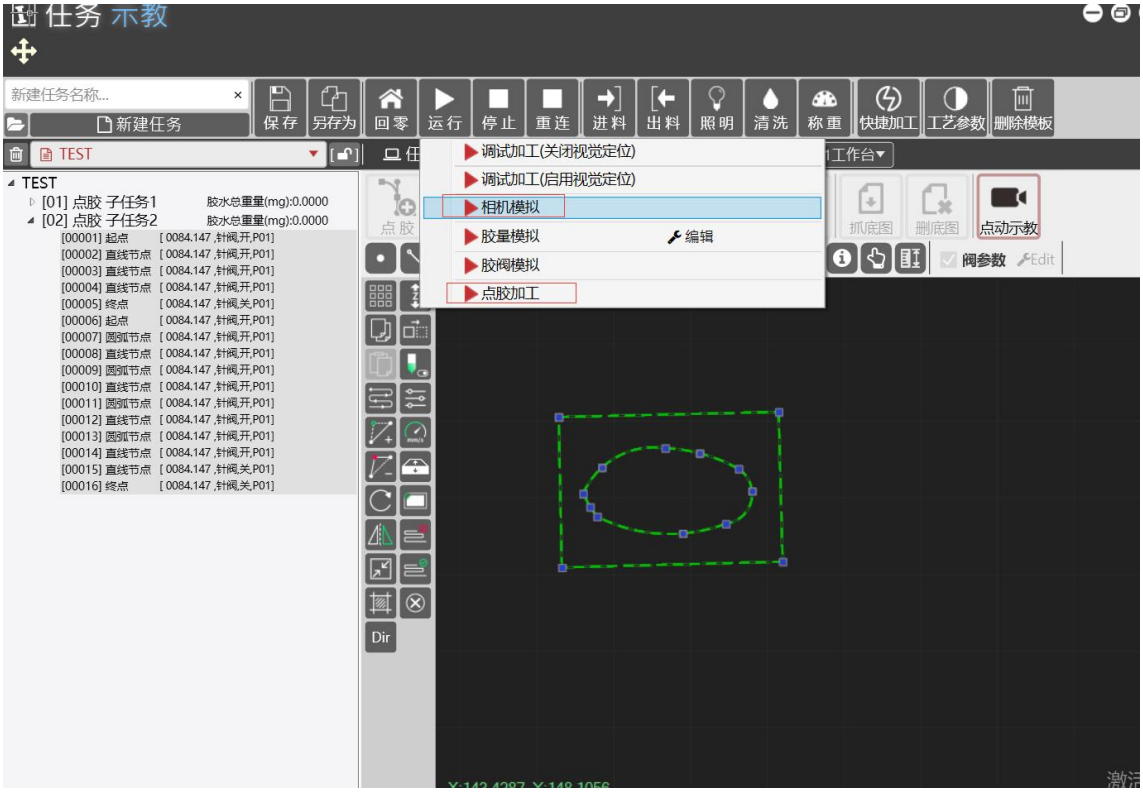
8.1.5 Array

8.1.6 Process parameter set configuration

8.1.7 Debugging Processing






任务 示教
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出料
照明
清洗
称重
快捷加工
工艺参数
删除模板
新建任务
TEST
调试加工(关闭视觉定位)
调试加工(启用视觉定位)
相机模拟
胶量模拟
编辑
胶阀模拟
点胶加工
点动示教
阀参数
Edit
Dir

任务名
TEST
编辑
2021-09-22-17:39:52
系统空闲
X
Y
Z
Y2
P1
P2
YF
2P1
2P2
VVX
VVY
CX
CZ
YF2
胶头温度
阀腔体温度
胶水温度
阀压力
胶水压力
胶水容量
胶水已使用时间
加工计数满足后称重(次)
加工计时满足后称重(s)
加工空闲N秒后称重(s)
系统空闲N秒后称重(s)
单点实测重量
每加工N次后清洗
加工N个阵列后清洗
加工空闲N秒后自动清洗1
加工空闲N秒后自动清洗2
加工空闲N秒后首件清洗
系统空闲N秒后自动清洗1
系统空闲N秒后自动清洗2
系统空闲N秒后首件清洗
N/A
0.10000
X : 136.062
Y : 72.000
Z : 19.778
Y2 : 7.500
Z-
Y+
Y2+
X-
X/Y/Z
低速
0.01mm
X+
Z+
Y-
Y2-
点动配置
轨迹预览
相机模式
阵列模式
坐标模式
IO 模式
耗时时间
0:0:0:0
当前总加工: 41模 58片
加工进度
进度信息显示
自动加工
点 动
单 步
回 零
进 料
出 料
称重
常规
开始
暂停
停止

8.2 Asynchronous dual valves

8.2.1 Valve offset calibration

Camera calibration - Valve offset calibration - New file drawing trajectory - Template - Array - Process parameter group configuration - Commissioning processing

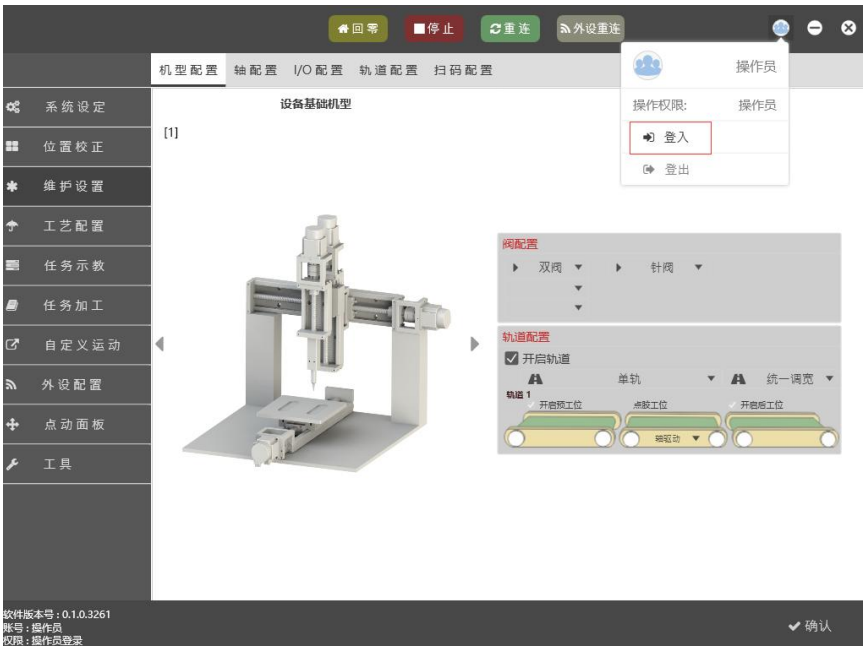
Detailed description of each step of the operation

8.3 Maintenance Settings

This chapter mainly introduces the model configuration, axis configuration, I / O configuration, track configuration and scanning configuration, these configurations in the machine assembly and debugging and on-site commissioning session of the pre-functional need for occasional use, this part of the function of the use of low-frequency, once set up in the subsequent use of time will be less involved in the changes.

8.3.1 Permission Management

Start the software, the interface is displayed as follows:



First of all, the implementation of the login, where different login privileges corresponding to different operational content, first of all, the super administrator to enter, and then through the login interface configuration interface, you can create their own accounts with different permissions, the design of the super administrator

can enjoy the configuration of models other than all the rights of the software, the process administrator has to carry out the document demonstration and teaching-related rights, operators are limited to the task of processing the interface of the corresponding functions.

If the motion controller and all peripherals are in the power-on state before the software starts, the software will automatically connect the controller and reconnect the camera and all peripherals during the software startup process, and after a successful reconnection, it must return to zero once.

In the middle of the process, if you perform an emergency stop and other operations, it is also necessary to perform a reconnection and peripheral reconnection operations, reconnected after the success of the implementation of a return to zero;

8.3.2 Model Configuration

The model configuration covers the basic model type and the additional configuration of the equipment (including valve type and track selection), after the model configuration, the software will automatically complete the axis allocation work, you can carry out the next axis configuration work.

8.3.3 Axis Configuration

The axis configuration interface is shown below

8.3.3.1 Axis Number

The axis number corresponds to the actual physical port of the controller, which has been confirmed at the time of installation. Once different models are selected, the axis number will be assigned and confirmed by itself, and if it needs to be modified, it is necessary to contact the company's technical personnel.

8.3.3.2 Pulse

Pulse equivalent here is only how many pulses the controller sends the equipment can run normally for a distance of 1 millimeter, the value is determined by the equipment selection, for example, for the structure of the coupling directly connected to the servo and the screw, the servo drive pulses per turn divided by the lead of the screw, that is, the pulses required for each unit of length of the movement.

8.3.3.3 Stroke

Formation is divided into positive and negative stroke, usually X / Y / Z axis only positive stroke, for the dual-valve mechanism according to the assembly relationship between the main valve and vice-valve and back to the zero direction, the existence of negative stroke; feed axis for the sequence of unrestricted operation, so the stroke is set to 9999 can be set by default;

8.3.3.4 Motor Reverse and Pulse Type

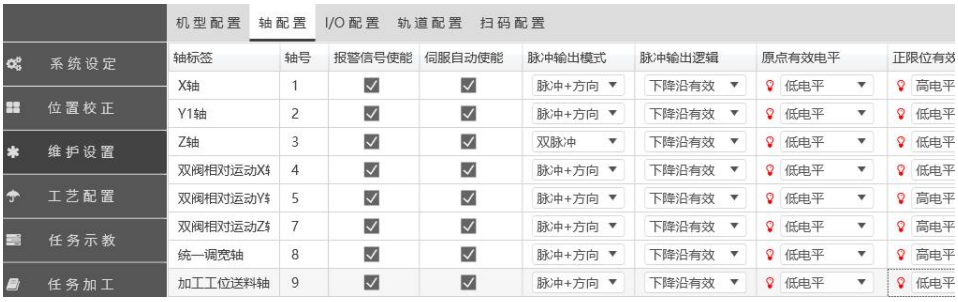
The default motor reverse is unchecked, if the motor reverse is checked, the controller will reverse the output pulse direction signal, and the actual result is that the motor positive and negative running direction will be exchanged, and the signal will no longer need to be modified once the debugging of the equipment crash is completed. The pulse type is determined by the settings of the load driver and can be adjusted according to the actual situation.

8.3.3.5 Signal effective level

According to the switch type, if the output voltage is 0V (low level) when the switch is active, the corresponding input port can be configured as low level active. When the signal is valid, the corresponding indicator turns green (indicating that the signal is valid).

After modifying the options in the axis configuration, confirm and save to take effect.

8.3.3.6 Signal Enable



If the Enable signal is checked, the function corresponding to the signal is effective, otherwise, it is not effective.

8.3.3.7 Axis Test Function

The axis test interface is used for equipment debugging. The number of pulses sent through the axis test interface is not affected by the validity of limit switches, and it is used to verify the wiring and whether the motor is running in the correct direction during the equipment debugging process;

The axis test interface performs CPK test enable, and correctly sets the start point and end point of CPK as well as the number of CPK times, confirms and saves it, and then performs CPK test, and the device will perform CPK copying according to this parameter.

8.3.4 I/O Configuration

8.3.4.1 Input Port Configuration

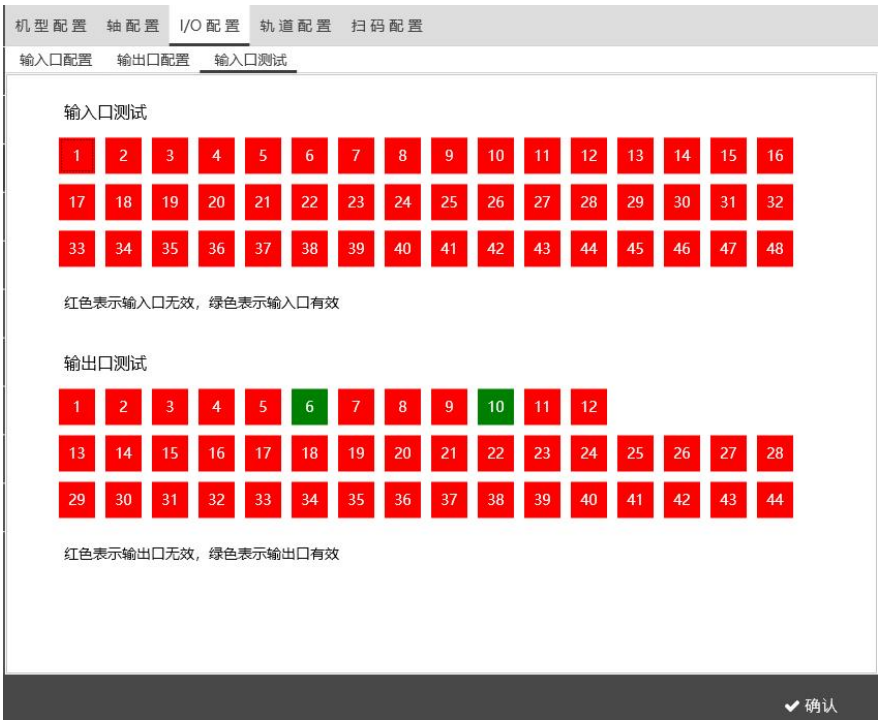
The software automatically displays the required input ports in the input port configuration interface according to the set model, and configures the port number according to the actual wiring of the machine; the default filtering time is sufficient; the delay time indicates that the corresponding port will alarm if it does not receive the signal within the specified delay time according to the logical judgment; if the delay time is set to 0, it means that the input port will wait for the signal to be valid and then perform the action corresponding to the label of the input port. If the delay time is set to 0, it means that the input port will wait for the signal to be valid and then perform the action corresponding to the input port label.

If the delay time is set to 0, it means that the input port will wait for the signal to be valid to execute the corresponding action of the input port label. The valid level is related to the switch type corresponding to the input port, it is not black when it is not configured, the font shows red when the signal is invalid after configuration, and green when it is valid after configuration.

8.3.4.2 Output Port Configuration

The software automatically displays the required output ports in the output port configuration interface according to the set model, and the port number is configured according to the actual wiring of the machine; the filtering time can be defaulted; the delay indicates that the corresponding port will be triggered according to the logic judgment when the signal is supposed to be triggered after the delay of the corresponding set value; whether to check whether to shut down when stopping or shutting down when going back to zero is selected according to the different ports of different on-site models is selected by the user. All options are effective after setting and clicking confirmation.

8.3.4.3 Input port test



This interface is only for checking whether the wiring or switch of the device is used correctly. Input and output ports do not need to be configured, but in this interface, you can also see whether the signal of the physical port is generated or whether the signal can be received correctly.

8.3.5 Track Configuration

Open track: green color is open, when it is open, the track will participate in the processing flow;

Auto Width Adjustment: When it is turned on, each processing file will correspond to a corresponding track width parameter, when switching files, it will be prompted whether to switch to the corresponding track width or not, clicking Yes will automatically complete the track width setting. If you don't turn it on, the track width will be manually adjusted to a suitable value.

Track transmission direction: support left-in-right-out and right-in-left-out, reserve the physical port design and make good I/O configuration at the time of design, when switching the track transmission direction, there is no need to change the wiring, and the software automatically completes the switching of the corresponding function of the signal.

8.3.5.1 Track Modes

Provide 6 kinds of track modes: normal, reflow, cycle, over-board, adjusting machine and track test.

1: Normal mode, used in normal processing, according to the set in and out of the board process in order to perform the process of entering the board, processing, out of the board and so on.

2: reflux mode: for example, the carrier from left to right processing is completed, in the right side of the material out of the position after the completion of the pickup again will be the carrier reflux to the left side of the material into the position, waiting for the release of material to continue to perform the next processing, to play the purpose of sharing the carrier.

3：Circulation mode: place the carrier from the feeding position, after processing, the carrier together with the product will run to the discharging position and then run to the feeding position again, wait for picking up the fixtures and then put in the new fixtures again to start the next processing.

4：Overboard mode: when the current station machine failure can not be processed, overboard mode, the machine only as a similar function of the feeder, to ensure the normal flow of the entire production line work.

5: adjusting the machine: feeding to processing, processing after the jacking signal does not disappear, so that the workpiece is in the jacking state, easy to adjust the machine at this time to go through the visual camera to observe the effect of dispensing.

6: track test: tuning machine mainly to verify the validity of each signal track and the correctness of the process, consistent with the conventional mode, in the mode with the carrier, normal feeding, jacking, discharging and so on, just in the middle, but not for the task of processing.

8.3.5.2 Track debugging

According to the assembly structure in order to set the relevant parameters can be set up

8.3.6 Sweep configuration

Scanning supports two modes: camera scanning and external scanning device scanning, external scanning device scanning needs to be set in the peripheral configuration of the relevant communication protocol settings, set up after the success of the choice to use.

Decoding rules:

1: 4 kinds of judgment logic "?" "→" "←" "="

2: Two types of numbers and characters

Example:

Scan result C360036BCD by rule valid value 360036 conforms to start processing file name of 100;

Scanning result A1237CEF2 according to the rule valid value of A in line with the start processing file name of 103 documents

8.4 System settings

System settings mainly cover the heater, air pressure, electronic scales, valve maintenance, alarms and manual intervention and other configurations, in the actual application process, you need to advance in the peripheral configuration will be the corresponding peripheral configuration can be used normally, followed by a one-by-one introduction to the various functional modules

8.4.1 Heater configuration

It supports the communication of multiple heating controllers for nozzle, runner, glue, preparation station, processing station and back-end station to monitor the temperature of the working process and provide corresponding alarms to ensure the quality control requirements;

8.4.2 Air Pressure Configuration

Support the communication of multiple peripheral controllers, such as total air pressure, supply air pressure, valve air pressure, etc., to monitor the air pressure of the working process and provide corresponding alarms to ensure the quality control requirements;

8.4.3 Electronic Scale Configuration

8.4.3.1 Electronic balance settings

In the peripheral configuration of the electronic scale communication protocol and communication port number settings, after successful setup by sending standard data to verify whether the communication is normal.

Turn on the electronic scale, and select the correct configuration of the name of the weighing peripheral, through the reading of the current measured value as well as the implementation of the zero and reference zero after the implementation of the zero again to perform the reading, to verify the correctness of peripheral communication and basic functions;

The air pressure setting below the electronic balance is mainly for convenience, when the actual single-point weight of the weight calibration does not meet the requirements, and when you want to adjust the air pressure value and then do the weight calibration again, you can directly input the target air pressure in this interface, and the data setting value of this interface is synchronized with the setting in the air pressure configuration.

8.4.3.2 Weight Calibration

Through the point-and-click interface, move the camera to the center of the weighing port of the electronic scale, and then move the actuating valve to the camera position, i.e., move the valve precisely to the weighing position of the electronic scale, and then record the current coordinate through "pos", which is fixed as the weighing position.

Set the calibration parameters, spray valve in the parameter mode, pay attention to the setting of the opening time and closing time of the valve, the subsequent software control will be effective with the parameter.

Considering the stability of electronic balance reading and the accuracy affected by external factors, it is recommended to set the motion in place, balance zero setting and reading delay time above 500MS;

Set the target standard single-point weight, single-point weight upper limit value, lower limit value, and the permissible deviation of the last measurement, and then perform the weight calibration. Here, when the weighing result is out of tolerance, the software will give a reminder message and will not save the current out-of-tolerance weighing value.

When the weighing result is out of tolerance, the software will give a message and will not save the current value of the weighing result.

8.4.3.3 Automatic weighing settings

Set the weighing conditions during processing, according to the actual requirements, after starting the processing in the processing interface, the software will automatically turn on the relevant timing and perform the weighing according to the set conditions.

Manually set the warning capacity of balance cup, cleaning cup and glue discharge cup, the software will automatically estimate the weight according to the amount of glue discharged during the weighing and cleaning operations, and give a prompt when the total weight exceeds the total weight, so as to avoid the overflow of the glue cup.

8.4.4 Valve Maintenance Configuration

8.4.4.1 Maintenance position setting

Set the weighing conditions during processing, according to the actual requirements, after starting the processing in the processing interface, the software will automatically turn on the relevant timing and perform the weighing according to the set conditions.

Manually set the warning capacity value of balance cup, cleaning cup and glue discharge cup, the software will automatically estimate the corresponding weight according to the amount of glue discharged in the process of weighing and cleaning, and will give corresponding prompts when the total weight exceeds, so as to avoid overfilling and overflowing of the glue cups.

8.4.4.2 Maintenance condition setting

Customized movement, you can write the corresponding cleaning file in advance in the customized movement configuration interface, you can also edit the customized movement through the interface, pop-up customized movement configuration interface, according to the actual requirements of the customized file by article to write the customized file, customized file preparation in the customized movement chapter one by one.

Execute cleaning before processing, in the case of checking the implementation of cleaning before processing, for specific processing scenarios, you can also check the implementation of cleaning before dispensing that is, in the visual positioning of the photo after the implementation of a cleaning, cleaning is completed, that is, the implementation of dispensing.

If you need to use the cleaning function in the valve offset configuration interface, i.e., if you need to perform cleaning at the position where the first step of JET is executed, you need to check the box of valve offset cleaning after the corresponding customization file, and you only need to check one box here.

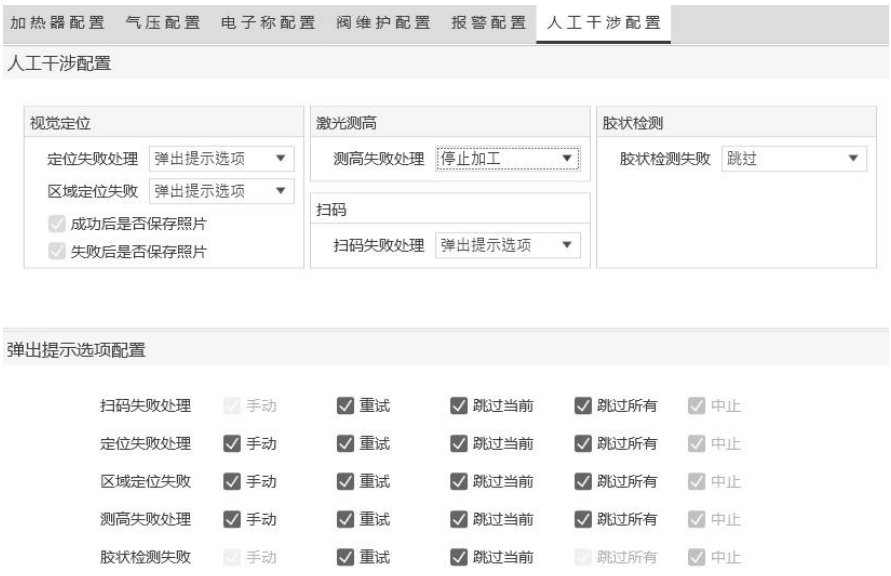
Specific cleaning conditions need to be set according to the actual application needs.

8.4.5 Alarm Configuration

Alarms support three modes: system pause, system stop, no alarm, alarm only four modes, according to the actual needs of the configuration.

Indicator light in the I / O port configuration of the physical port, the corresponding state configuration in the software, each color indicator used to indicate what state, check the configuration can be.

8.4.6 Manual Interference Configuration

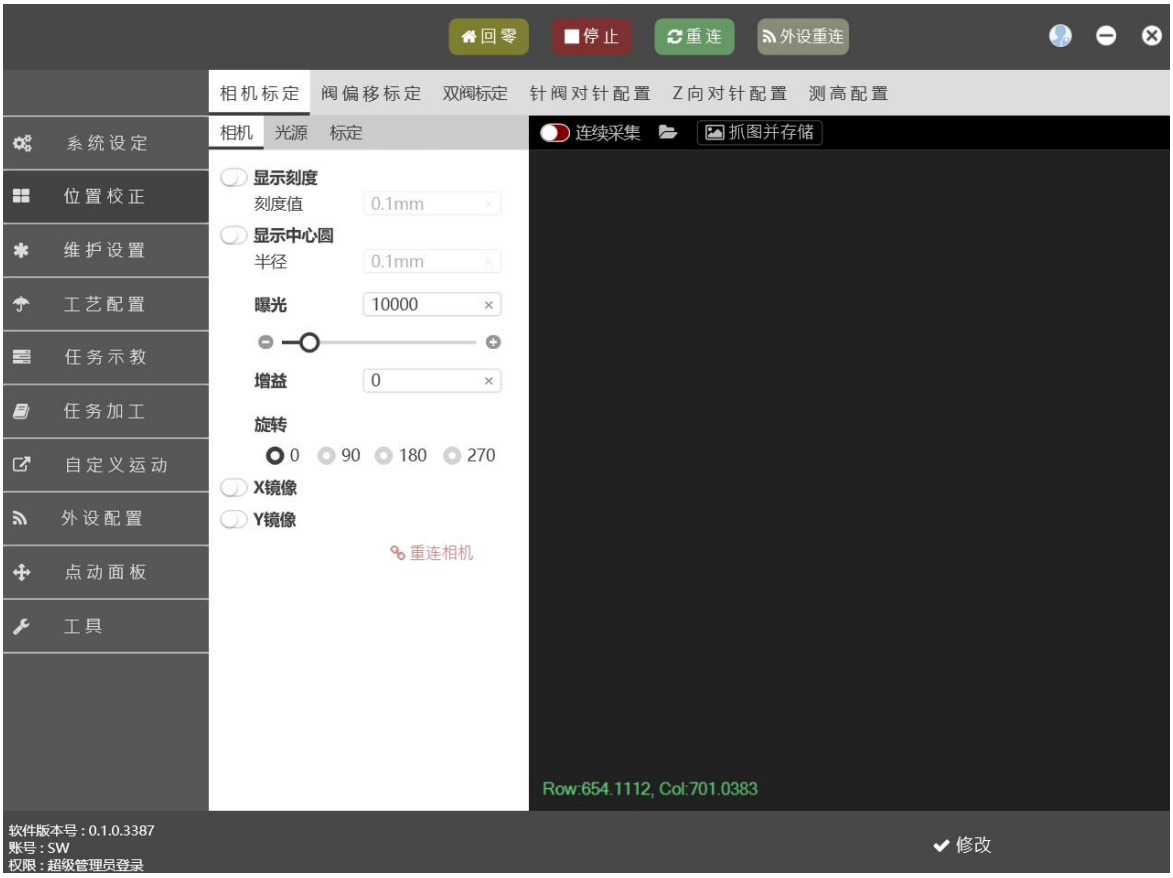


Visual positioning includes two types of visual positioning and regional positioning modes, manual configuration for positioning failure scenarios to provide skip the current, skip all, stop processing and pop-up prompt option in four modes; which when you select the pop-up prompt option, the prompt option corresponds to the content according to the need to check the operation items contained in it, including manual, retry, skip the current, skip all, and abort the five scenarios.

Manual is to specify the positioning center manually, retry to take the corresponding photo matching altimetry again.

8.5 Position Calibration

This chapter mainly introduces the camera calibration, valve offset calibration, dual-valve calibration (when the model is configured for dual-valve), needle-valve-to-needle configuration (when the model is configured for needle-valve), Z-to-needle configuration and altimetry configuration, which are configured in the actual use of the process operators need to be mastered.



8.5.1 camera calibration

8.5.1.1 camera

Check the display scale, the red cross cursor automatically according to the set scale display

Check the display of the center circle, the red crosshair cursor will add a set radius circle display.

The above two items are mainly based on the customer's own usage habits to confirm whether to check the box or not.

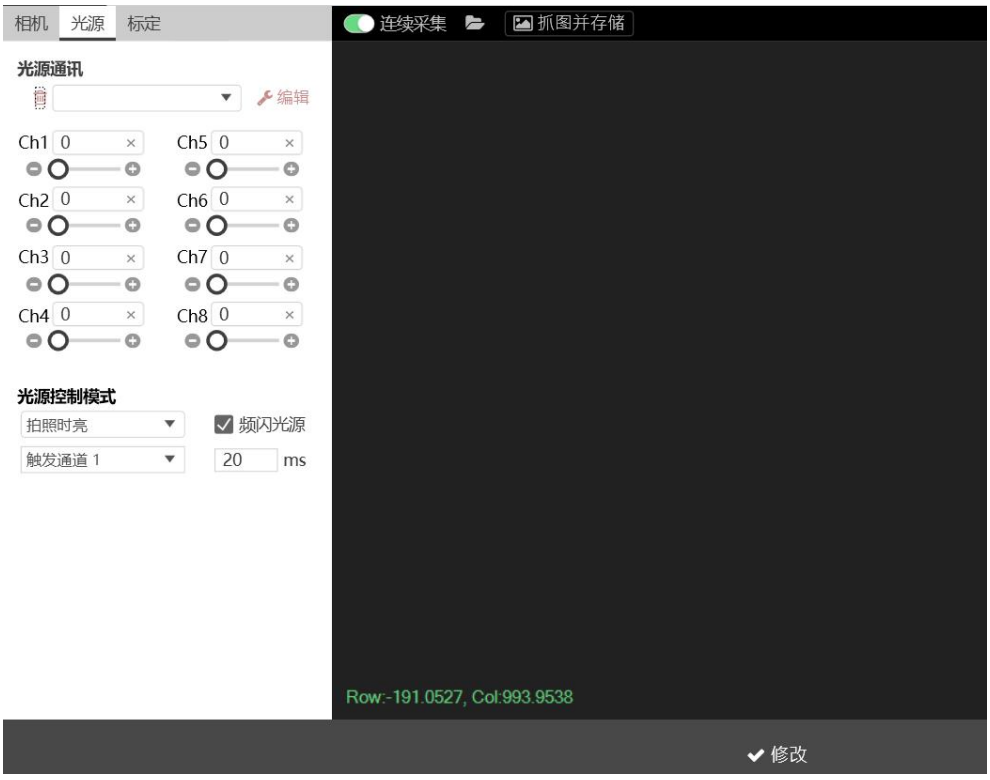
Exposure value according to the camera aperture and the corresponding light source light link to determine, it is recommended that the debugging process will be adjusted to the camera aperture of more than 70%, and then adjust the exposure value according to the requirements of the actual lighting effect to ensure that the use of requirements.

Gain is mainly used for denoising photos after lighting, gain value is too large will make the photo distortion information is too much, generally gain 0 can be, when needed, it is recommended to increase the value of the setting is not greater than 10.

Rotation: according to the camera installation and fixation method to determine, through the rotation of different rotation angles, the camera will present the photo angle and the actual product placement after the presentation of the same angle.

X/Y Mirroring: According to the image presented and the actual product placement results of comparison to confirm whether to check the box.

8.5.1.2 Light Source

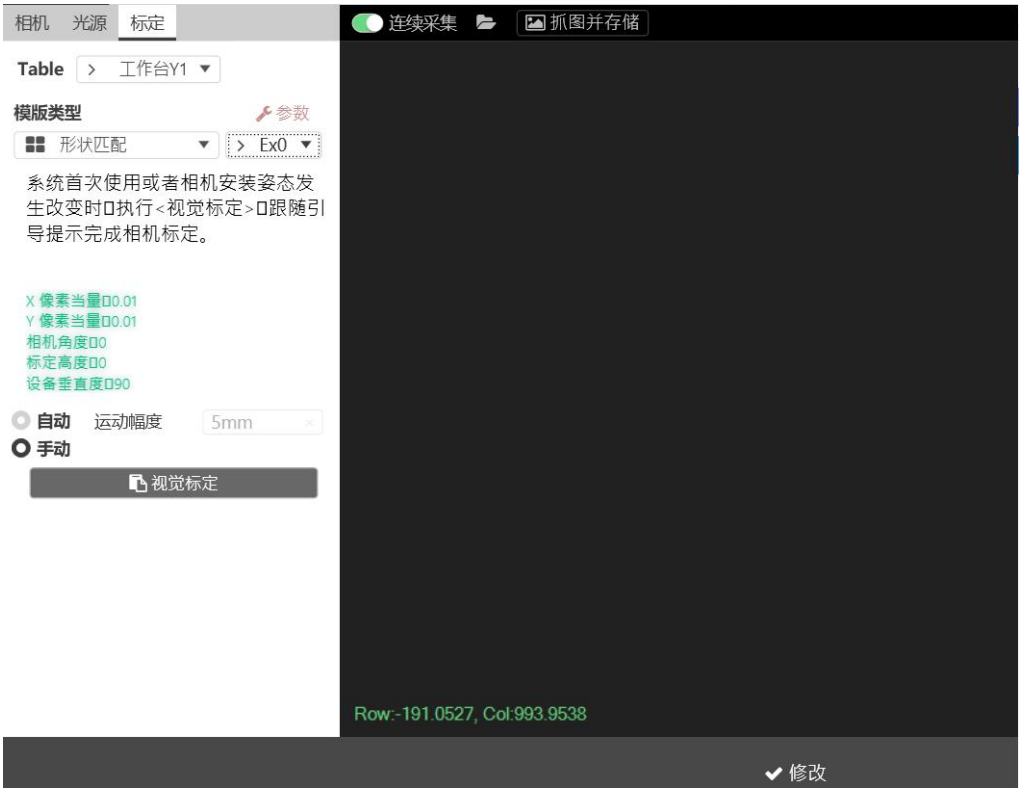


If the light source is a communication type, make a good communication configuration in the peripheral configuration, choose the correct configuration file here, and click modify to confirm after selection.

Light source is usually divided into constant light source and strobe light source, according to the actual model selection; strobe light source, you need to use the output port of the control card (need to be in the output port configuration) to do a good job in the physical port configuration, in the photo, the software will be based on the settings correctly through the output port of the control card to output the trigger signal to complete the triggering of the light source.

Non-frequency flash source trigger channel and trigger period are not required to set.

8.5.1.3 Calibration



Select the worktable (the default worktable of single-Y model is worktable Y1).

The template type provides three conventional modes: shape matching, contour matching and circle center finding, and contour matching mode is recommended.

First of all, the calibration features placed directly under the camera, by adjusting the camera height and focus, etc., to ensure that the characteristics of the object is in a clear modeling state, and then according to the prompts to perform step-by-step calibration, calibration is completed by clicking on the screen through the mouse to specify the location, and then the center of the camera cross if it can be accurately run to the specified click position, then the results of the calibration is verified to be correct.

8.5.2 Valve offset calibration

According to the configuration of the model, select the valve to be calibrated and calibrate the valve attitude, then move the valve to the appropriate height above the calibration surface, execute JET dispensing, dispensing is completed after the implementation of the next step, and then move the camera, the center of the camera cross aligned with the center of the glue point, and then perform the next step to perform the deviation calculations, the results of the deviation calculations will be in the calibration results with the X/Y/Z offset value show.

Regarding the selection of dispensing point: the software supports the multi-point mode of dispensing point, according to the checkbox and the set parameters such as multi-point interval distance uplift distance interval time, when executing JET, the glue will be dispensed automatically from multi-points at the specified position in sequence.

For the scenario that the height of calibration plane is not consistent with the height of the valve plane, in order to avoid the automatic adjustment calculation of the actual processing Z coordinate by different Z-axis height changes during the execution of valve offset, it is necessary to check the box of calculating the XY deviation only in the third step of the execution of valve offset.

For the model with attitude axis, when the valve offset calibration is executed for the first time, it is necessary to select different attitudes in the first step, and adjust the valve attitude to the set position by adjusting the movement of the attitude axis, after executing JET, and then executing the next step, which will automatically display the corresponding attitude axis coordinates in Attitude 1 and Attitude 2. The control of attitude axes can be completed by selecting the corresponding axes in the right extended axes and then executing the point movement.

In the second step of aligning the center of the camera with the center of the glue spot, the exposure can be adjusted through the drag bar on the right side of the dynamic screen to ensure that the glue spot can be seen correctly.

8.5.3 Dual-valve calibration

Dual-valve configuration models, according to the wizard in the first step in turn to complete the spraying of four glue points, and then in turn to complete the V2-0/V2-X/V2-Y three glue points of the center of the camera and the center of the glue point alignment, and finally the implementation of the deviation of the calculation of the correct results of the calibration.

The above figure shows the scene for the deputy valve XY, if the configuration model for the main valve X deputy valve Y scene, the second step of the glue point position will be different, schematic content V2 indicates the deputy valve, V2-0 in the 0 indicates the origin, V2-X indicates the maximum stroke of the small X at the maximum stroke of the V2-Y indicates the maximum stroke of the small Y at the maximum stroke.

8.5.4 Needle Valve to Needle Configuration

Needle valve to needle configuration is only for the model configuration for the needle valve scenario, and the device is installed to the scene of the needle device, the needle device and the controller hardware wiring refer to the hardware wiring instructions;

Needle valve alignment requires a complete and correct valve offset, and then perform a calibration of automatic needle alignment, the results of automatic needle alignment is only a record of the current needle valve relative to the precise position of the needle gauge, for the subsequent automatic alignment and automatic correction of the valve offset position as a benchmark.

The correct use of the process for if the re-execution of the valve offset calibration, you must do a calibration of the automatic needle, record a correct benchmark, if the device has a needle device, then the subsequent needle or needle position change, it is recommended that direct automatic needle can be without the need to perform the operation of the valve offset calibration.

Operation process:

First of all, the needle valve movement manually moved to the center of the needle alignment instrument, and Z down to the needle alignment instrument inside, to ensure that the XY movement can be correctly sensed signals, at this time through the POS record of the starting position of the needle.
Then set the needle speed, air shift speed, XY round-trip displacement, the number of times the needle is repeated, in order to ensure the accuracy of the needle, the needle speed can be set as small as possible, it is recommended that the setting in the following 5.

Set the parameters to save the implementation of the calibration of automatic needle alignment, needle alignment is completed, click to confirm the save.
After setting the starting point of alignment and related parameters, you can execute CPK to verify the consistency of the installation.
To use this function, turn on automatic needle alignment, and in the valve multi-attitude scene, select the attitude that needs to participate in needle alignment.

相机标定
阀偏移标定
双阀标定
针阀对针配置
Z向对针配置
测高配置
位置
定位
X: 0.000
Y: 0.000
Z: 0.000
Y2: 000.00
步进
0.01mm
工作台
Y
Y2
Z
快速
40.000
mm/s
慢速
2.000
mm/s
扩展点动
双阀相对运动X轴
低速
0.01mm
pos:0.000
Row:-5.9172, Col:-91.7160
打开自动对针
阀号
阀1
阀姿态
基准姿态
当前阀姿态参与对针
对针起始位置
X 0.000 mm
Y 0.000 mm
Z 0.000 mm
Pos
Go
[GO] Z轴安全保护距离
0
自动对针结果
自动对针结果 X 0.000 mm
自动对针结果 Y 0.000 mm
自动对针结果 Z 0.000 mm
标定自动对针
XY对针速度 20 mm/s
Z对针速度 20 mm/s
XY空移速度 20 mm/s
Z空移速度 20 mm/s
XY往返位移 0 mm
对针结果最大合法偏移 5 mm
对针重复次数 1
重复对针报警偏差 0 mm
对针前执行回零
新建任务时执行对针
对针CPK
重复次数
10
开始
停止
确认

8.5.5 Z-Way Needle Alignment Configuration

The Z-needle alignment device is commonly referred to as the "mushroom head", and is effective when the Z-axis needle alignment function is turned on for equipment with a Z-needle alignment device installed.

Operation procedure:

Record the pin position - Set the pin parameters - Set the maximum pin travel and operating error - Calibrate the Z-axis pinning.

In order to ensure the precision of needle setting, the Z-axis needle setting speed is required to be set at less than 2 mm/s;

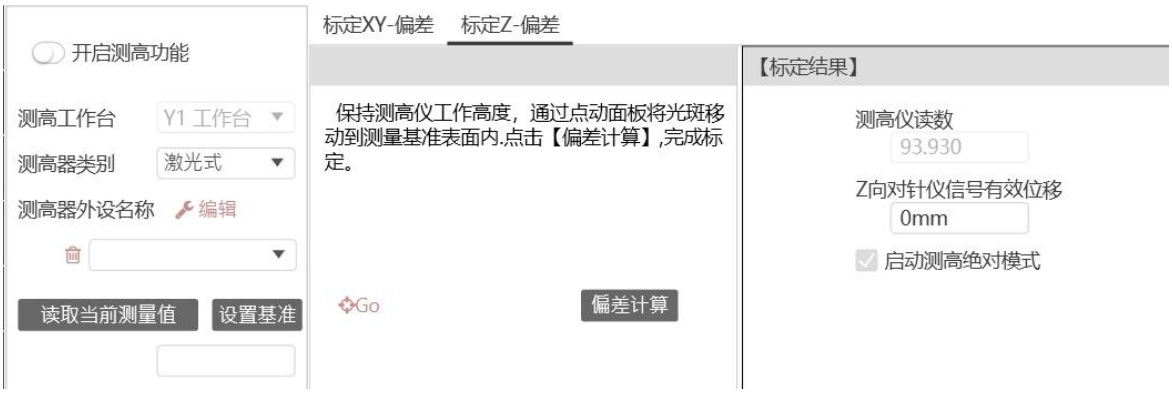
After the valve offset calibration, in order to find the center position of the mushroom head more accurately, you can move the center of the camera to the center position of the mushroom head, and then quickly move the valve to the center position of the mushroom head by quickly tapping the "Valve Move to Camera Position" button on the upper left of the arrow through the Z-axis.

8.5.6 Altimeter Configuration

Turn on the altimetry function, correctly select the type of altimeter and configure the altimeter, and after the configuration is completed, determine the correctness of the communication by reading the current value.

Operation process:

Complete the calibration of XY deviation and Z deviation sequentially according to the prompted information.



Notes:

1: Different altimeters may have negative height values, the current software does not support negative readings, so you need to altimeter settings, the processing of the required measurement range are adjusted to positive values.

2: Altimeter there is altimeter data refresh response frequency, it is recommended that the refresh response time is set at 100ms or less, there are specific use scenarios (such as flight altimetry) need to re-evaluate the response time.

3: It is necessary to pay attention to the effective range of altimeter readings, if you use absolute altimeter mode, you need to check the box to enable the absolute mode of altimeter, at this time the Z height of the process will be based on the location of the regional altimeter point as a benchmark, a positive value means that the Z moves negatively to the principle of the reference plane, and a negative value means that the Z moves positively close to the reference plane (used for the processing of the product concave setup scenarios in the fixtures).

8.6 Process Configuration

The process configuration includes the zero return process and the default dispensing process parameter configuration.

8.6.1 Zeroing process

Zeroing parameters include zero return speed, secondary zero return speed, backward distance, secondary backward distance, stopping position, zero return direction, zero return sequence, and so on.

轴标签	回零速度	二次回零速度	回退距离	二次回退距离	停靠位置	回零方向	回零顺序
X轴	100	20	5	2	0	正	g2
Y1轴	100	20	20	2	0	正	g2
Z轴	100	20	5	2	0	负	g1
双阀相对运动X轴	40	20	5	2	0	负	No
双阀相对运动Y轴	40	20	5	2	0	正	No
阀异步姿态轴	40	20	5	2	0	负	No
阀2异步姿态轴	40	20	5	2	0	负	No

Zeroing direction: Choose according to the structure of the equipment, X running to the right is positive, Y running upward is positive, Z axis upward is negative, here we need to pay special attention to the direction of the Z axis.

Zero return order: NO means the corresponding axis is not reset, g1 means reset first, g2 means wait for g1 reset to finish and then reset, usually in order to prevent the safety of hitting the needle, the Z-axis performs reset first; when the setting order is the same, it means the reset is performed at the same time.

8.6.2 Default Dispensing Process Parameter Configuration

Default dispensing process parameters include speed parameter, valve parameter, speed limit, once the parameter is set, the subsequent new task will automatically take the default parameter as the standard to create a new task file; in order to minimize the subsequent operation, according to the operating status of the equipment before the new task as well as the actual processing of the dispensing parameter to be used to set up the default parameter first. Normally the speed parameters and speed limit values do not need to be modified again for subsequent use.

8.7 Customized Motion

Customized movement covers: switch glue, output port, positioning movement, axis movement, micro wipe, back and forth wipe, wait for the state, custom prompts and other 8 types of commands.

New process:

1: Click New, enter the custom file name

2: According to the actual action requirements in turn, select the corresponding functional instructions, set the corresponding action, click on the center of the insertion, it will automatically be displayed in the left side of the display area of the content of the instruction

3: Insert the scheduled actions one by one

4： After finishing the writing and clicking Save, you can directly test whether the process conforms to the design through the Test button.

5： If you want the customized function to be operated manually in the task processing interface, click "Set Processing Interface Shortcut Keys", and then select the corresponding customized task in the shortcut key setting interface.

8.8 Peripheral Configuration

Commonly used peripherals usually refer to electronic scales, altimeters, temperature controllers, barometers, light sources, code guns, valves and so on.

Configuration process:

1: Select the peripheral type, then find the corresponding peripheral model and click Create.

2： Input the communication file name in the pop-up communication parameter page and configure the corresponding serial port number and other serial port settings according to the current computer port, and then click to confirm.

3： After creating the new file, you can select the file on the left side, and then execute "Open" to establish communication, execute "Send", and then observe the return data in the blank area on the upper right, if there is a correct data return, it means that the communication settings are correct and the communication is successful.

Remarks:

At present, the peripherals have covered the mainstream signal of the mainstream peripheral brands on the market, if you can not find the corresponding model in the process of use, you need to provide detailed information on the corresponding peripherals and contact our technical service staff.

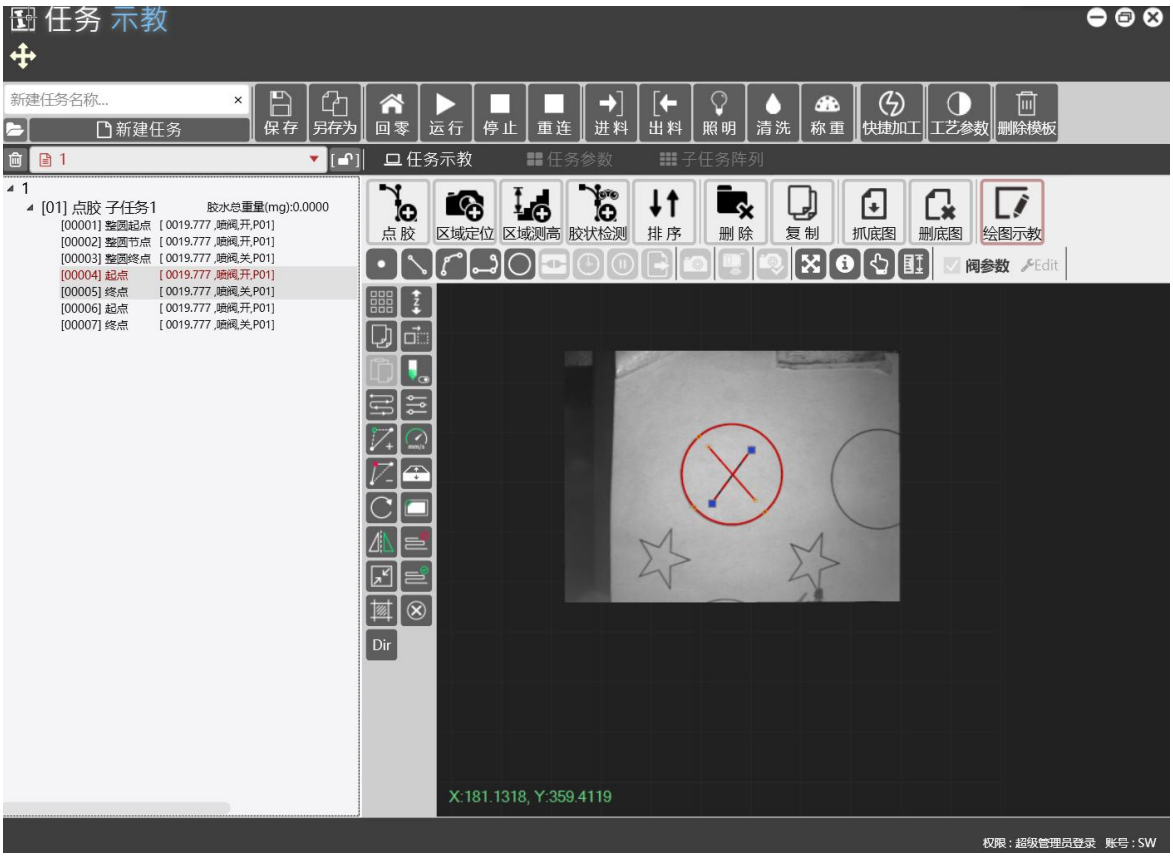
8.9 Task teaching

A task can contain: multiple dispensing sub-tasks, regional positioning sub-tasks, regional altimetry sub-tasks and glue detection sub-tasks.

There are two types of task teaching: drawing teaching and pointing teaching.

Drawing: The camera intercepts the base map, and then according to the actual need for dispensing trajectory, by selecting the corresponding element type, in the corresponding position of the corresponding trajectory, with the advantages of intuitive and fast.

Pointing teaching: Select the element type, and then through the camera or the needle, the center of the camera or the needle to move to the specified position, one by one to complete the operation of the teaching.



Task new construction process:

1: Input the new task name and click "New Task", then insert the dispensing sub-task.

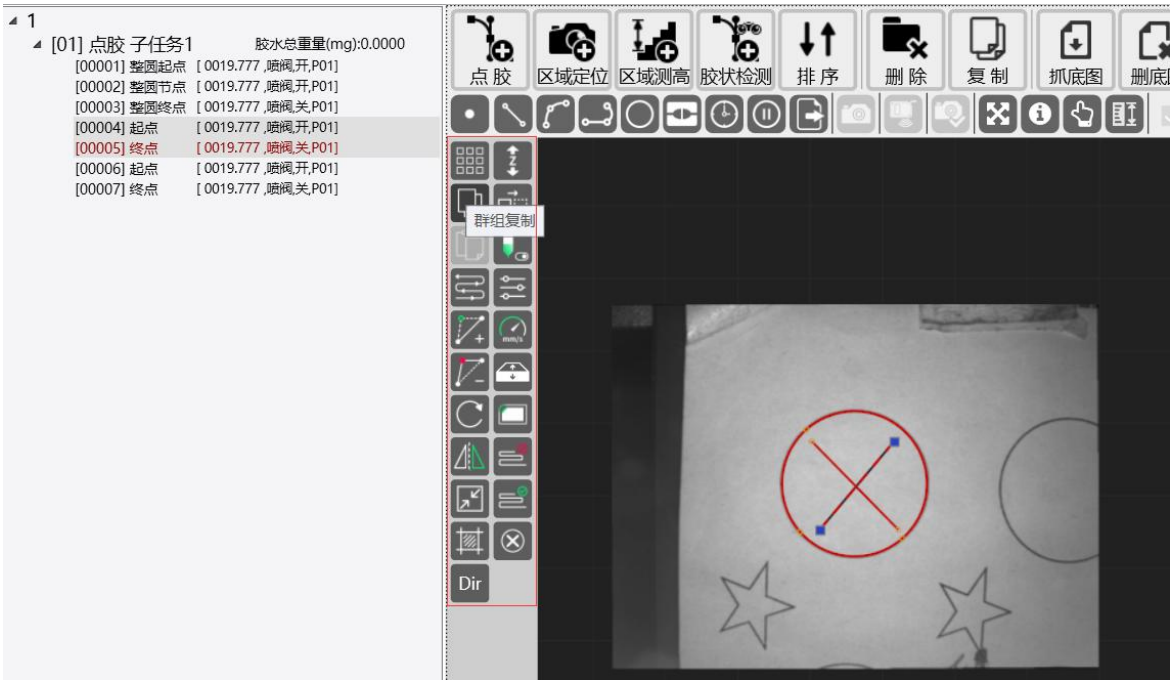
2： Move the camera to the top of the workpiece to be processed, capture the base map, if the scope of the view window can not cover the graphics to be drawn, move the camera and capture the base map again.

3: Select the type of elements that need to be taught, in turn, in the base map of the required dispensing position of the trajectory drawing, the example of the drawing of a full circle and two straight lines, the software provides isolated points, straight lines, arcs, polylines, full circle and other types of elements.

4: If the teaching by pointing, you need to teach the way to switch to point teaching, in the selection of dispensing sub-task, select the required elements drawn type, the software automatically pop-up teaching editing interface (the following figure for the arc of the rotation of the pop-up teaching editing interface).

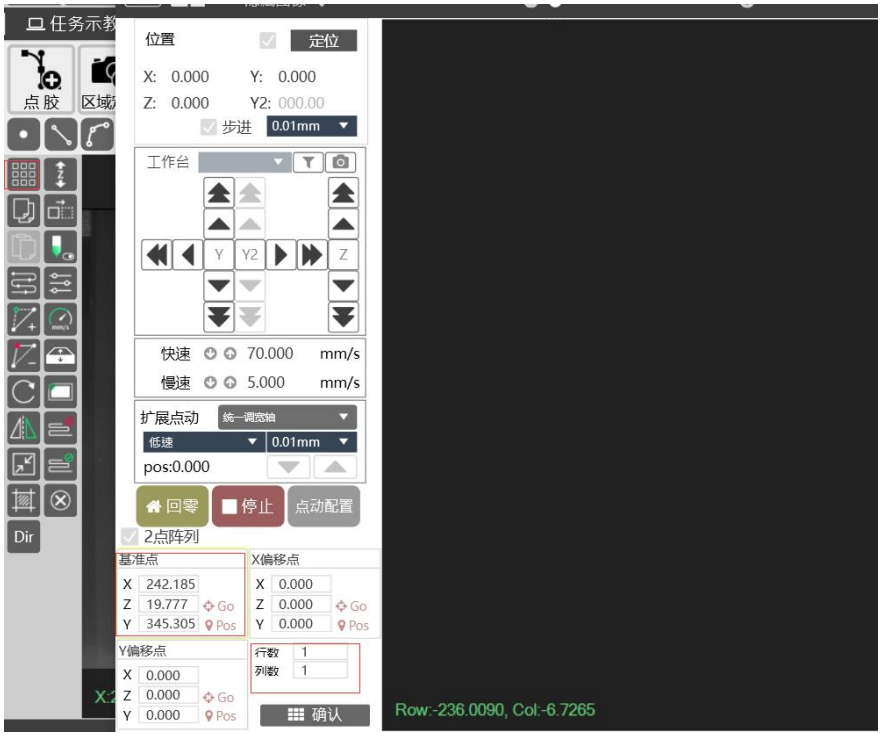
5: Then select the teaching mode according to need (select the camera or needle), select the camera mode, according to the right side of the camera dynamic display panel screen, move into place after clicking on the "teaching" (precise movement of the center of the camera to the specified location, you can click the left mouse button on the screen to achieve the way), the software will be one by one to record the teaching The software will record the teaching position one by one and finally form the required machining trajectory, after teaching a section of the trajectory, click to confirm. If you need to switch the teaching type of the next trajectory, you can directly select the corresponding teaching element type in the upper left corner of the teaching editing interface without leaving the teaching editing interface.

8.9.1 Element Editing



8.9.1.1 Group Array

Select the elements you want to group array, and then click " " icon, the operation interface shown in the figure below will pop up.



Select the reference point of the array and the offset point in X direction and the offset point in Y direction through the center of the camera, and then input the corresponding number of columns and rows, click on the confirmation, the software will generate the trajectory of the array automatically according to the offset distance of the rows and columns and the number of rows and columns, and the trajectory will be displayed in the interface of the task after the array.

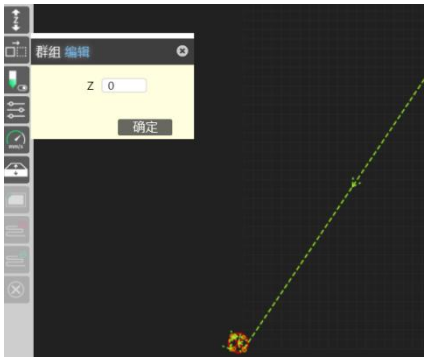
8.9.1.2 Group copy/paste

Select the trajectory to be copied, and then click " ", the following information prompt box will pop up;

Click "OK", close the prompt box, and then use the left mouse button to click on the location of the required paste, the design allows any element in any element of the end of the paste after the insertion of elements, select the location of the paste, the toolbar group copy icon automatically gray at the same time will be automatically set to the array of the paste function is available at this time to operate a red box in the following figure At this time, operate the group paste shown in the red box in the figure below, the array paste operation box will pop up automatically, use the camera center to find the reference point, the implementation of the group paste can be. The datum for copying and pasting is based on the processing starting point of the selected element.

8.9.1.3 Modify Z by group

Select the element whose Z coordinate you want to modify, and then execute the Group Modify Z coordinate, enter the corresponding Z coordinate in the popup box on the right side of the icon and click Confirm.



8.9.1.4 Group Offset

Select the element you want to perform the group offset, then perform the group offset, enter the corresponding X/Y/Z offset in the popup box on the right side of the icon and click confirm, pay attention to adjust the position according to the expectation and enter the positive and negative values.

8.9.1.5 Group Modify Switch Gel

Select the element to be operated, and then perform the switch glue group operation, in the pop-up prompt box on the right side of the icon, operate according to the prompted information, and then confirm the operation.

8.9.1.6 Group Sorting

Select the elements to be operated, as shown in the figure below, three segments of the trajectory is selected, and then perform the trajectory sorting, according to the prompted information to specify the sorting datum, that is, using the mouse in the task to teach the interface to click on the specified datum, the sorting of the closest to the datum of the starting point of the starting element for the machining of the starting segment.

8.9.1.7 Group Modification Parameter Set

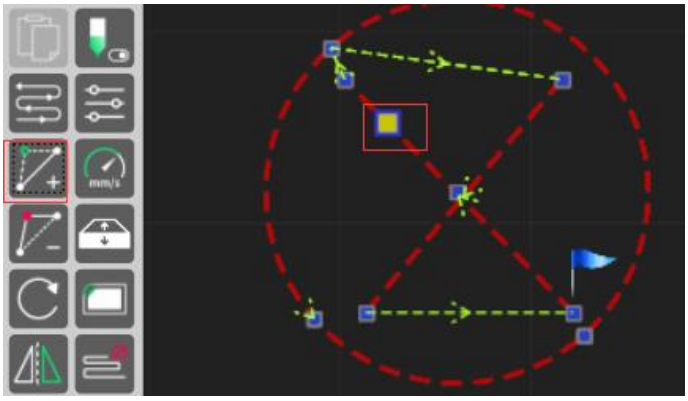
Select the element to be operated, and then group modification parameter group, in the icon on the right side of the pop-up prompt box according to the prompt information to select the parameter group to be specified, after the operation can be determined.

8.9.1.8 Modify trajectory speed by group

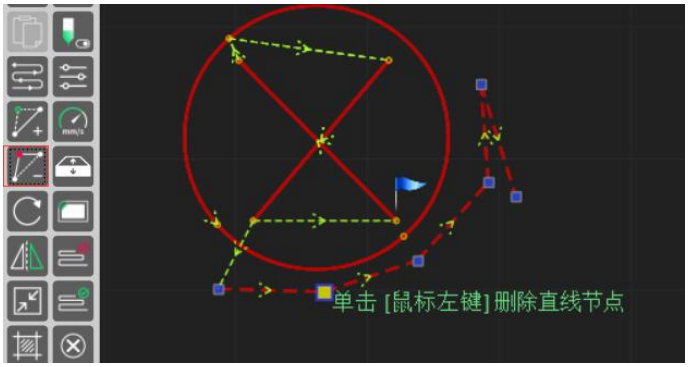
Select the element to be operated, then the group modifies the parameter group, the prompt box pops up on the right side of the icon to input the set trajectory speed, after the operation, you can determine.

8.9.1.9 Add node/delete node

Select the element to be operated, the implementation of the increase node, and then the mouse to go close to the required increase node of the track elements, and then the mouse will automatically capture the point after the change to the small yellow square shown in the figure below, and then click the left button, that is, to add a node here.

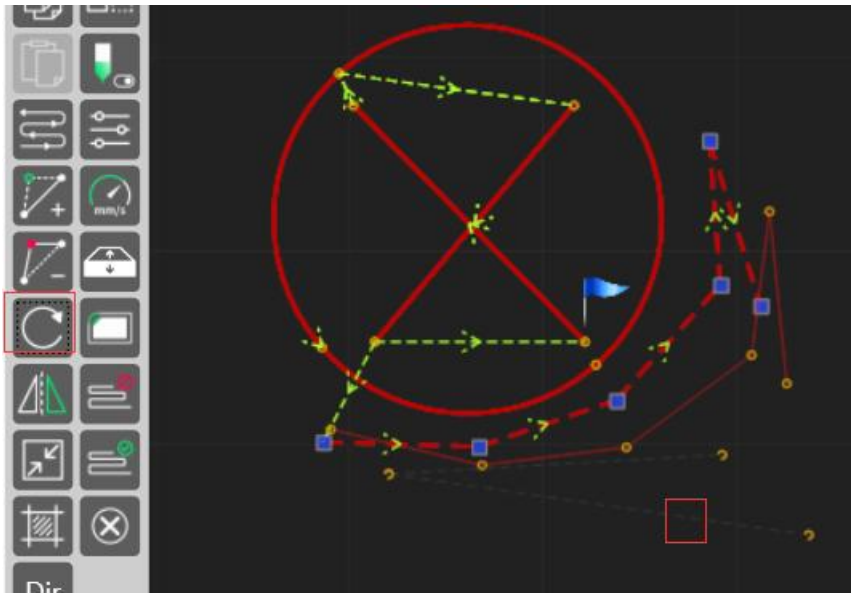


Select the element to be operated, perform the deletion of nodes, and then the mouse to go near the node to be deleted, the mouse will automatically capture the node after the point becomes a small yellow square as shown in the figure below, and then click the left button, that is, the node will be deleted.



8.9.1.10 Group Rotation

Select the element to be operated, the implementation of group rotation, and then click the mouse to generate a rotary axis of the starting point, click again to generate a rotary axis of the end point, and then release the mouse can perform any rotary operation, as shown in the figure below, shown in the lower right corner of the red box is the rotary axis of the target position, the dotted line for the desired elements to do the rotation, the red line for the rotation of the target position of the thin solid line.



8.9.1.11 Group Compensation Z

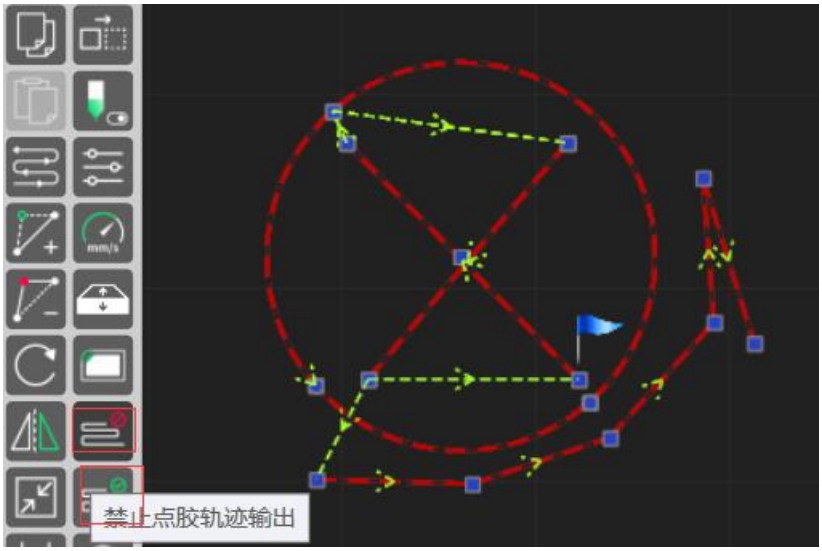
Select the element to be operated, execute Group Complement Z, in the pop-up right prompt box, according to the drop-down options, rotate the appropriate height compensation value, click to confirm. The height compensation value needs to be edited by yourself in advance in the editorial text on the right side, the compensation value is not displayed in the coordinates on the left side, and Z will be corrected during the actual machining process.

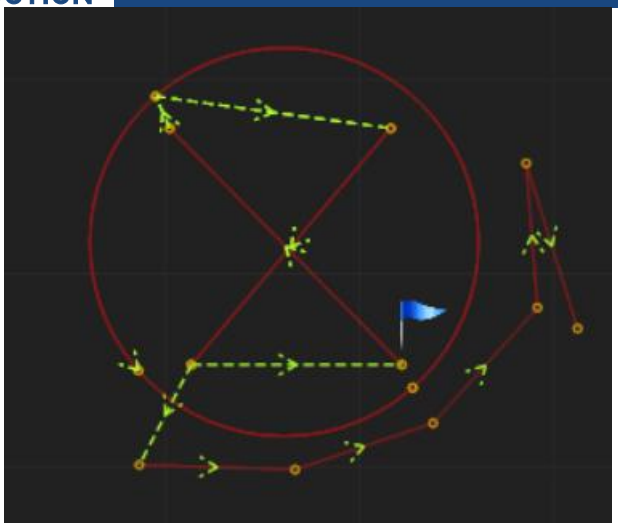
8.9.1.12 Group chamfering

Select the element to be operated, execute group chamfering, and in the pop-up prompt box on the right, input the radius of rounded corner and then OK.

8.9.1.13 Enable/disable trajectory output.

Select the element to be operated, execute the trajectory output enable/disable, the disabled trajectory will be displayed with a red solid line, and the disabled trajectory will not be executed during the machining process.





8.9.1.14 Trajectory reversal

Select the element to be operated, execute "Dir" to reverse the trajectory, this function will swap the start point and end point of the selected trajectory.

8.9.1.15 Delete selected elements

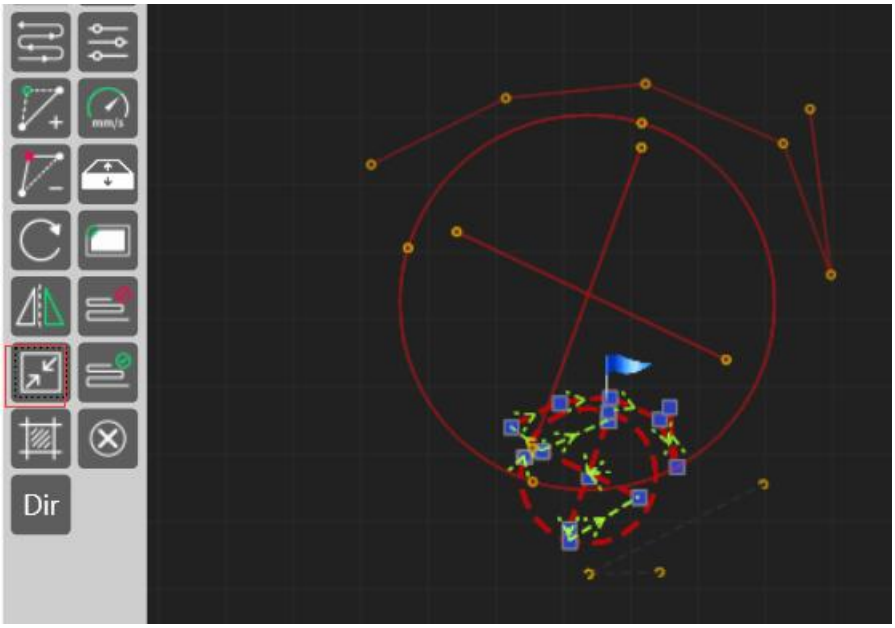
Select the element to be operated and execute the delete operation to delete the selected trajectory.

8.9.1.16 Mirror Image

Select the element to be operated, perform group mirroring, then mouse click to generate a starting point of the mirroring axis, click again to generate an end point of the rotation axis, and then the software automatically performs mirroring according to the specified mirroring axis.

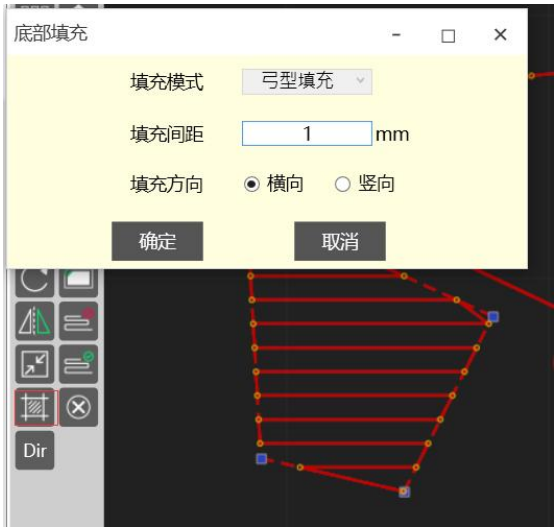
8.9.1.17 Scaling

Select the element to be operated, the implementation of group scaling, and then click the mouse to generate a scaling base position, click again to generate a scaling base end point, and then release the mouse can be performed proportionally scaled, the following dotted line for the expected to do the scaling of the element, the red line for the size of the target element after the scaling of the thin solid line. The gray dotted line is the scaling reference and scaling scale.

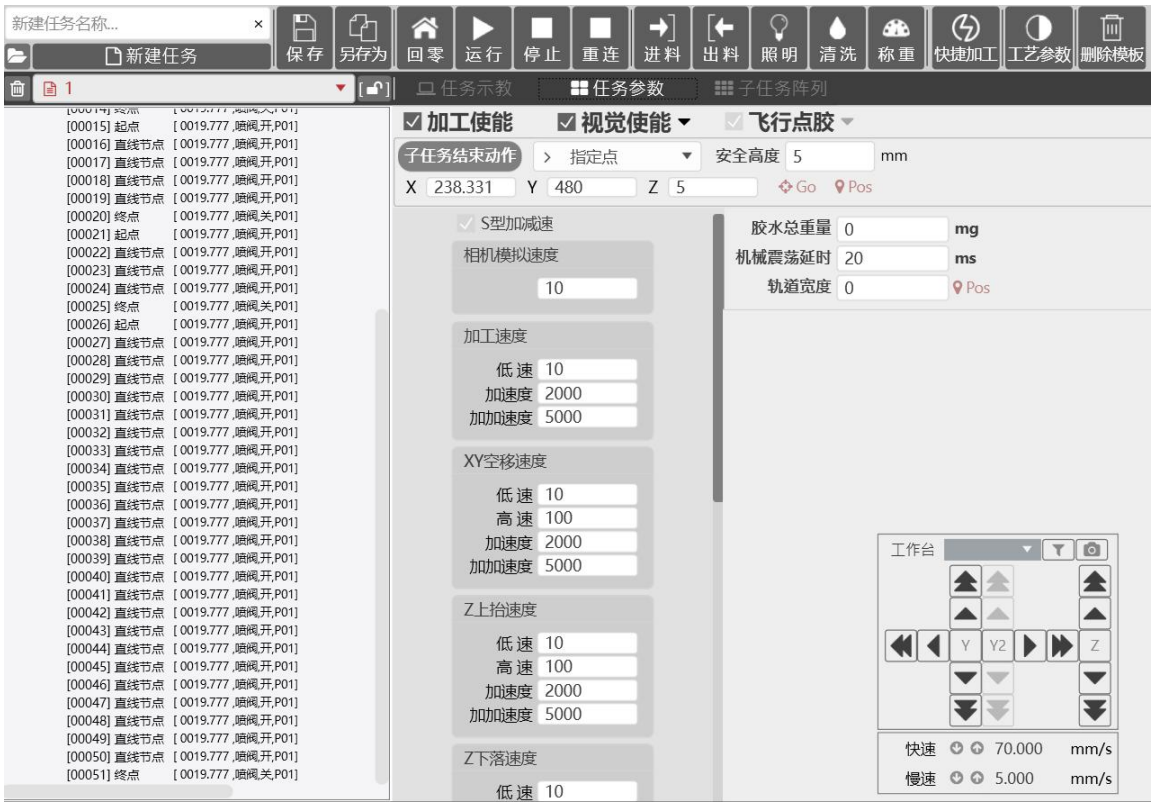


8.9.1.18 Bottom Fill

Select the track element that forms a closed area to be filled, execute Bottom Fill, then set the corresponding filling parameters in the popup box and click Confirm.



8.9.2 Task Parameters



Processing Enable:

check the box to indicate that the corresponding sub-task is processed, uncheck the box to indicate that the sub-task is not processed.

Visual Enable: Check the box to indicate that the sub-task has visual positioning, and the corresponding template creation option will be enabled in the sub-task array and subsequent operations.

Positioning Correction Trajectory:

You can select Positioning Correction Trajectory in the drop-down selection of Vision Enablement, when the position of the carrier changes and you expect to re-adjust the trajectory, you can prioritize the execution of Positioning Correction Trajectory; Positioning Correction Trajectory is a process of re-adjusting the template and trajectory based on the current position.

Sub-task end action:

Support five settings: start point, end point, specified point, system back to zero, and customization; when choosing customization, you need to edit the corresponding customization file in advance and select the customization file correctly.

Safe Height:

Here is the Z-axis stopping height after machining is finished.

Total Glue Weight: Setting to 0 indicates that the function is not enabled. If set to a non-zero parameter, when the total glue weight of the task trajectory exceeds this value, a prompt of no processing is given. Avoid abnormal difference in the weight setting of the trajectory in the task.

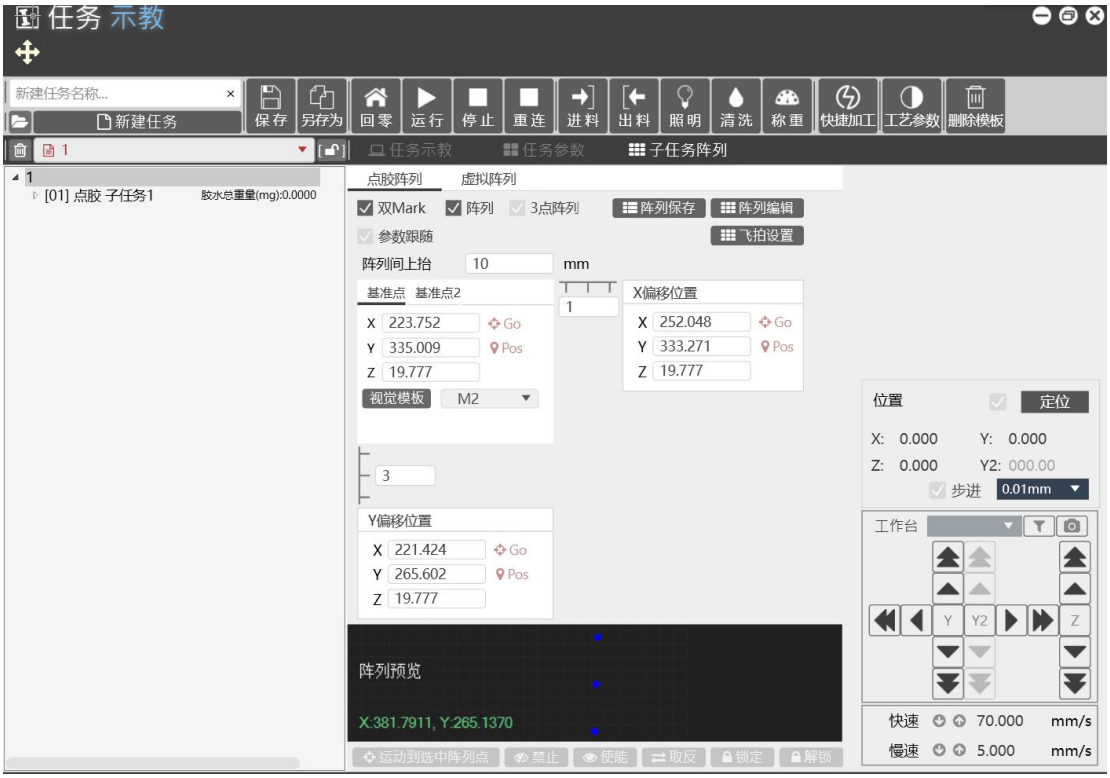
Mechanical vibration delay:

This parameter is used to eliminate the effect of mechanical vibration, and perform subsequent actions such as taking pictures and dispensing glue after the equipment runs in place and stays for a set period of time, so as to improve the positioning accuracy and processing accuracy.

Track width:

In the track setting, after turning on the automatic width adjustment function, the track width will be bound with the file, and when switching the file, it will judge whether the bound width of the file is the same as the current track width, and if it is not the same, it will be automatically adjusted to the track width bound to the file after switching.

8.9.3 Subtask Array



Check Double MARK, the datum and datum 2 will appear automatically, if you don't check Double MARK, there is only datum by default.

Check Array, X offset position and Y offset position options will appear automatically. The default is 3-point array, after checking the box, it is 2-point array, only the diagonal position needs to be set.

Parameter Follow: For the scene with multiple sub-tasks, in order to realize the special processing sequence, you can choose Parameter Follow and bind the following sub-tasks, at this time, the sub-tasks with the Parameter Follow checked do not need to be positioned visually, and use the positioning results of the following sub-tasks.

Inter-array lifting: This value is the relative height value, which indicates that after machining all the trajectories of one array point, then lift up the specified height and move to another array point for machining.

Array Preview: This value indicates all the array points corresponding to the subtasks, including the array points pre-processed by the subsequent subtasks.

8.9.3.1 Vision Template

After vision enablement, the subtask array interface, the vision template setup option appears automatically.

If the file name of the visual template is blank, click "Visual Template", then the template new interface shown in the figure below will pop up automatically, and according to the self-test results, a template name will be given starting with M. If a new template has been created and has a file name, click "Visual Template", and then the existing template will be opened, at which time you can perform the analysis of the existing template. Existing template, at this time you can perform the existing template modification or rebuild; you can also enter your own expectations of the new template name, and then click on the "visual template" to enter the template new interface for the new, at this time the new template name will be the name of the self-entered template.

8.9.3.1.1 New Visual Template - Basic Parameters

Search Quantity: the number of MARKs that can be matched to the lowest low score or above in the field of view search range according to the specified template, as shown in the following figure, if the search quantity is 2, then the field of view range will be searched to 2 MARK points, usually the value is set to 1.

Minimum Score: According to the similarity of the template matching MARK, the lower the minimum score is set, the easier it is to find MARK points, but at the same time, it may lead to insufficient positioning accuracy; the value is set between 0-1, usually the value is set between 0.7-0.9 set according to the actual use of the site.

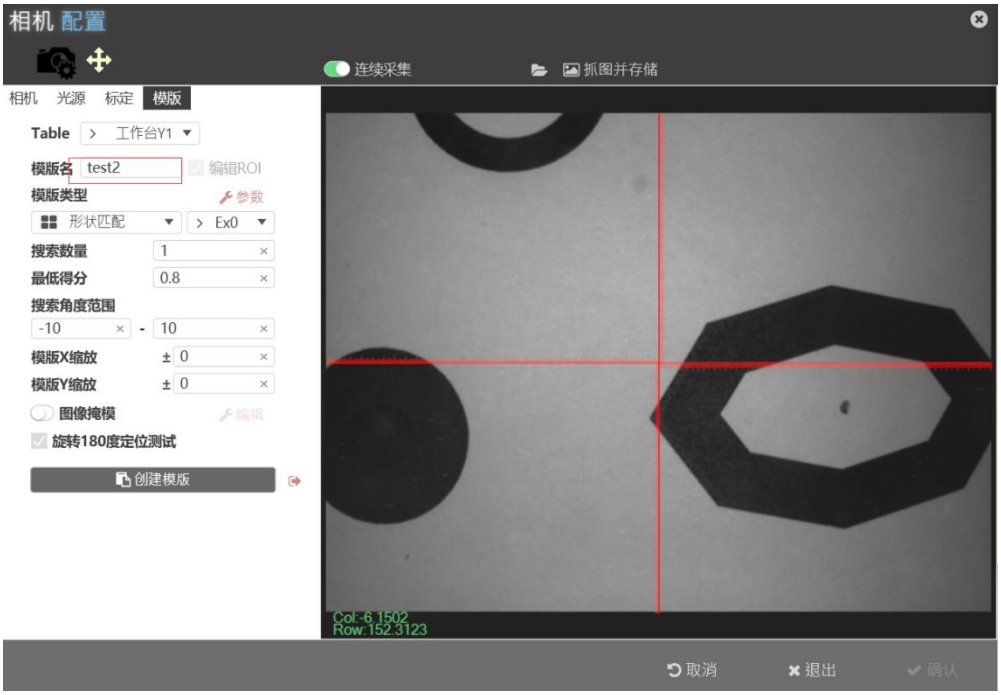
Search Angle Range: Default value ±10 degrees, meaning that when searching for a matching MARK, the template is allowed to rotate within this angle to search for the MARK point with the highest degree of recognition.

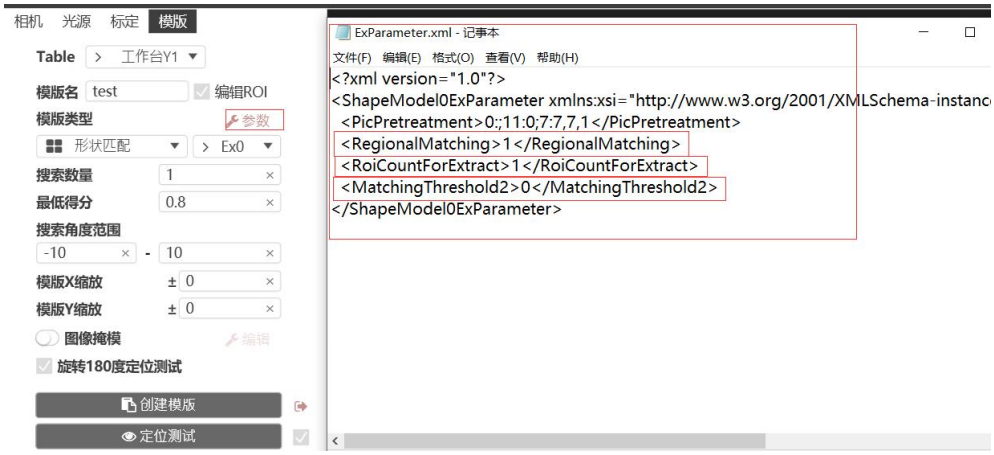
Template Scaling Range: When matching AMRK, the template is allowed to be scaled within the set deviation range for matching, the default value is 0. In specific scenarios where the template deformation is large and the consistency of the scenario is poor, the normal setting is 0.

Image Mask: Used in specific modeling scenarios, used to cover up or fill in part of the area by artificial mask to meet the requirements of successful modeling.

Rotate 180 degree positioning test: the newly created template will be selected 180 degrees to do matching test, specific use occasions, the default is not checked.

8.9.3.1.2 New visual template - shape matching





Parameter description of the new template:

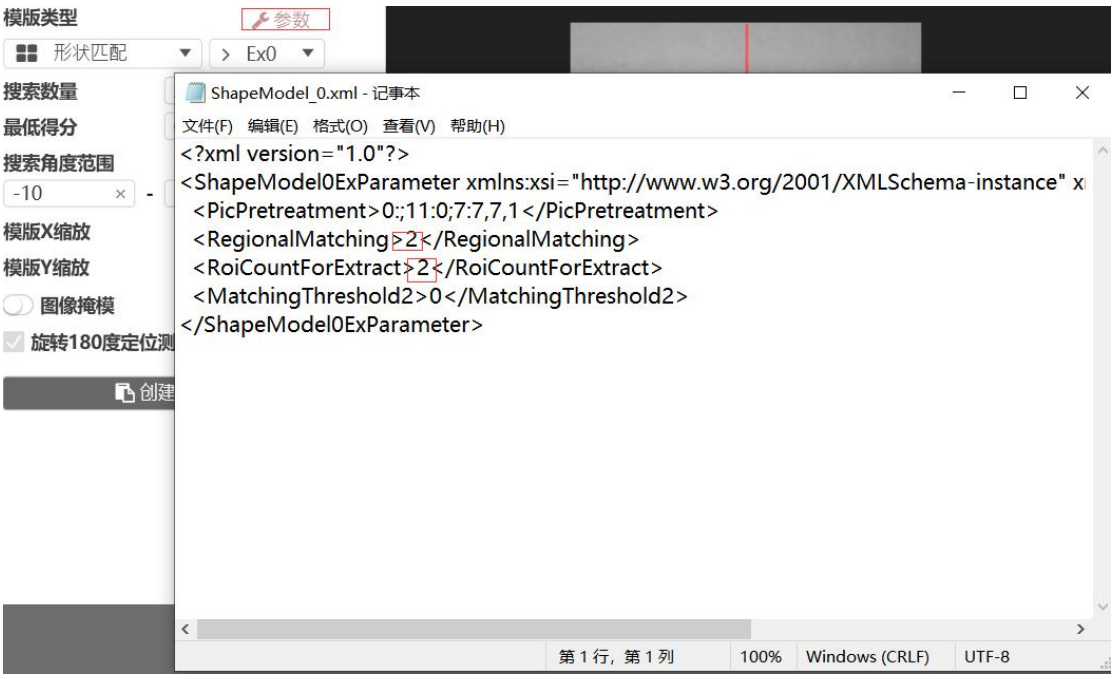
1: RegionalMatching: the default is 0, for the entire field of view range of search, if you need to specify the search area, then set the corresponding number can be set, here, once the number of set search area, then in the creation of the template, you must first draw the search area according to the prompts, draw the search area before you can click the next step after drawing the region of interest;

2: RoiCountForExtract: the default value is 1, which is the set number of regions of interest (i.e., feature points/MARK required for modeling);

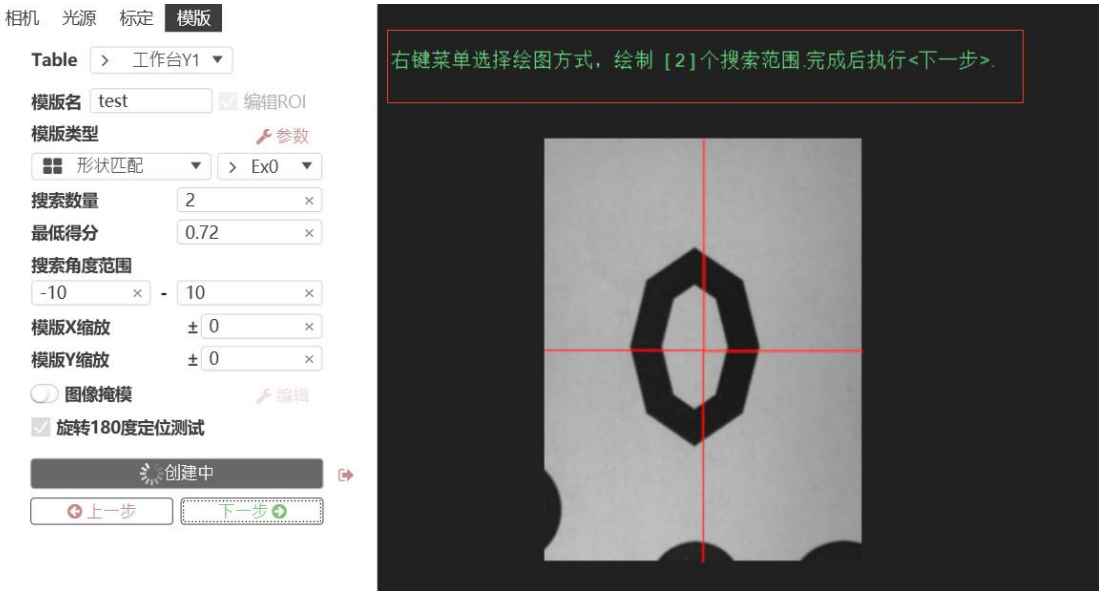
3: MatchingThreshold2: the second-level matching threshold, the default value is 0. Usually, if you can model correctly with a minimum score of 0.7 or more, you do not need to set this value. Specific occasions are always unable to modeling success, the minimum score needs to be reduced to a lower, such as 0.4 in order to create a new template success, at this time in the successful modeling of the positioning test found that the actual score is usually higher, such as are greater than 0.8, at this time you can enable the threshold, such as set to 0.7. The purpose of this threshold is to ensure that you can properly modeling at the same time, and to ensure that in the actual positioning of the use of relatively high The purpose of this threshold is to ensure that the modeling can be done properly, and at the same time, to ensure that in the actual positioning, a relatively high degree of recognition can be used to find the MARK point matching, so as to get a relatively high positioning accuracy.

Example: The following is an example of the process of creating a new template with two search areas and two regions of interest;

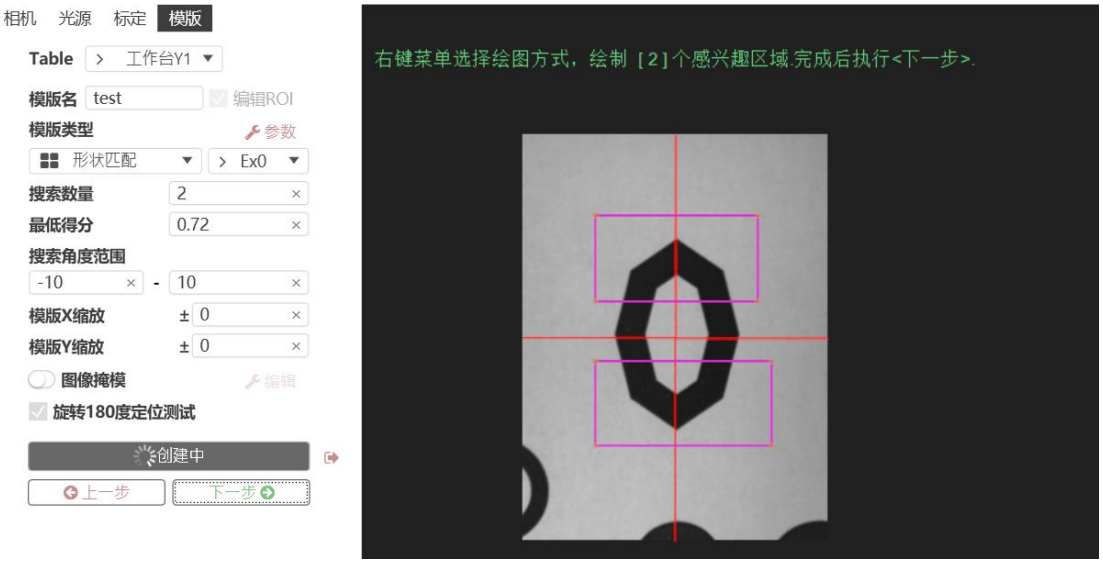
Step 1: Click "Parameters", modify the parameters of the pop-up notepad file, save it and close it.

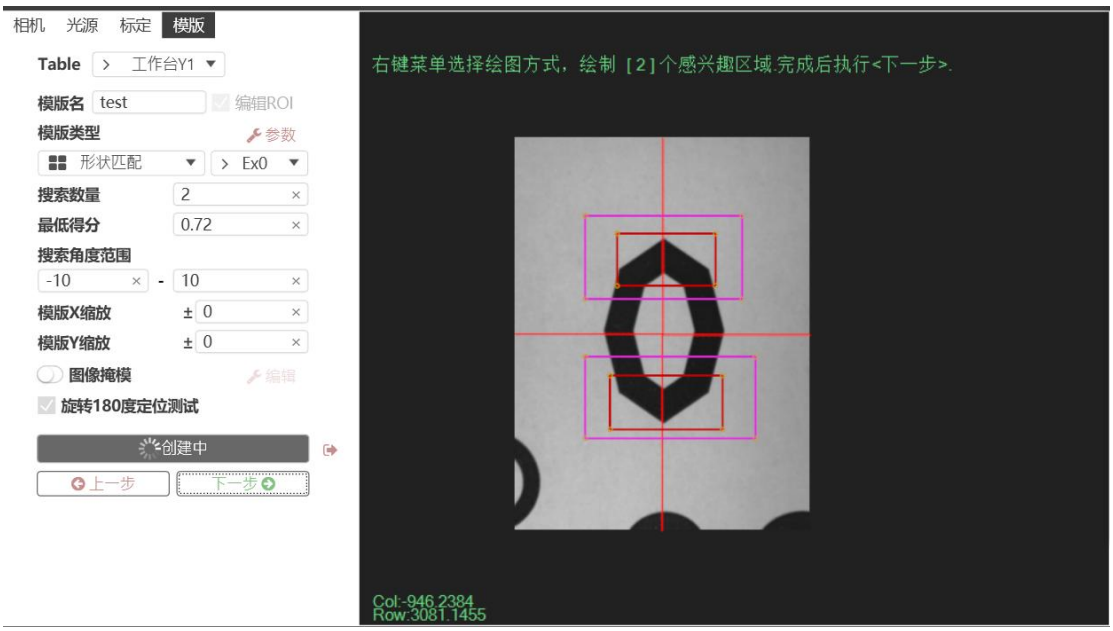


Step 2: Select the shape mode, and create a template, according to the prompts, click "Next", pay attention to the top line of the display screen shows the text prompts, prompted to right-click to select the drawing mode (the drawing mode contains: the whole circle, rectangle and polyline in three ways), and draw the search range;

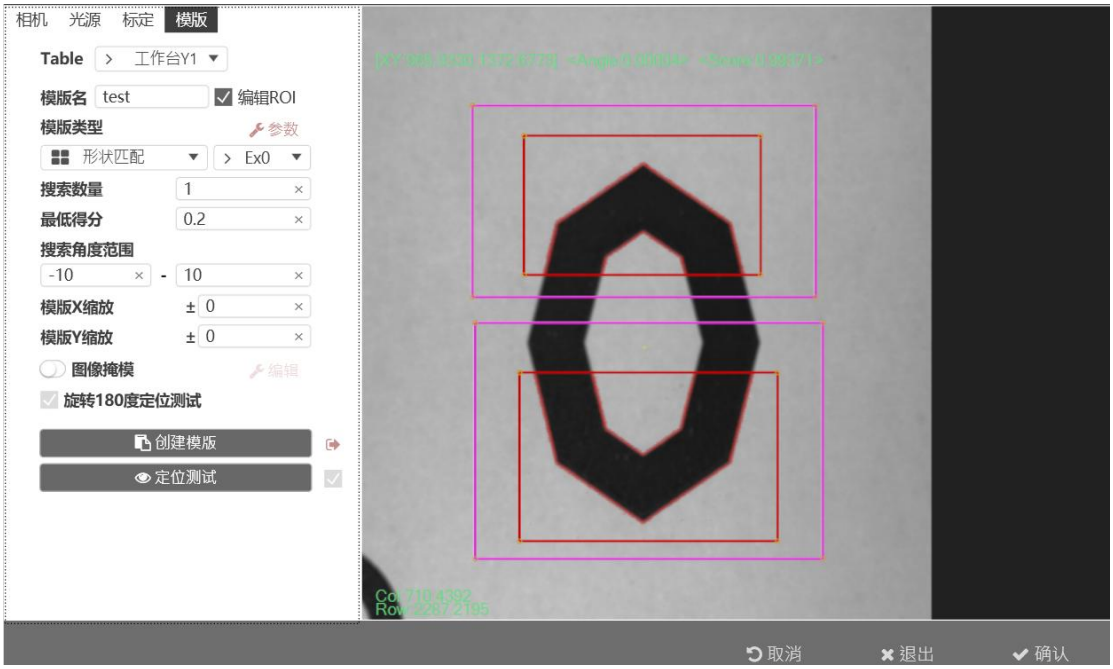


Step 3: right-click to select the two rectangular drawing two search area (light purple box shown) and click Next, the following chart, prompted to draw the region of interest, continue to right-click to select the rectangle mode to draw the two regions of interest (red box shown), the region of interest.

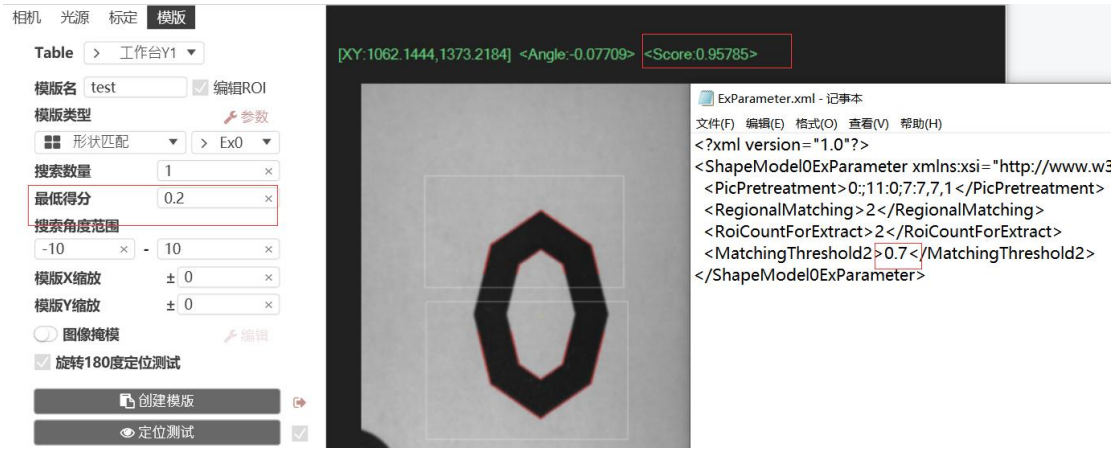




Step 4: Draw the region of interest after clicking Next to complete the new template, and in the lower right button pop-up template new successful message, the new successful use of red auxiliary lines to indicate the template elements of interest



After successful creation, you can use the positioning test to view the results of the template creation, as shown below, click on the positioning test, the red auxiliary line will be used to indicate the template elements of interest, and at the same time with a white box to indicate the scope of the search.



Note: Here, because the use of the printer to print a graphic for demonstration, print the results of the edge of the burr more, the minimum score will be adjusted to 0.2 to finally be able to create a successful, here to open the second level of the threshold is set to 0.7, to see the results of the positioning test results scored 0.95785.

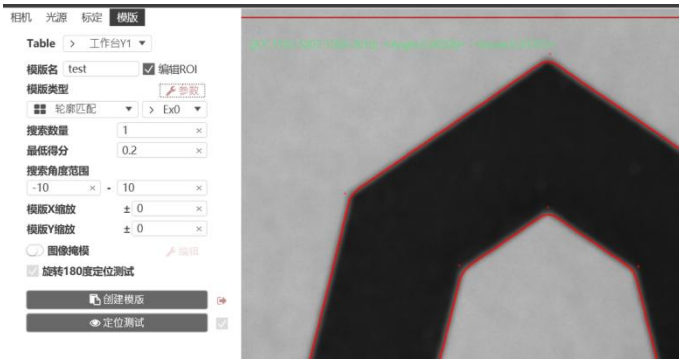
8.9.3.1.3 New visual template - contour matching

Template new parameter description:

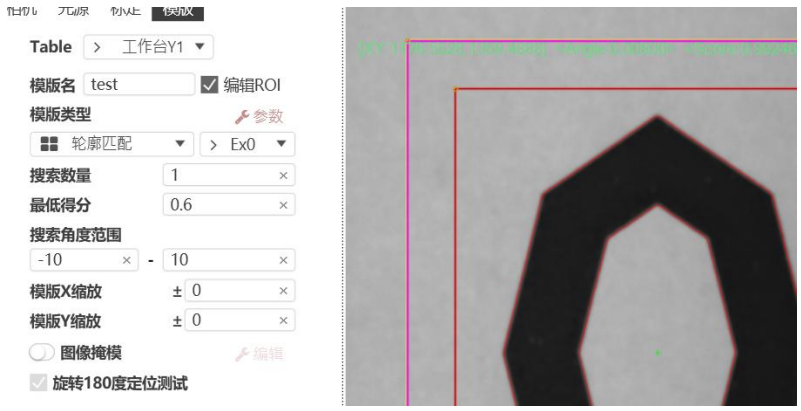
1: RegionalMatching (the number of search areas, the default value of 0), RoiCountForExtract (the number of regions of interest, the default value of 1), MatchingThreshold2 (the second level of matching threshold, the default value of 0), the three parameters with the shape of the matching usage and meaning is identical, refer to the shape of the matching usage to understand. These three parameters are identical to the usage and meaning of shape matching, just refer to the usage of shape matching.

2: EdgesAlpha: the default value of 3, when the image appears to be like the outline of the border transition contrast is not very obvious, you can increase the value, note that the value of the increase must be an odd number, such as 3, 5, 7, 9、、、、；

Set the parameter to 5 and 9 when the modeling results are as follows:



The modeling results when setting the parameter to 3 are as follows: when the parameter is set to 1, the modeling still cannot be successfully modeled when the minimum score is set to 0.2.



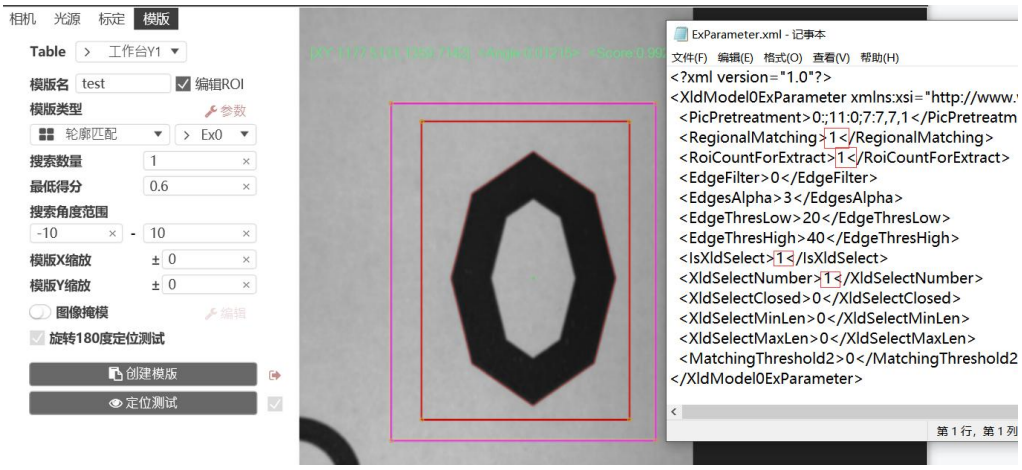
Note:

It is recommended to leave this value unchanged and use the default value of 3.3: EdgeThresLow (default value of 20), EdgeThresHigh (default value of 40) boundary extraction gray jump adjustment range, recommended not to modify;

4: IsXldSelect: the default value is 0, do not do screening, according to the outline of the rules, will meet the rules of all the contours are found, if set to 1, according to the deletion of the number of contours, contours closed or not, the upper limit of the length of the contour and contour length of the lower limit of the rules specified in the four parameters for screening

5: XldSelectNumber: the number of filtering (0 does not limit the number of contours, 1 means that only the longest contour filtered, 2 means that the longest contour filtered 2, and so on); XldSelectClosed = 1 only filtered closed contours; XldSelectMinLen (the minimum length of the unit of pixels, the default value of 0 means that do not implement the filtering conditions), XldSelectMinLen (the minimum length of the unit of pixels, the default value of 0 means that do not perform) (minimum length in pixels, default value is 0 to not perform this filter), XldSelectMaxLen (maximum length in pixels, default value is 0 to not perform this filter);

The following example: for example, if the filter is set to 1 and the number of filters is set to 1, the modeling result is that only the outer contour (the one with the largest length contour curve) is retained among the recognized inner and outer contours.

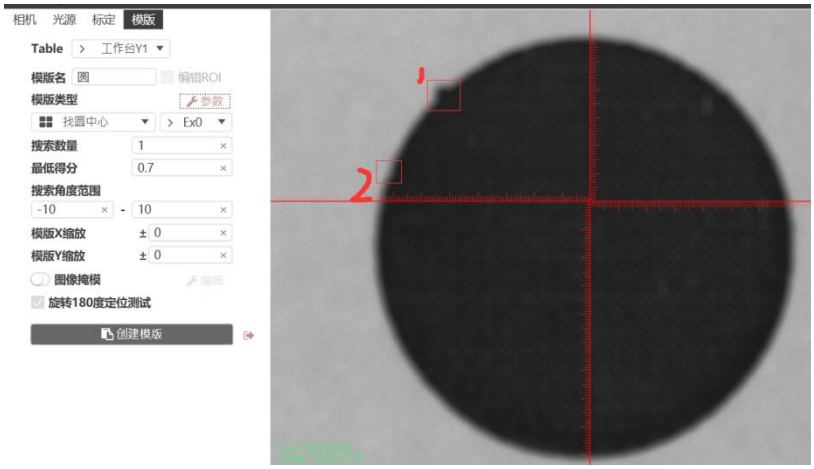


8.9.3.1.4 New Visual Template - Finding Circle Center

Description of template new construction parameters:

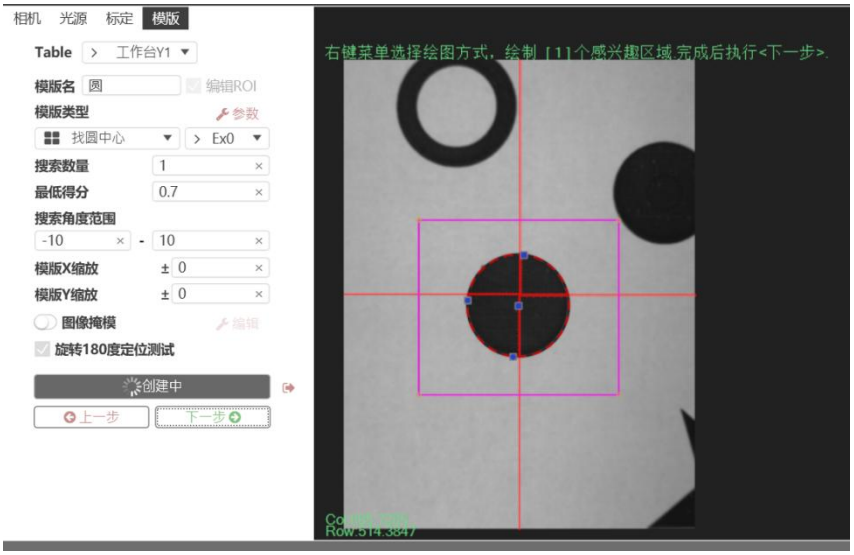
1: RegionalMatching, the default is 0, for the entire field of view range of search, if you need to develop the search area, then set the number accordingly, here once the number of search area set, then in the creation of the template, you must first draw the search area according to the prompts, draw the search area before you can click next, and then draw the region of interest again;

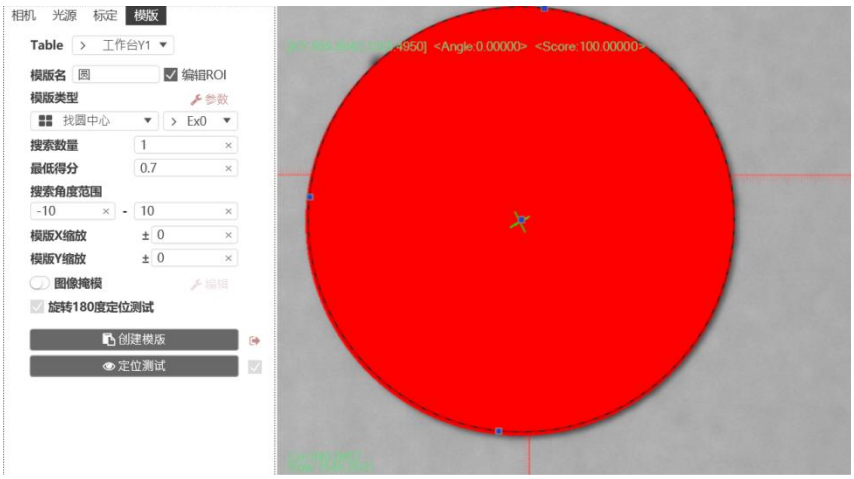
2: RegionIsOpening: whether the implementation of edge clutter shear, the default value of 1 that the implementation of the shear; the default shear rules: OpeningWidth shear region width of 1 (default 1 pixel units), OpeningHeight shear region height of 1 (default 1 pixel units). Similar to the process of finding a circle as shown in the figure below, there is a small black dot protruding from the center of the circle in the search for the center of the processing of the place;



3: RegionIsClosing implementation of the edge of the gap fill, the default value of 1 said for the implementation of the ClosingWidth fill the default value of the width of 1 (pixel units), ClosingHeigh fill the default value of the height of 1 (pixel units), such as the above figure shows the location of the circle has a small concave notch; through the shear and fill in the parameters aimed at making the final new template The purpose of the cut and fill parameter is to make the final new template form a complete circle as much as possible.

4: RegionSelectMeanOffset, the amount of variation in the gray scale of the circle, the default value is 30; this value is the average calculated value of the new template based on the drawing of the region of interest, within the range of plus or minus 30 (gray scale) of the average gray scale value, that is, the modeling is successful or successful matching. Here in order to get the most suitable average gray value, in the drawing of the region of interest need to rotate the pattern of the circle, and as far as possible to make the drawing of the circular region of interest and the feature element (circle) to find the same size.

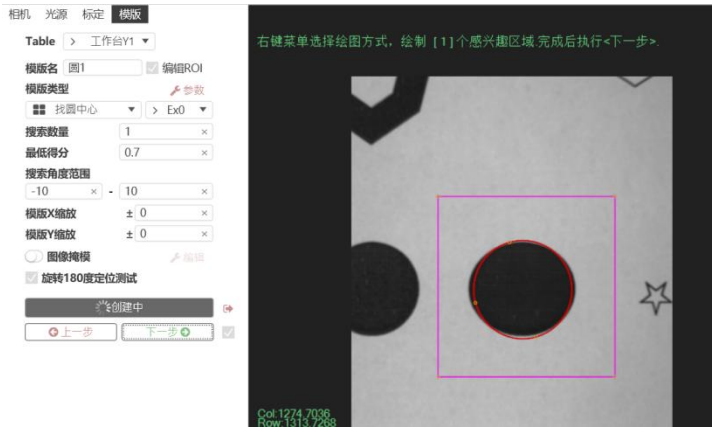




5: RegionSelectAreaOffset, the amount of variation in the area of the circle, the default value is 0.3, the meaning of this value indicates that when modeling, using the area of the circle in the region of interest as a benchmark, within the range of plus or minus 30% can be modeled successfully.

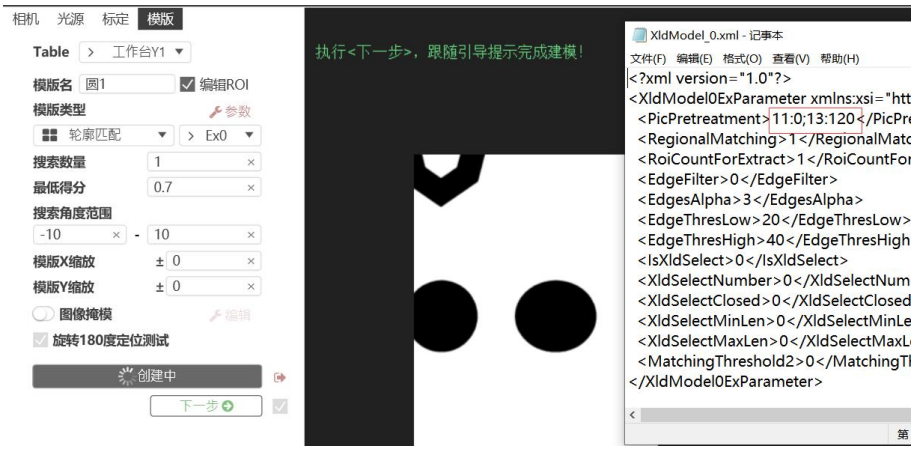
6: RegionSelectCircularityMin, the minimum circularity, the value determines the final match of the circularity, the default value of 0.75 (range 0-1), the larger the value, the final match the object is more round; the actual characteristics of the object must not be a complete circle, so you need to adjust the parameter to ensure that the correct modeling.

The following figure: there is a circle-like ellipse feature elements, the implementation of the element as a feature to find the center of the circle modeling, the final modeling success for the region shown in red; the following figure of the ellipse, if you set the minimum roundness of 0.95, can not be modeled successfully.



8.9.3.1.5 Image Preprocessing Parameters

Parameter Description: PicPretreatment: According to the rules if it starts with 0, the image is not preprocessed, the default is 0:;11:0;9:7,7,1, the preprocessing parameters will be modified to 11:0;13:120 after the preservation of the image is shown in the figure below, the 13th parameter is set to 120 (grayscale value range of 0-255), the image grayscale is 120 as the dividing threshold, greater than 120 are set to 255 means white, less than 120 are set to 0 means black, so the final image presented only black and white two colors.



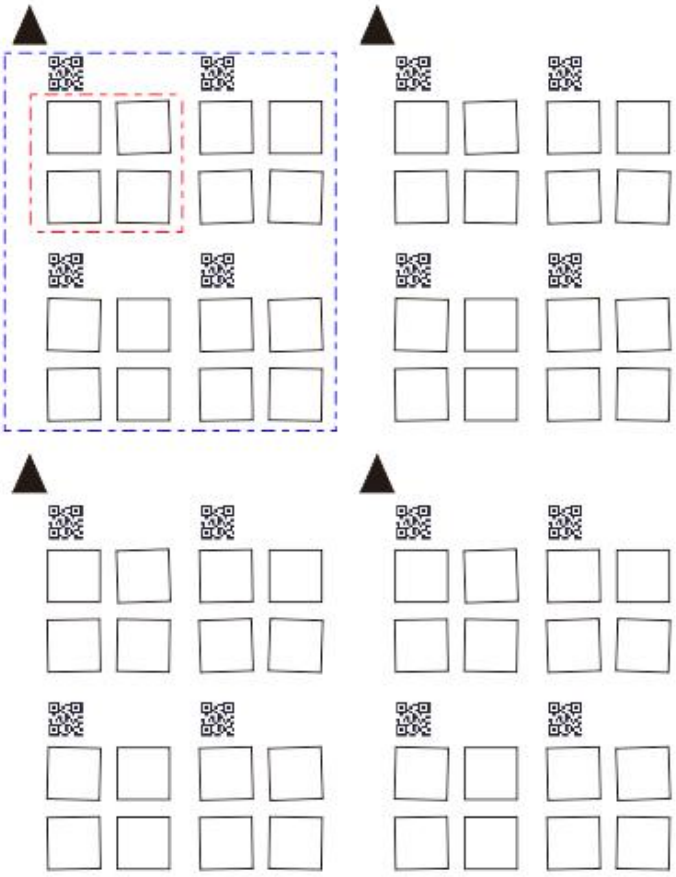
Usually modeling does not need to set this parameter, the presentation of the screen is not ideal, gray scale contrast is not obvious when you may use this parameter setting.

Note: Image pre-processing is not open to modify the parameters and the above has been opened to modify the parameters still can not meet the needs of use, you need to provide on-site lighting of the imaging screen provided to the R & D technicians to analyze and process.

8.9.3.2 Three-layer Array

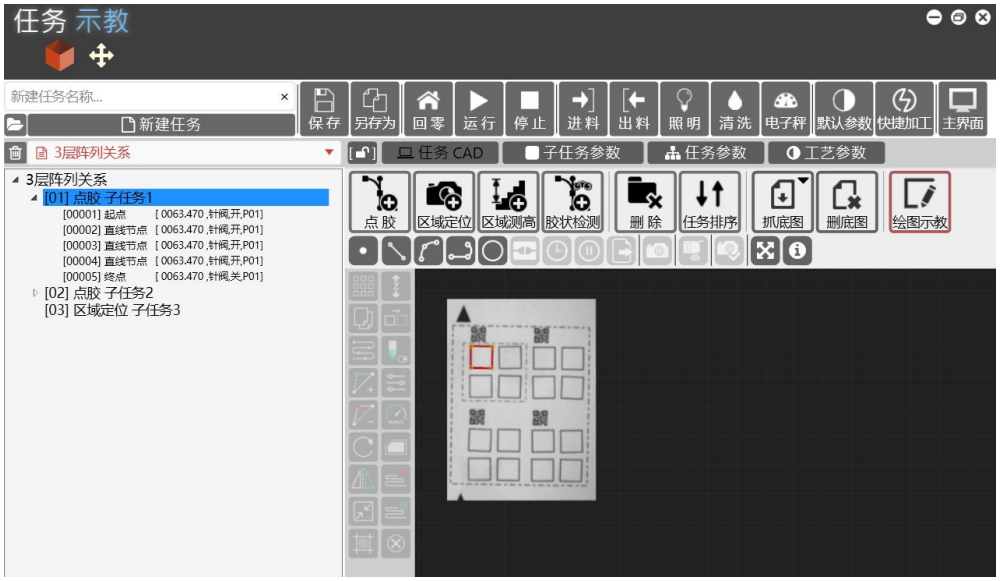
The three-layer array includes: sub-task array, sub-task pre-processing array and task pre-processing array.

The following need to process the following workpiece trajectory as an example to explain the relationship between the 3-layer array

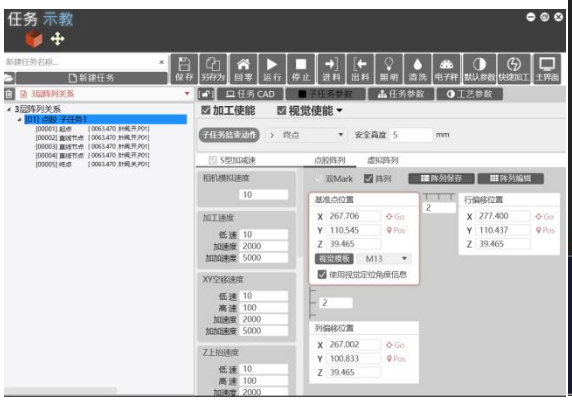


8.9.3.2.1 Sub-task array (first level array)

As shown in the figure below, the file named "3-Level Array Relationship" contains three subtasks, "Dispensing Subtask 1", "Dispensing Subtask 2", and "Area Subtask 3". Task 3" of the three subtasks.



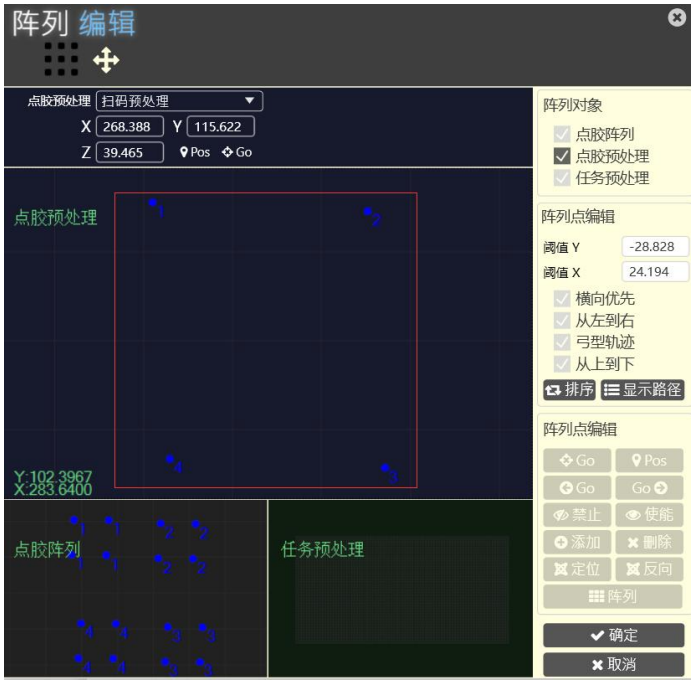
First of all, after intercepting the base map to draw a rectangular box, as the trajectory of the dispensing sub-task 1, due to the relationship between the location of each rectangular box here are in a different position, you can see the box dispensing path as a separate artifact, due to the placement of each box there are certain angular variations, here you need to use a corner of the box as a template for positioning, new templates to do the visual positioning, visual positioning, after the parameters of the sub-task for the array of dispensing operation (here after specifying the photo point, the array save operation, the software automatically according to the position of the array point relationship, the calculation of the four photo point that is understood as the array point), array 2 * 2 results that is shown in the dotted box in the figure below for the four rectangular path. Array is completed, enter the array editor can see the corresponding four array points, as shown below;



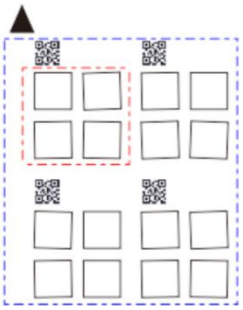
8.9.3.2.2 Dispensing preprocessing (second-level array)

In the dispensing preprocessing, select the sweeping preprocessing (here supports group preprocessing, visual preprocessing, sweeping preprocessing three ways), and then move the camera center position to the sweeping center position through the pointing panel, and then click on the "POS" to move the first point preprocessing point correctly to the specified position.

Select the preprocessing point, and then click the array, the following interface pops up, at this time, first click the reference point position of the "POS", record the first reference point of the array, and then move the center of the camera to the center of the QR code marked with a mark of 1 (approximate position, as accurate as possible) position, and then click the line offset point below the "POS". "POS" record, and then click the screen again to move the camera center to the position of the center of the QR code of Marker 2, and then execute POS; after execution, click to confirm, and then automatically generate the corresponding 4 preprocessing points according to the number of rows and columns set;



The above figure 1, 2, 3, 4 that is, for the dispensing preprocessing of the 4 preprocessing points that 2 * 2 array out of the array points, through the preprocessing array, that is, to complete the following figure in the blue dotted line box shown in the total of 16 rectangular box trajectory of the demonstration of teaching. Here, if each rectangular trajectory is understood as a product, 1 fixture with 4 products (while the fixture itself has a two-dimensional code), through the dispensing preprocessing that solves a time over the 4 fixtures spliced with a full version of the product's trajectory.

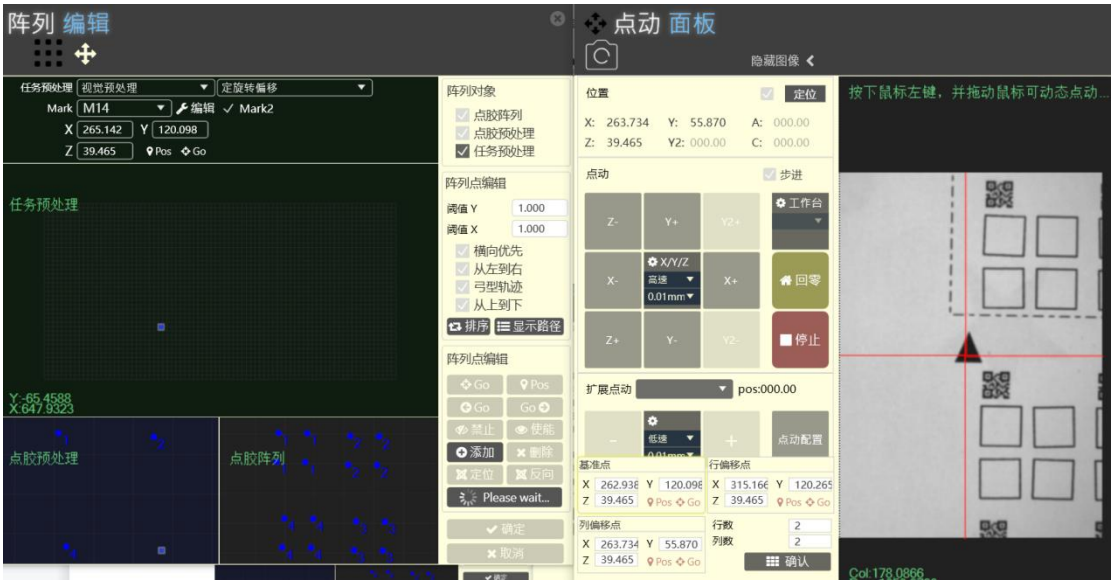


8.9.3.2.3 task preprocessing (third level array)

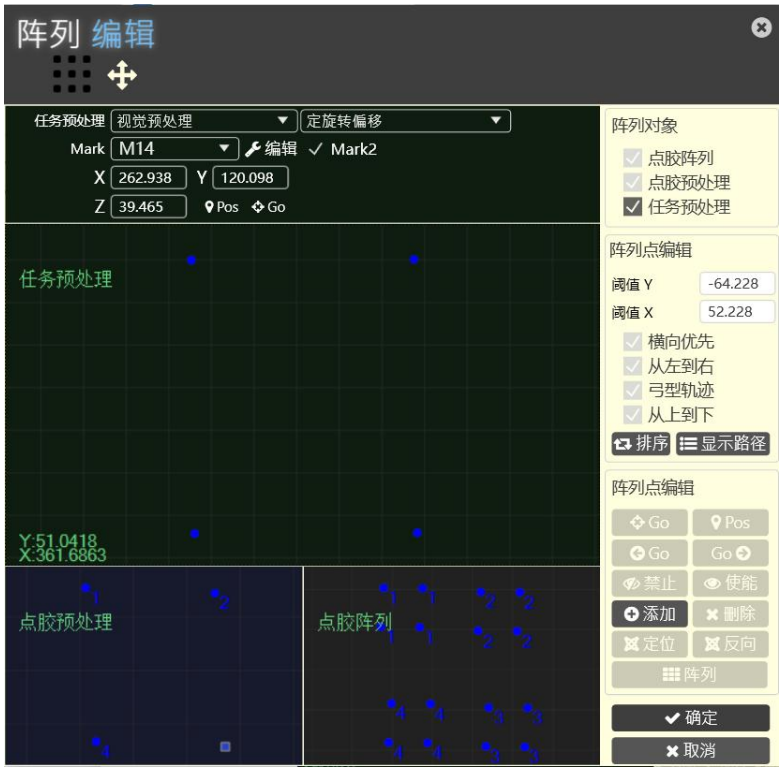
Select the task preprocessing, select the visual preprocessing, click on Edit "because here MARK is empty" automatically pop-up template new window and rules assigned to the template name M14 to create a template as a triangle as a feature, after the completion of the creation of the confirmation of the save and exit the template new interface;

At this time, the newly created M14 is automatically used as Mark point, and the coordinates of the newly created position of the template are automatically refreshed to the coordinates, and here you can also use the POS operation to refresh the information of the current coordinate position of the camera to the task preprocessing point, and at the same time, observe in the task preprocessing interface with the position of the processing point is automatically refreshed to the corresponding position of the format.

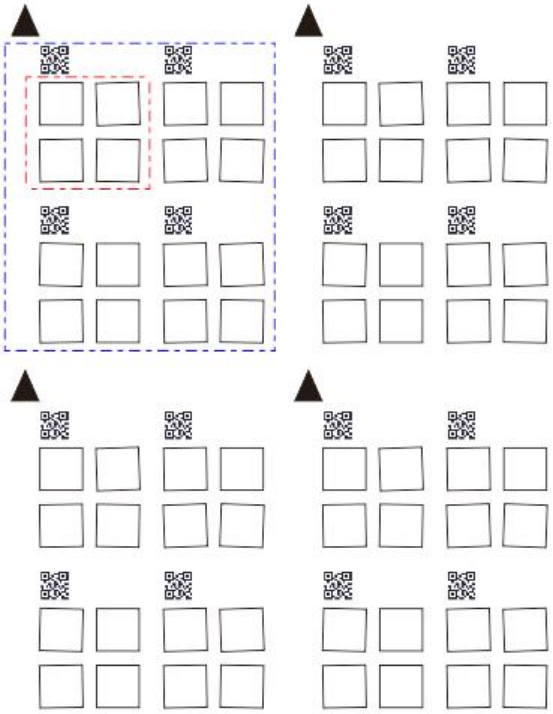
Select the first preprocessing point, and then click on the lower right corner of the array, according to the pop-up information at a time to record the row offset point and column offset point of the triangular MARK feature center record information and then confirm the array process is exactly the same as the dispensing preprocessing process.



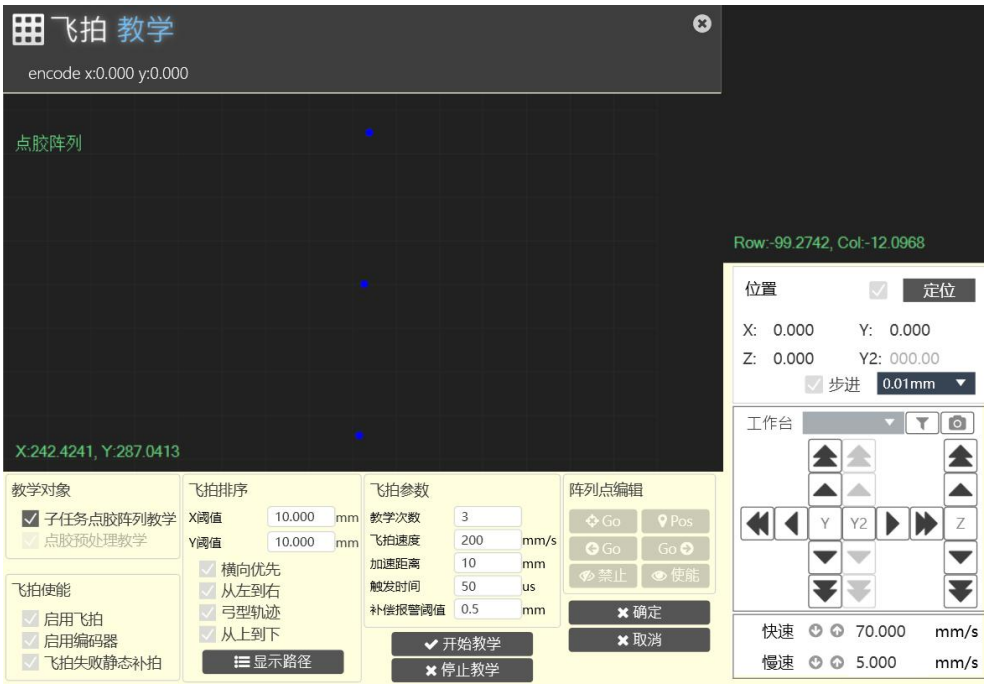
Array saved after confirmation in the task processing interface to see the following figure shows the four pre-processing points



Through the above operations, you can complete the array shown in the figure below need to process all the total of 64 square trajectories.



8.9.3.3 Flying Shooting Setting



In the use of the need to fly shooting scenarios, before use must be performed to teach the operation of the fly shooting;

Operation process:

1: in the fly shooting enable to enable fly shooting, enable the encoder, enable fly shooting failure static make-up shooting and other options

2: set a reasonable threshold for the flying camera sorting, click on the display track to view the sorting results, if the sorting results are not reasonable can be appropriate to modify the threshold to re-sorting

3：Set up the parameters of fly shooting and then execute fly shooting teaching;

8.9.3. 4 Area Positioning

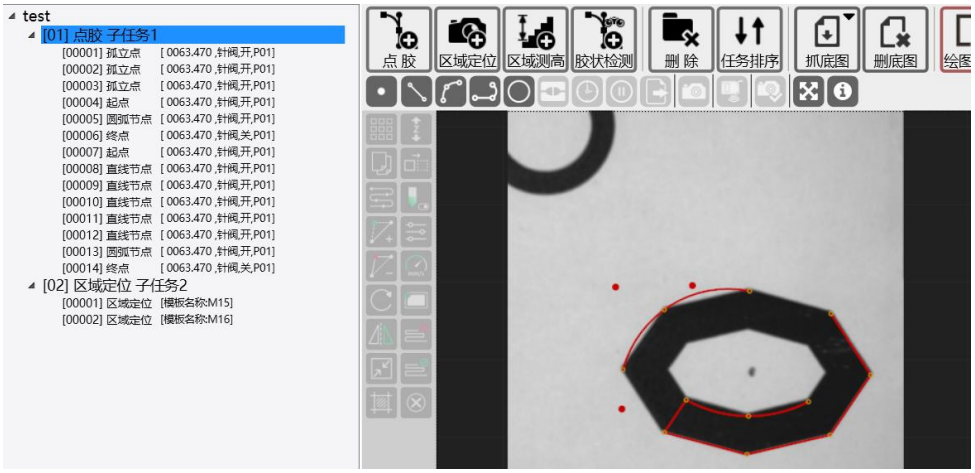
1: regional positioning: the use of the specified visual template on the box selected elements (isolated points, polyline nodes, arc nodes) for the position of the corrective / use of the file corrective / product availability and other operations;:.

2: Area positioning must be bound with the corresponding sub-task in the process of using, if not, it will be judged as invalid area positioning sub-task file, and the area positioning sub-task will be automatically skipped in the process of processing.

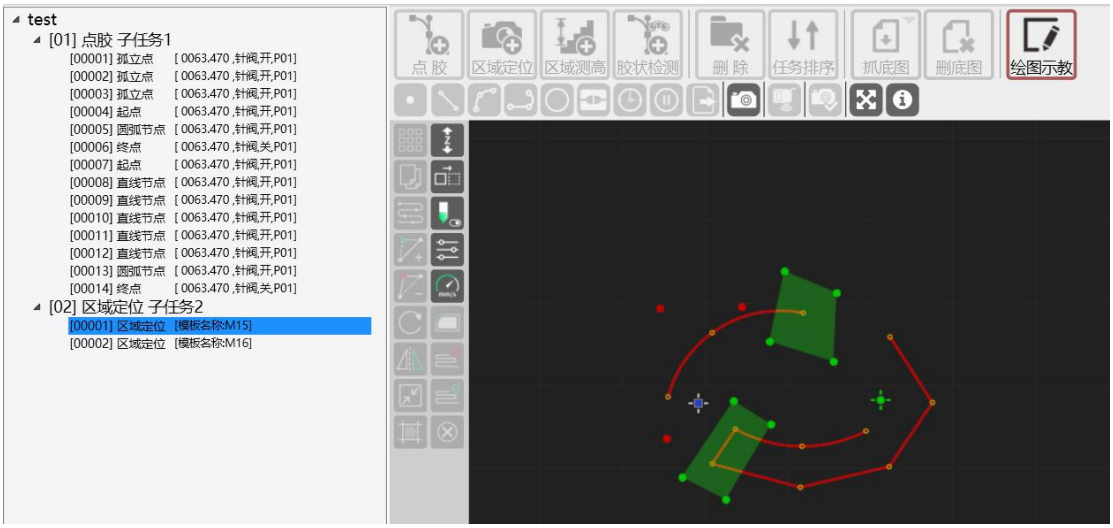
3: There are 4 kinds of exception handling methods for the failure of area positioning: skip the current non-processing, stop processing, pop-up prompt option, and skip all non-processing.

Regional positioning operation process:

1: First, create a new dispensing subtask 1, and then draw a dispensing path as follows



2: Create a new regional positioning sub-task, and then create a new regional positioning sub-task 2, insert two regional positioning points in the regional positioning, double-click the "regional positioning [template name]", the pop-up positioning points shown in the following figure shows that the interface, then click the "Visual" In the pop-up template new interface, move the center of the camera to the target position, execute the new template, click OK to close the template new interface after successful creation. Then click "Teach" in the Positioning Point Teaching interface to successfully complete the teaching of the positioning point, and click on the confirmation of the Positioning Point Teaching interface to successfully complete the teaching of a regional positioning point. The following figure shows that two regional positioning points have been added to M15 and M16 respectively.



2: According to the need to reasonably select the regional positioning impact elements, the example of regional positioning point 1 box selected area for a 3-point arc end (upper right), regional positioning point 2 box selected area for a polyline in the middle of the two straight-line nodes (lower left), and then select the regional positioning subtasks 2, in the subtask parameters will be regional positioning subtasks 2 and the point of adhesive subtasks 1 to bind.

Set up as above:

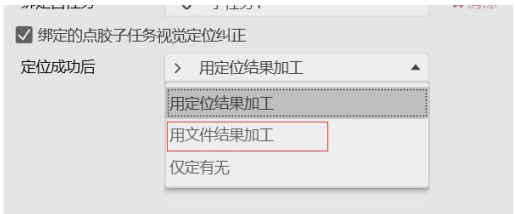
1: During processing, take pictures of the visual positioning of area positioning M15 and M16 respectively, and after successful positioning, correct the end position of the 3-point arc according to the positioning result of M15. According to the positioning result of M16, the position of the two straight line nodes in the boxed section of the polyline is corrected.

Other setting instructions:

1: If the binding sub-task is blank (i.e., clicking is clear), then the regional positioning points M15 and M16 are not involved in the actual processing.

2: Binding dispensing sub-task visual positioning correction: default check, after checking here if the sub-task itself is a visually positioned dispensing task, then the visual positioning result of the dispensing task will be corrected for the regional positioning visual photo position; otherwise when it is checked, then the photo position of M15 and M16 will not be affected by the visual positioning result of the dispensing sub-task 1.

3: There are three kinds of processing methods after successful positioning, the default "processing with positioning results" is to correct the regional positioning results to the selected regional elements; if you choose to process with the document results, then only do regional positioning and take pictures here, the positioning results after successful photographing will not correct the selected regional elements, if you need to correct, you can use the dispensing subtasks to correct the visual positioning results. If you need to correct the deviation, use the visual photo positioning results corresponding to task 1; if you choose to determine the presence or absence of the region, the success of the positioning is considered to have, positioning failure is considered to have no;



4: region positioning failure processing:

Skip the current non-processing: regional positioning requirements to skip the current understanding of the whole section of the trajectory and the necessary requirements of the box must contain the starting point of the trajectory (isolated points do not exist in the concept of the starting point), such as the example, M15 and M16 do not contain the starting point of the arc and the starting point of the multi-segmented line, here, if the positioning failure configured as "skip the current non-processing", then here even if M15 and M16 are successful, it is considered that there is no positioning failure. If the positioning failure is configured as "Skip Current Not Processed", then even if the positioning failure of M15 and M16 will still process the trajectories of all the elements shown in the figure. In order to realize that only the arc portion of M15 will not be processed, you need to include the starting point of the arc in the box.

Stop machining: here as long as the region positioning failure, the implementation of the stop, this stop processing is understood to be in the positioning failure, directly prompted to stop, the system reset, the Z-axis does not lift.

Skip all machining: here as long as the area positioning failure occurs, the pop-up will skip all non-processing, Z-axis up to a safe height;

Pop-up prompt option: according to the pop-up prompt option for personalized configuration, here manual mode can perform manual fine-tuning of the camera position, through manual adjustment of the specified positioning results results to continue processing. Other modes are consistent with the standard mode;

8.9.3.5 Area altimetry

The concept of regional altimetry

1: Area altimetry: according to the altimeter to identify the height value of the specified point, the processing of the specified point through the height of the specified point changes corresponding to the adjustment of the specified element point of the glue valve dispensing height, so as to ensure that the glue valve dispensing height is consistent, to achieve the desired effect of dispensing.

Area height measurement operation

1: In the peripheral configuration to complete the configuration of the altimeter, configuration is completed through the peripheral communication configuration interface communication debugging function to complete the configuration verification, can be correctly completed readings, as follows, for example: configuration is complete - open - send, correctly returned to the receiving area Obtained the correct measured distance value. The correct scenario is that the farther the altimeter is from the object being measured, the greater the value. Understand that the reading is the actual distance value, the configuration of the serial port altimeter is usually configured with the correct port number and baud rate.

2: Complete the altimetry configuration in System Configuration - Altimetry Configuration.

Calibration XY-Deviation: Record the working height of the altimeter, and change the X,Y deviation between the center of the camera and the center of the altimeter, in order to use the camera to teach the height measurement point in the future.

Calibrate Z-Deviation: Use the altimetry data to generate the Z-coordinate of the dispensing element directly, this function is not open at present, and the design here reserves this function.

3: Teach-in altimetry subtasks

Insert an area altimetry subtask - insert an altimetry point - then double-click the area altimetry point to pop up the altimetry point teaching interface, in the altimetry point teaching interface; move the center of the camera to the specified set measurement point, and then click Teach (to record the current coordinates as the camera position). The following figure illustrates the "L" character as the measurement position), and then click on the measurement (based on the altimetry configuration of the calibration of the XY offset and the working height of the altimeter) to move the altimeter to the specified point and the working height to complete an altimetry and record the measured value, click on the confirmation after the completion of the test is completed, that is, the completion of an altimetry point of the teach-in.

Remarks:

Alarm error: 0 that does not limit the altimetry error, here if not zero (need to be positive), such as the value of 2, then in the subsequent processing, the value of the judgment needs to be in the range of 93.1129 ± 2mm is considered legal, more than the value of the alarm.

Regional altimetry: the previous check default for the selected state, altimetry for the boxed area in effect, at the same time in the teaching interface task CAD using a logo box to indicate; if this is not checked, it means that for all the elements of the drawing region at the same time in the teaching interface task CAD no logo box.

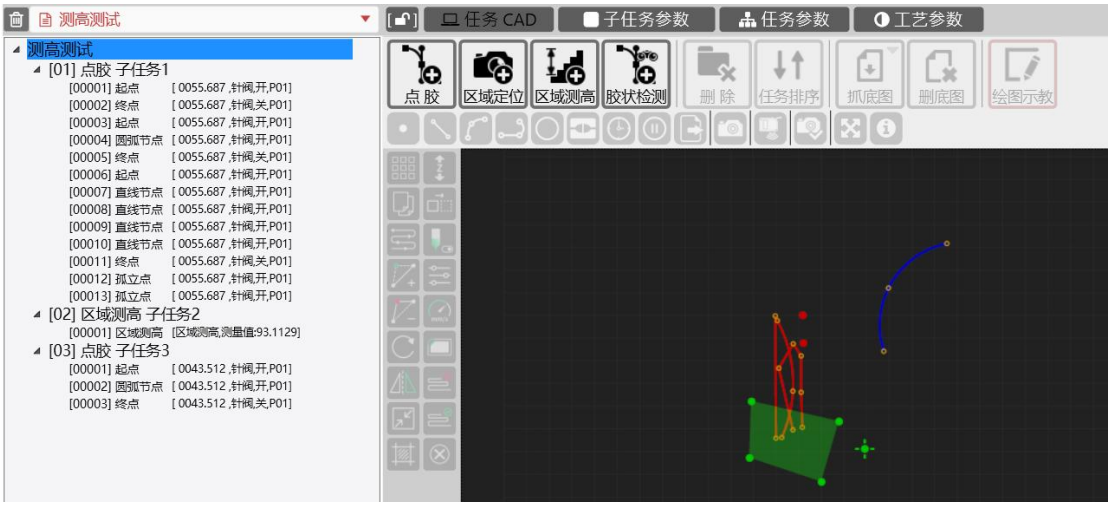
4: Altimetry subtask parameters

If an area altimetry subtask is bound to a subtask, the area altimetry is only valid for that subtask, and the specific altimetry result only affects the element corresponding to the subtask that is boxed.

If the sub-task is not bound to a sub-task (the bound sub-task is empty), then the area height measurement will be effective for all sub-tasks (for example, there is only one dispensing sub-task, if there are more than one dispensing sub-tasks, it will be effective for more than one dispensing sub-tasks at the same time), and the specific height measurement result will affect all the elements corresponding to the boxed elements of the dispensing sub-tasks.

5: altimetry failure processing

Height measurement failure: the height measurement result exceeds the set alarm error value and cannot be read correctly;



The above figure is an example:

Skip the current non-processing: Skip the trajectory corresponding to the starting point in the box selection, as shown in the above figure, since only the starting point of the three-point arc and the polyline in Subtask 1 (red) are box-selected, the arc and polyline are not processed, while the straight line in Subtask 1, as well as the isolated point and the three-point arc of the gluing Subtask 3, are processed normally.

Processing according to measured values: Only information is recorded in the processing information list, all elements are actually processed normally, and the Z-axis height of the boxed elements is corrected according to the actual measured values.

Processing according to no deviation: The processing information prompts processing according to 0 deviation, and all trajectories are processed according to 0 deviation.

Stop processing: Abort is stopped and the Z-axis is not lifted;

Pop-up prompt option: select the machining mode according to the prompt content, execute the measurement once again after manual intervention, and correct the machining according to this measurement value after successful measurement, no longer limited by the alarm error value;

Skip all non-processing: the entire dispensing sub-task corresponding to the binding is not processed, and the unbound sub-tasks are not affected.

8.9.3.6 Processing debugging

The software provides debugging processing (disable visual positioning), debugging processing (enable visual positioning), camera simulation, glue volume simulation, glue valve simulation and dispensing processing scenarios.

Debugging (visual positioning disabled): In the process of machine adjustment, the visual positioning process is not executed, and the selected trajectory is run at the angle of the glue valve, supporting the running of a section of the trajectory or the entire trajectory.

Debugging (Enable Visual Positioning): After the visual positioning is executed in the machine setting process, run the selected trajectory with the angle of the glue valve, support running a section of the trajectory or the whole trajectory.

Camera Simulation: After the vision positioning is executed in the tuning process, run the selected trajectory with the angle of the camera, support to run a section of the trajectory or the whole trajectory.

Glue Simulation: Glue simulation contains two modes, glue simulation and trajectory weighing; where the glue simulation is used for the machine configured with electronic scales, the equipment runs to the weighing position of the electronic scales by itself to automatically complete the glue simulation and weighing process; trajectory weighing applies to the equipment itself does not come with electronic scales, it can be used for actual gluing in accordance with the set trajectory on the fixed carrier sheet, and the gluing can be completed by the external electronic scales with the assistance of manual labor. Weighing.

Gluing valve simulation: After the visual positioning is executed in the process of machine tuning, the selected trajectory will be run with the angle of the gluing valve, which supports running a section of the trajectory or the whole trajectory.

Task Processing: After the debugging of the file is completed, you can transfer to the task processing interface through the task processing, and at the same time, you can also use the editing of the task processing interface to return to the task editing interface.

8.10 Task Processing

The task processing interface is designed to provide the operator with the processing interface, which mainly contains basic weighing, track mode switching, commonly used customized shortcut keys, start pause stop, as well as pointing, single-step, back to zero, in and out of the material and other operations, and at the same time, provide the track preview, camera mode, array mode, coordinate mode, I/O mode and other observation windows to facilitate the observation of the process, and at the same time, in the left corner, provide the processing process information record. The lower left corner provides the processing information record.

In the center, it displays various monitoring statuses, including glue, temperature, weighing condition, cleaning condition, etc.

8.11 Tools

The tool provides operation log, controller diagnosis, visual CPK, data statistics, controller information query, time staging encryption, language configuration and other functional options.

Operation log:

mainly records the operation process of the software, customers do not need to pay attention to the use of the process, the recorded information is used for manufacturers to analyze the problem.

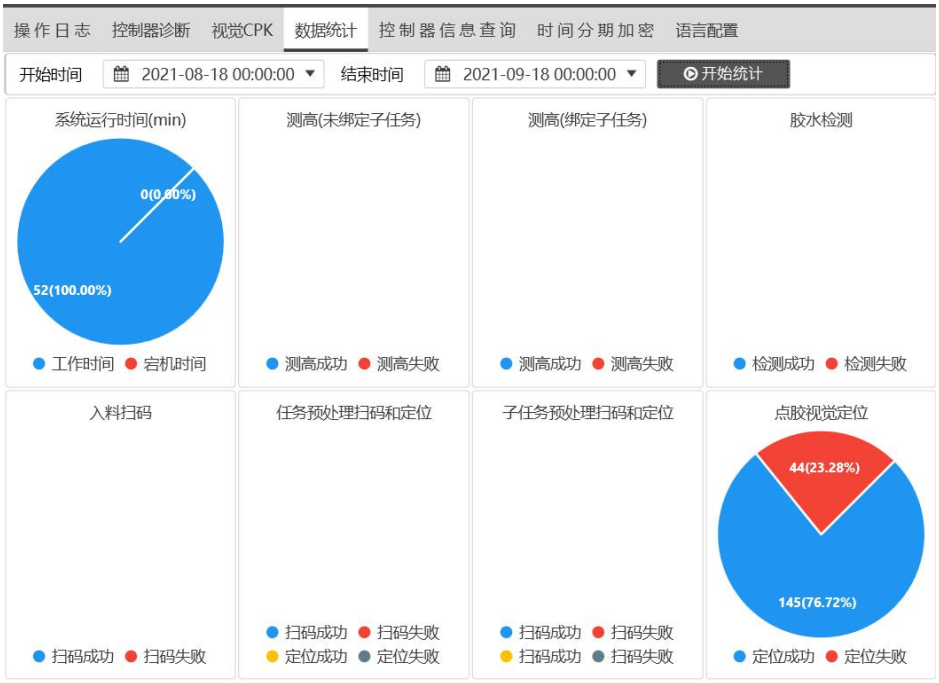
Controller Diagnostics: used to analyze the controller's operating status, customers do not need to pay attention to the use of the process, record information for manufacturers to analyze the problem.

Visual CPK:

Used by the equipment manufacturer, the equipment can be calibrated with a standard glass calibration plate to verify the repeatability of the positioning accuracy of the equipment before it leaves the factory.

Data Statistics: Used for statistical analysis of processing data, as shown below:

Controller information query: Provide controller firmware information query and



corresponding firmware upgrade

Time Staging Encryption: Provides the function of staging encryption for the equipment.

Language Selection: Provide Chinese, English and customized language, the customized language needs to be translated and documented by the customer according to the requirements.

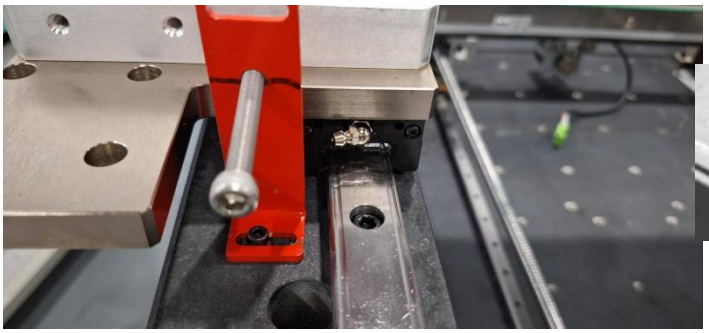
9. Equipment maintenance

As the equipment is used for efficient dispensing applications, routine maintenance is important. The tools and materials required for preventive maintenance are as follows:

1. Lubricating oil
2. Lead-free cotton cloth
3.Safety glasses
4. Rubber gloves
5.Hexagonal wrench

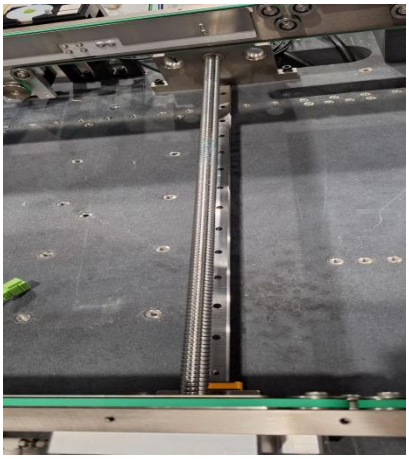
9.1 Maintenance of slide rail and silk rod

- Lubricate the X, Y, and Z slide rails with special slide rail lubricant every month by pressing the lubricant gun into the slide rail oiling port as shown in the figure;



- Lubricate the Z screw with special screw lubricant every two months by spreading the lubricant evenly on the outer surface of the screw;

- Widening screws are lubricated once every three months by evenly applying special lubricant to the outer surface of the widening screws.



Appendix equipment electrical diagram

设备图纸标识符

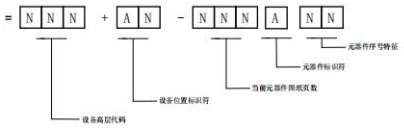
EQUIPMENT DESIGNATION AFTER

主图纸标识符 =

位置代码标识符说明 +

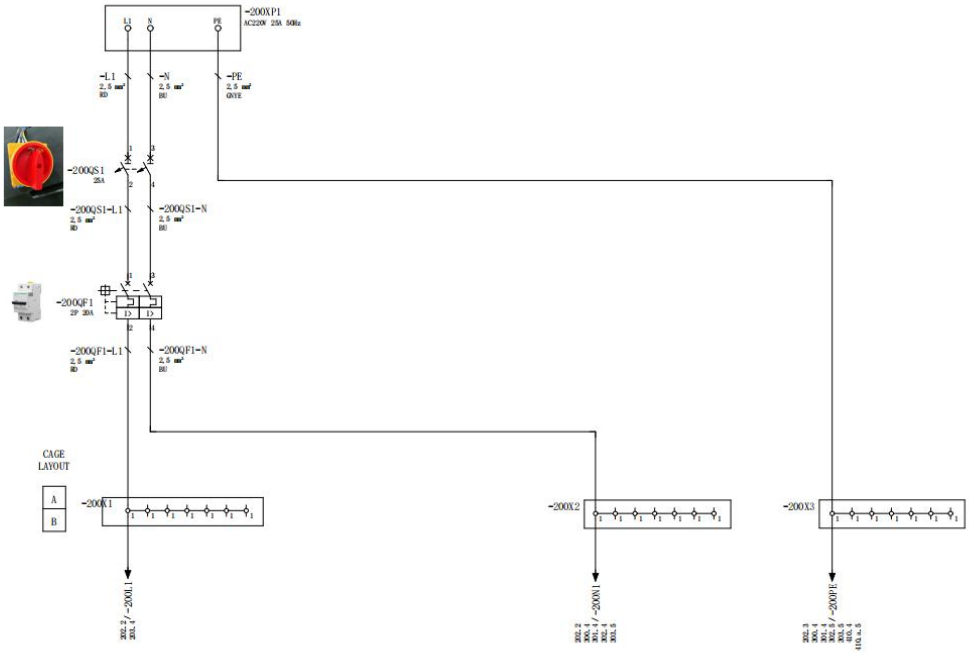
+S 主电气柜
+K 电气中转盒
+B 现场操作盒

主图纸电气标识符定义说明 ：

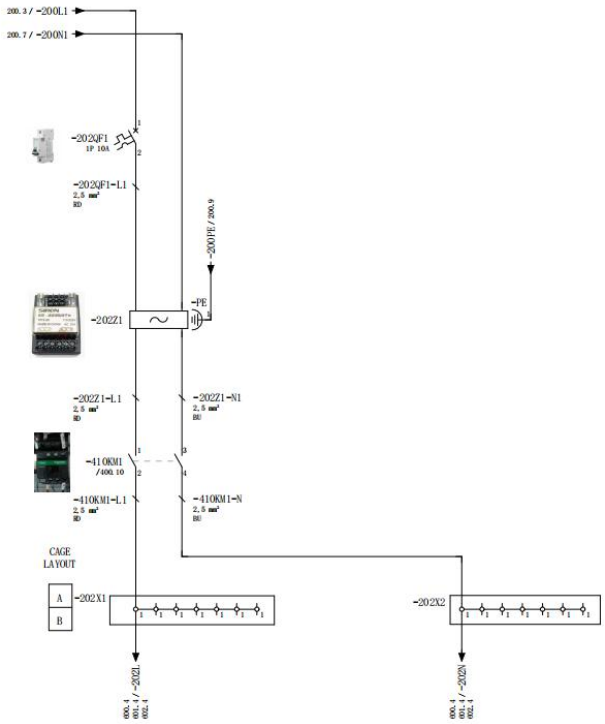


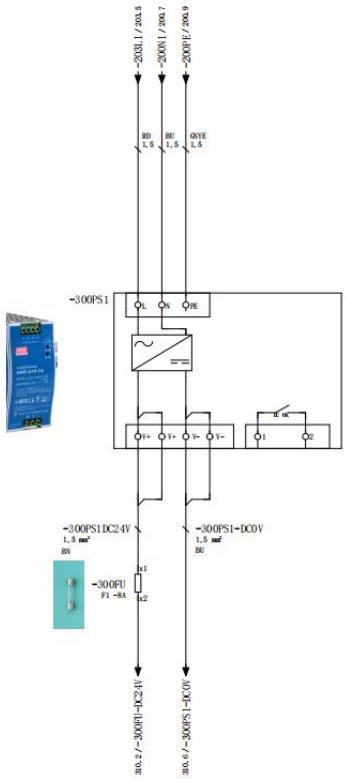
例(断路器) ：

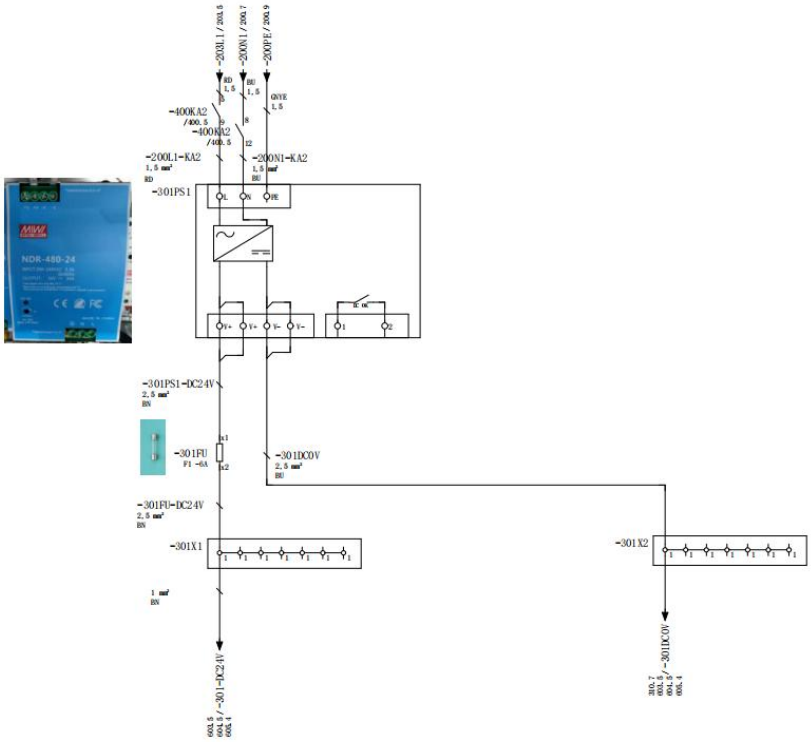
例(元器件) A ：S：开关、按钮
B：传感器 BP：接近 BL：光电 BM：磁性开关 BPS：压力开关 BT：温度开关
APS：压力传感器 ATS：温度传感器 AFS：流量传感器 ALS：液位传感器 ADS：位移传感器 ARS：区域传感器
TL：多色灯 HL：指示灯 Servo:伺服 VFD：变频器 Step：步进
DI_A:数字量输入 DO_A:数字量输出 AI_A:模拟量输入 AO_A:模拟量输出 CM_A:通讯模块输出
KA：中间继电器 KS：安全继电器 KM：接触器 FR：热继电器 QS：隔离开关 QF：断路器 YV：电磁阀 FO：滤波器
TD：分配器 PS：开关电源 XT:端子排 XS:插座 X:端子 EL：照明灯 SWI:交换机

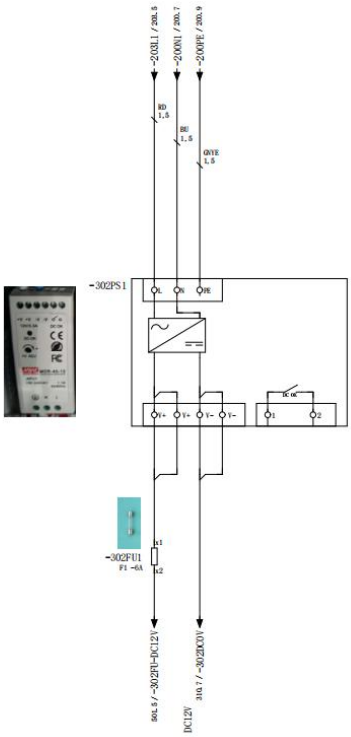


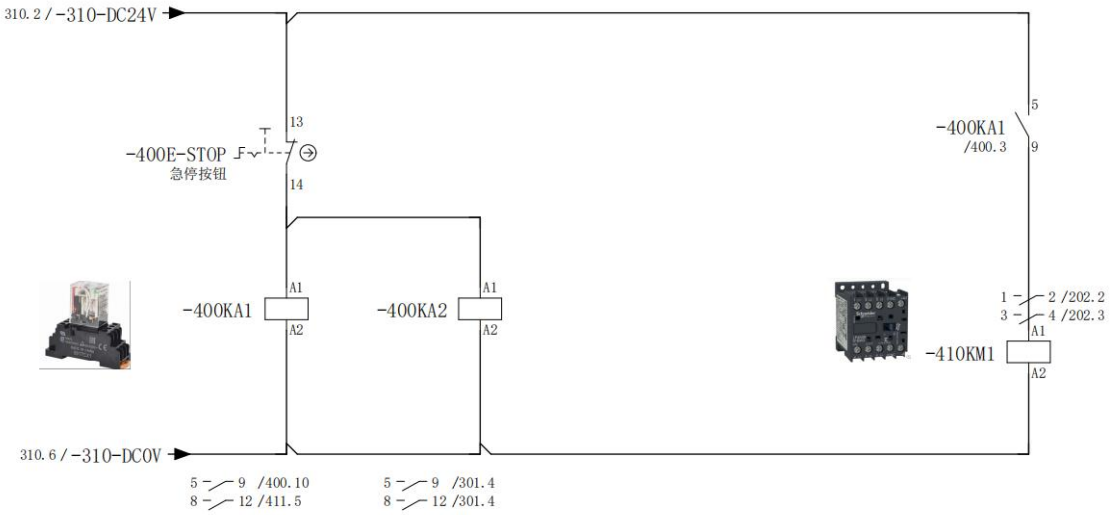
伺服电源

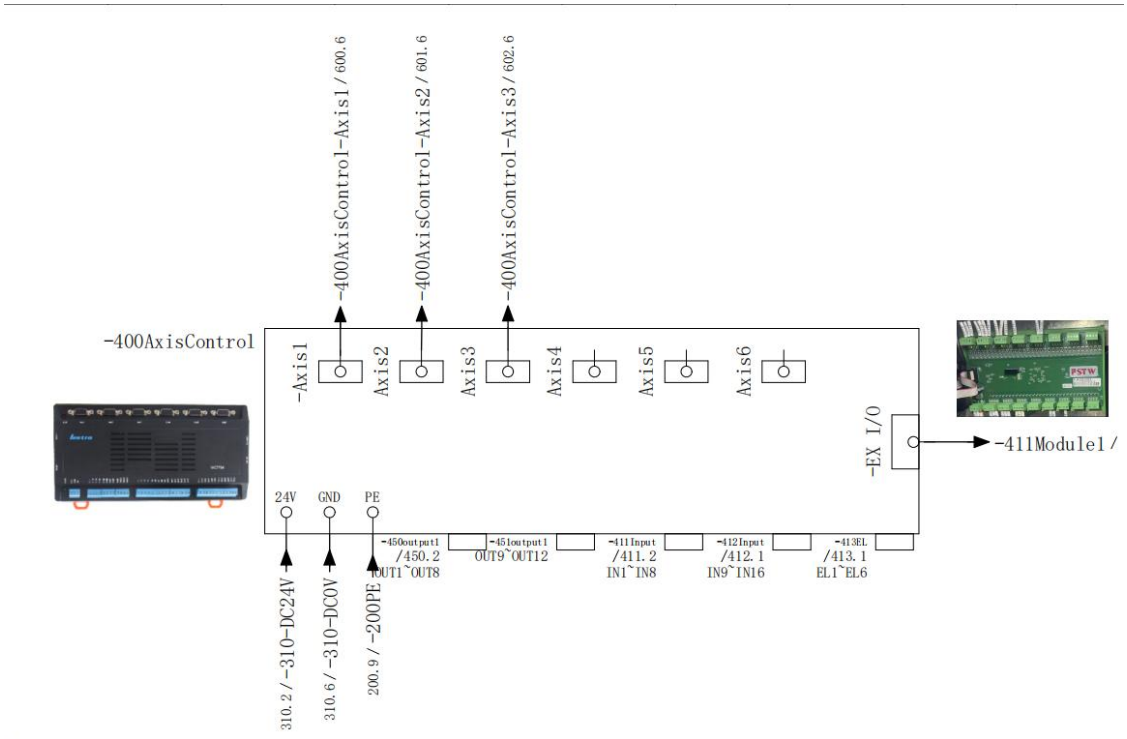

200.3 / -200L1
200.7 / -200N1
-202QF1
1P 10A
-202QF1-L1
2.5 mm²
RD
-200PE / 200.9
-202Z1
-PE
-202Z1-L1
2.5 mm²
RD
-202Z1-N1
2.5 mm²
BU
-410KM1
/400.10
-410KM1-L1
2.5 mm²
RD
-410KM1-N
2.5 mm²
BU
CAGE
LAYOUT
A
B
-202X1
-202X2
400.4 / -202L
401.4 / -202L
402.4
400.4 / -202N
401.4 / -202N
402.4

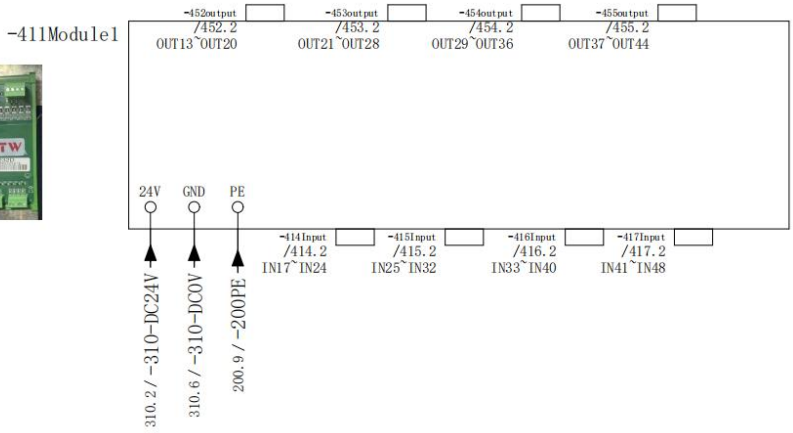

-203L1 / 203.5
-200N1 / 200.7
-200PE / 200.9
RD
1.5
BU
1.5
GNYE
1.5
-300PS1
L
N
PE
V+
V+
V-
V-
I
2
-300PS1DC24V
1.5 mm²
BN
-300PS1-DC0V
1.5 mm²
BU
-300FU
F1 -8A
x1
x2
310.2 / -300PS1-DC24V
310.6 / -300PS1-DC0V

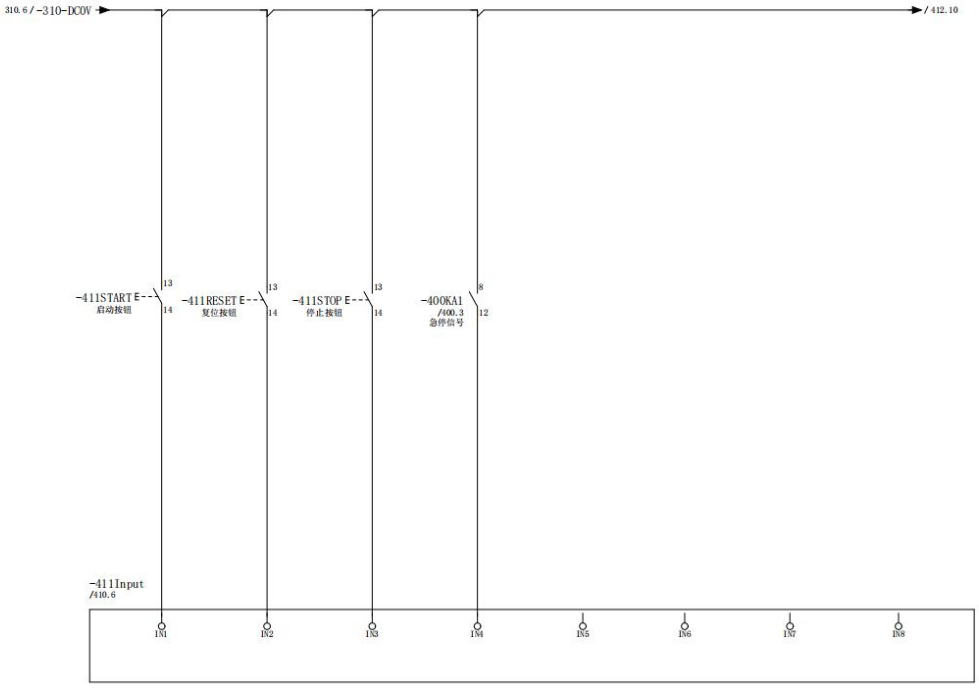

-203L1 / 203.5
-200N1 / 200.7
-200PE / 200.9
-400KA2
-200L1=KA2
-200N1=KA2
-301PS1
-301PS1-DC24V
-301FU
-301DC0V
-301FU-DC24V
-301X1
-301X2
-301DC0V

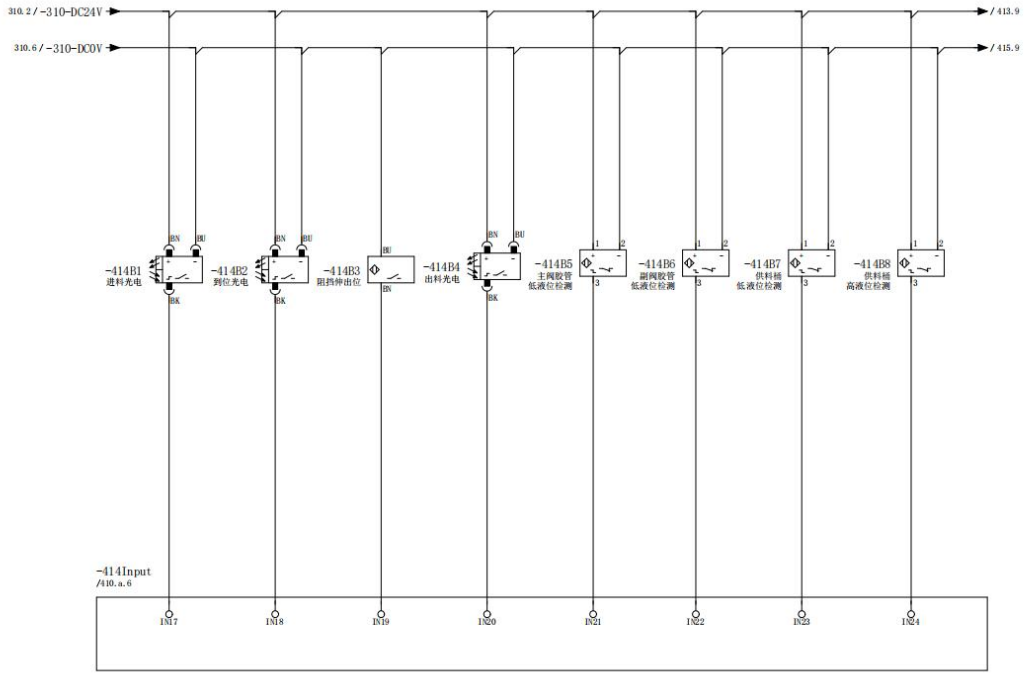

-203L1 / 203.5
-200N1 / 200.7
-200PE / 200.9
-302PS1
-302FU1
DC12V

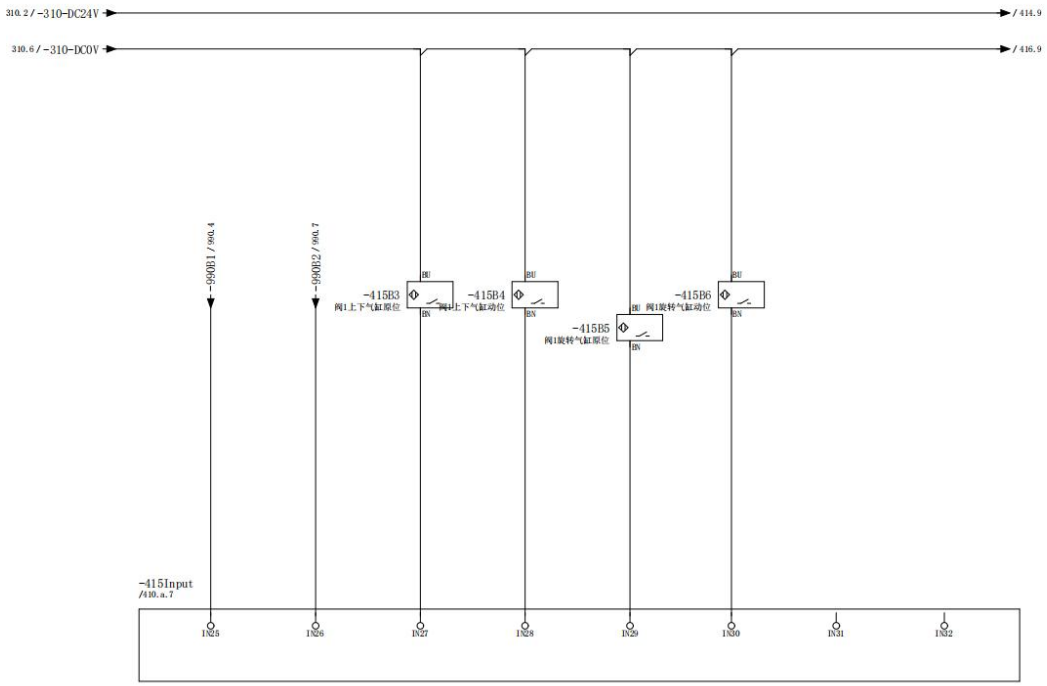

310.2 / -310-DC24V
13
-400E-STOP
急停按钮
14
-400KA1
/400.3
5
9
-400KA1
A1
A2
-400KA2
A1
A2
1
2 /202.2
3
4 /202.3
A1
-410KM1
A2
310.6 / -310-DC0V
5
9 /400.10
8
12 /411.5
5
9 /301.4
8
12 /301.4

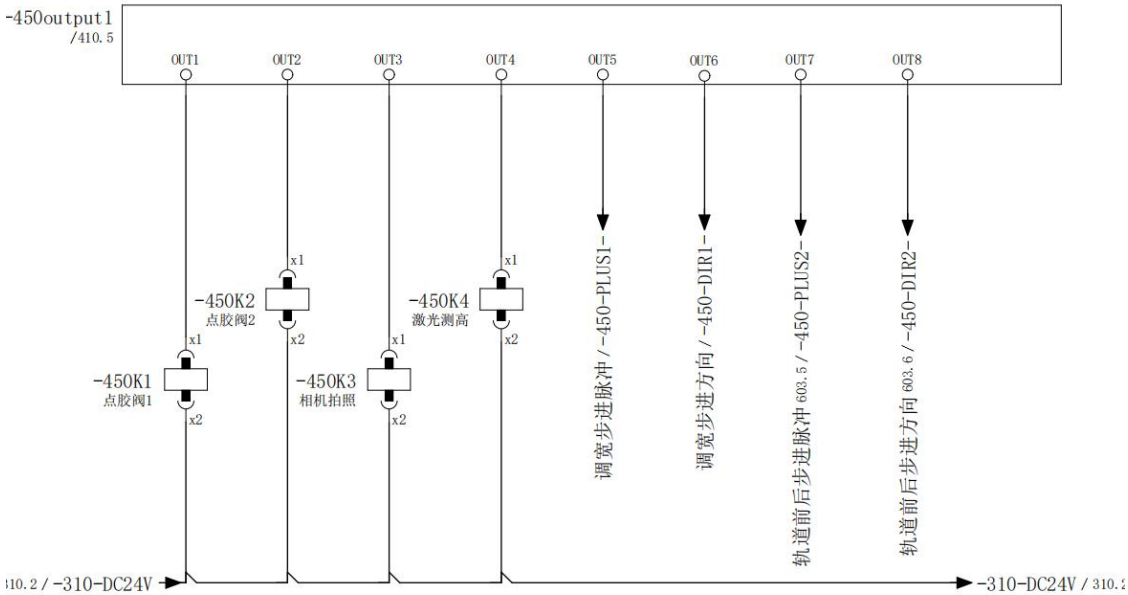

-400AxisControl
-400AxisControl-Axis1 / 600.6
-400AxisControl-Axis2 / 601.6
-400AxisControl-Axis3 / 602.6
-Axis1
Axis2
Axis3
Axis4
Axis5
Axis6
-EX I/O
-411Module1 /
24V
GND
PE
-450output1
/450.2
OUT1~OUT8
-451output1
OUT9~OUT12
-411Input
/411.2
IN1~IN8
-412Input
/412.1
IN9~IN16
-413EL
/413.1
EL1~EL6
310.2 / -310-DC24V
310.6 / -310-DC0V
200.9 / -200PE

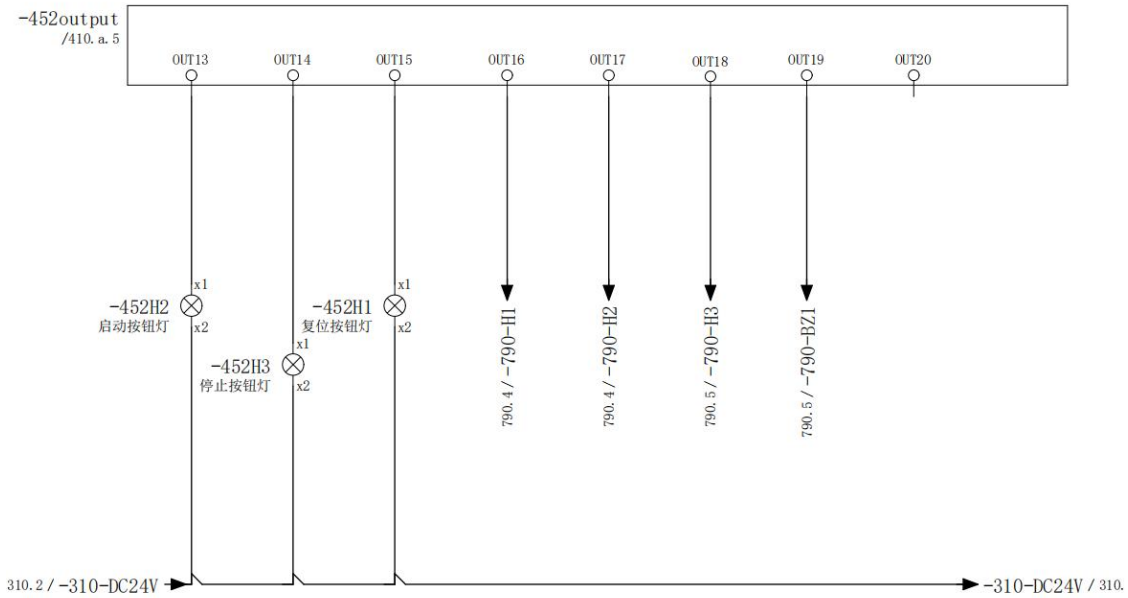

-411Module1
-452output
/452.2
OUT13~OUT20
-453output
/453.2
OUT21~OUT28
-454output
/454.2
OUT29~OUT36
-455output
/455.2
OUT37~OUT44
24V
GND
PE
-414Input
/414.2
IN17~IN24
-415Input
/415.2
IN25~IN32
-416Input
/416.2
IN33~IN40
-417Input
/417.2
IN41~IN48
310.2/-310-DC24V
310.6/-310-DC0V
200.9/-200PE

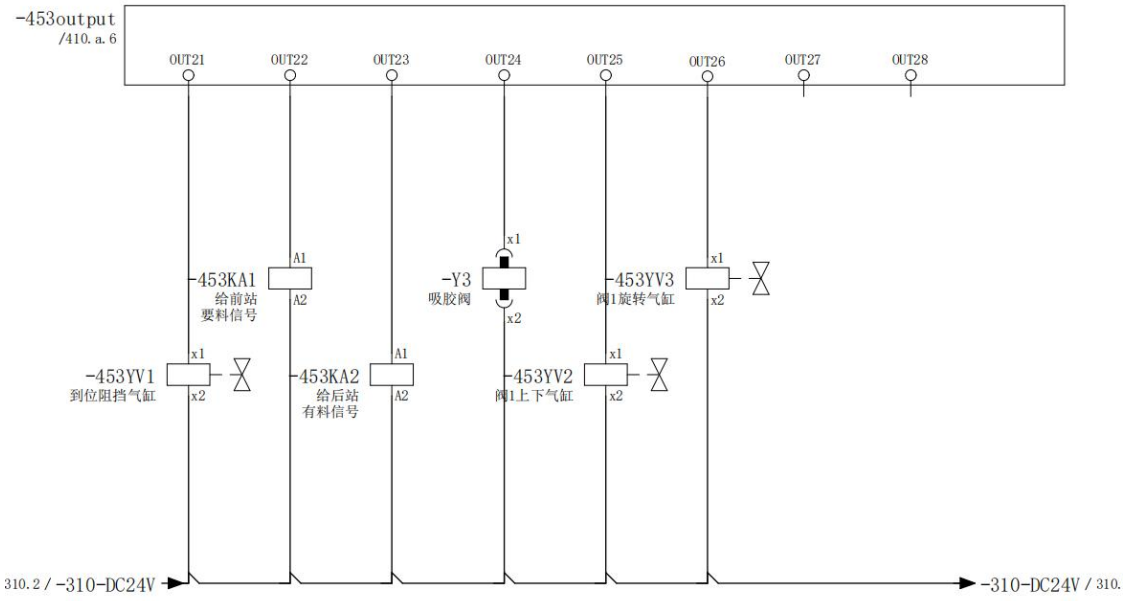

310.6/-310-DC0V
/412.10
-411START E--
启动按钮
-411RESET E--
复位按钮
-411STOP E--
停止按钮
-400KA1
/400.3
急停信号
-411Input
/410.6
IN1
IN2
IN3
IN4
IN5
IN6
IN7
IN8

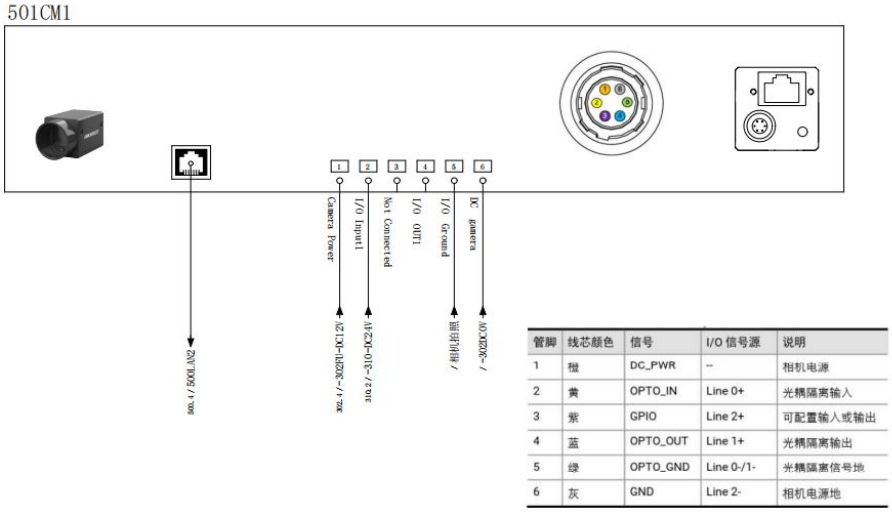

310.2 / -310-DC24V
310.6 / -310-DC0V
/ 413.9
/ 415.9
-414B1
进料光电
-414B2
到位光电
-414B3
阻挡伸出位
-414B4
出料光电
-414B5
主阀胶管
低液位检测
-414B6
副阀胶管
低液位检测
-414B7
供料桶
低液位检测
-414B8
供料桶
高液位检测
-414Input
/410.a.6
1N17
1N18
1N19
1N20
1N21
1N22
1N23
1N24


310.2 / -310-DC24V
310.6 / -310-DC0V
/ 414.9
/ 416.9
-990B1 / 960.4
-990B2 / 960.7
-415B3
阀1上下气缸原位
-415B4
阀1上下气缸动位
-415B5
阀1旋转气缸原位
-415B6
阀1旋转气缸动位
-415Input
/410.a.7
1N25
1N26
1N27
1N28
1N29
1N30
1N31
1N32

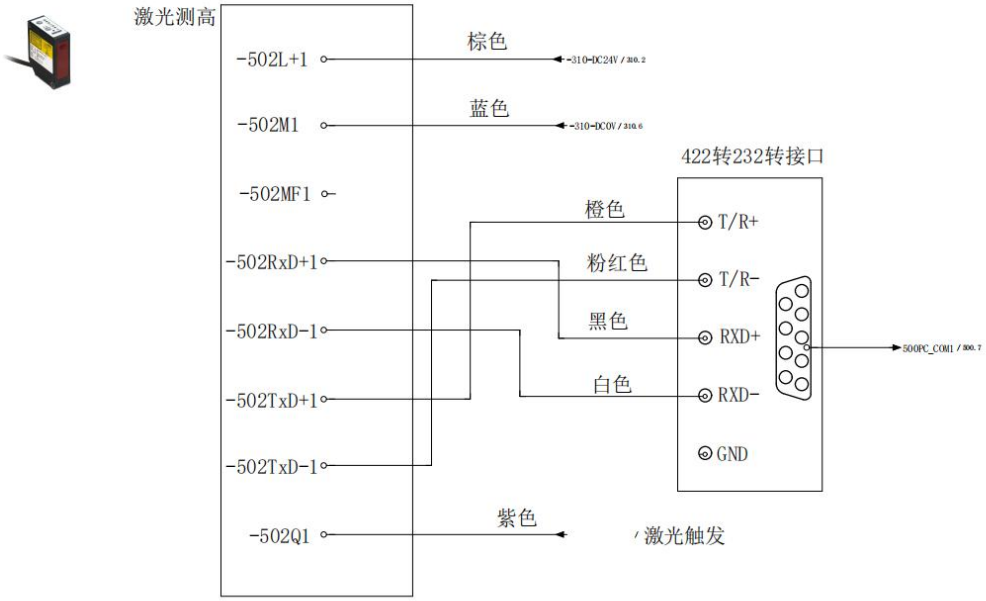

-450output1
/410.5
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
OUT8
-450K1
点胶阀1
-450K2
点胶阀2
-450K3
相机拍照
-450K4
激光测高
x1
x2
调宽步进脉冲/-450-PLUS1-
调宽步进方向/-450-DIR1-
轨道前后步进脉冲603.5/-450-PLUS2-
轨道前后步进方向603.6/-450-DIR2-
310.2/-310-DC24V
-310-DC24V/310.

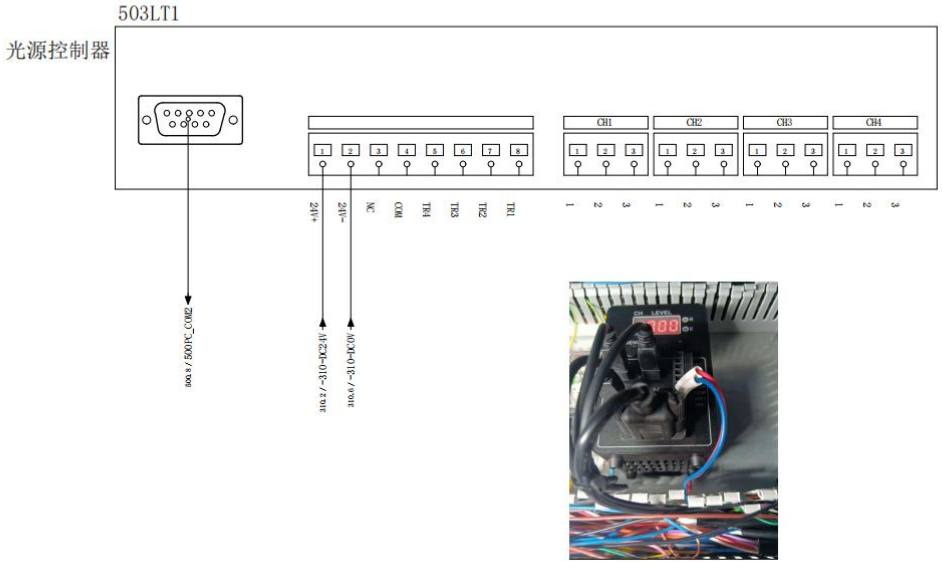

-452output
/410.a.5
OUT13
OUT14
OUT15
OUT16
OUT17
OUT18
OUT19
OUT20
-452H1
复位按钮灯
-452H2
启动按钮灯
-452H3
停止按钮灯
x1
x2
790.4/-790-H1
790.4/-790-H2
790.5/-790-H3
790.5/-790-BZ1
310.2/-310-DC24V
-310-DC24V/310.



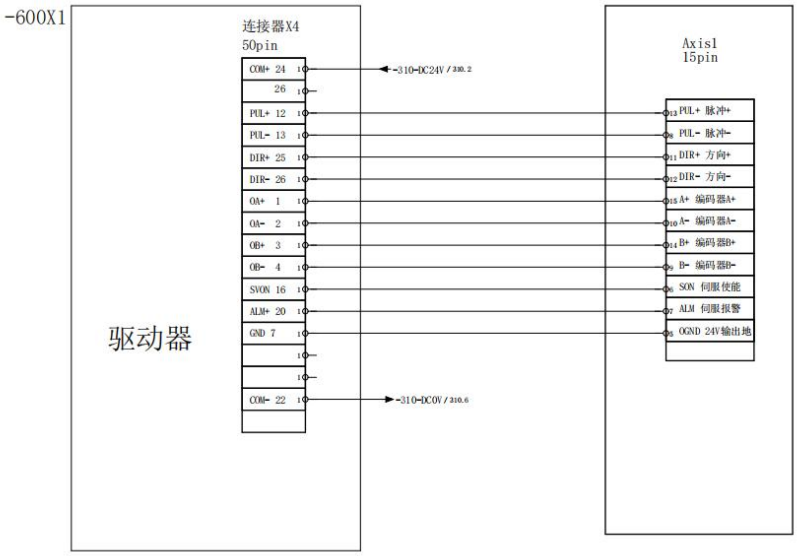


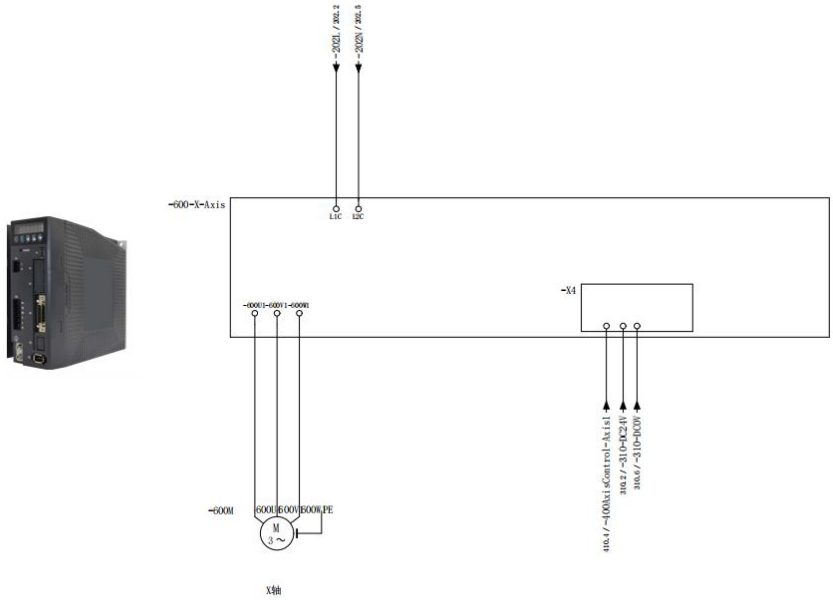
管脚	线芯颜色	信号	I/O 信号源	说明
1	橙	DC_PWR	--	相机电源
2	黄	OPTO_IN	Line 0+	光耦隔离输入
3	紫	GPIO	Line 2+	可配置输入或输出
4	蓝	OPTO_OUT	Line 1+	光耦隔离输出
5	绿	OPTO_GND	Line 0-/1-	光耦隔离信号地
6	灰	GND	Line 2-	相机电源地


激光测高
-502L+1
-502M1
-502MF1
-502RxD+1
-502RxD-1
-502TxD+1
-502TxD-1
-502Q1
棕色
蓝色
橙色
粉红色
黑色
白色
紫色
422转232转接口
T/R+
T/R-
RXD+
RXD-
GND
激光触发

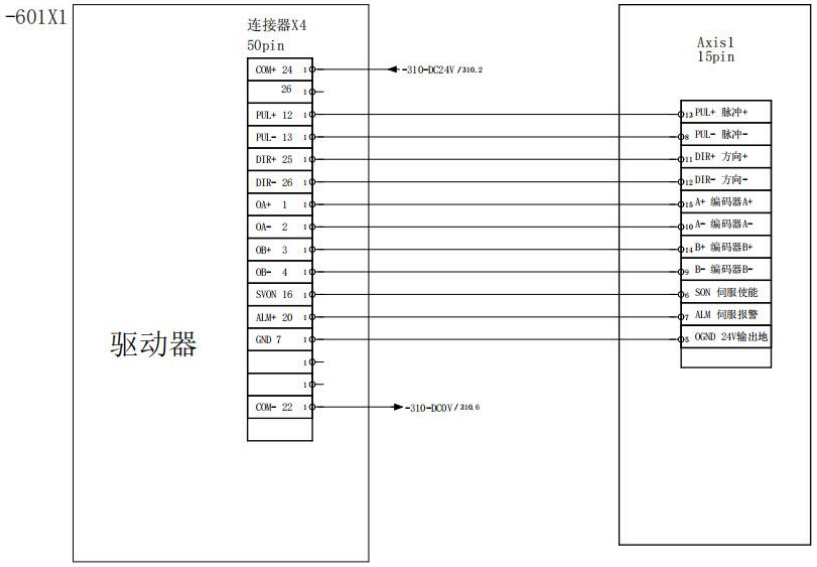

503LT1
光源控制器
CH1
CH2
CH3
CH4

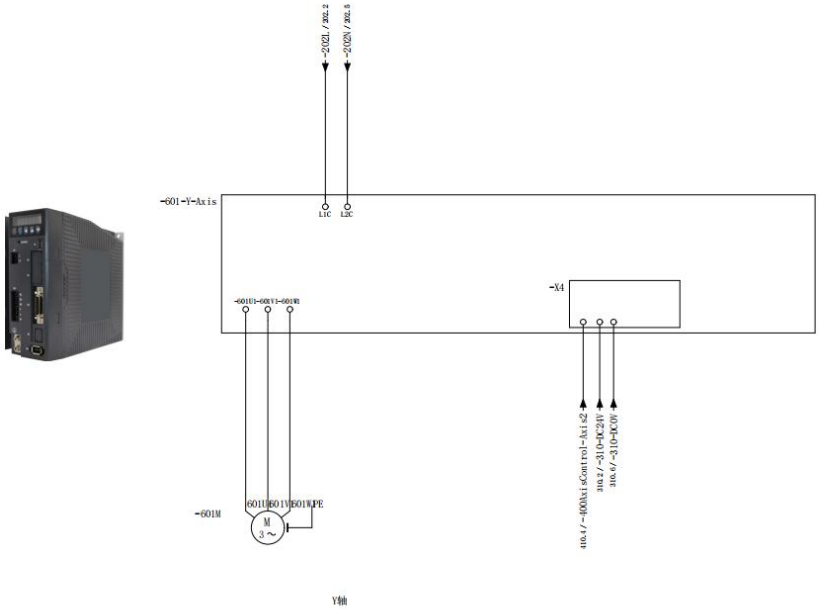
X轴伺服控制器与板卡接线图



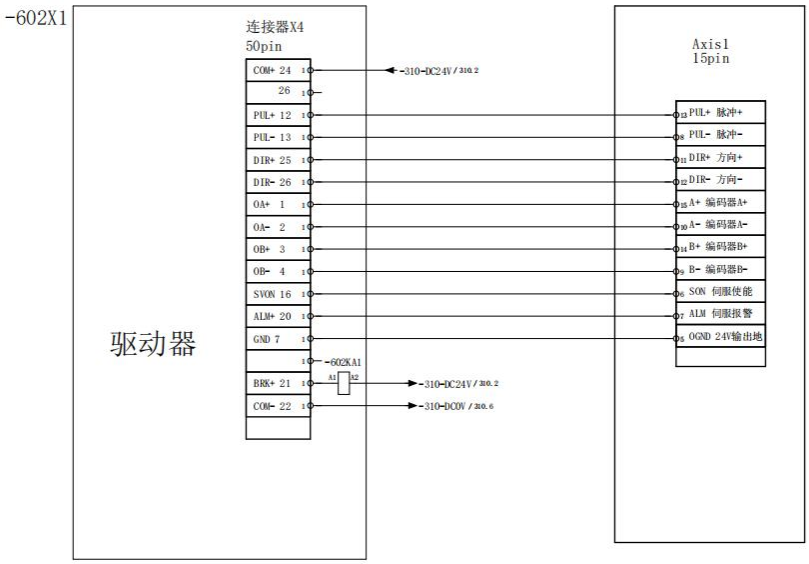


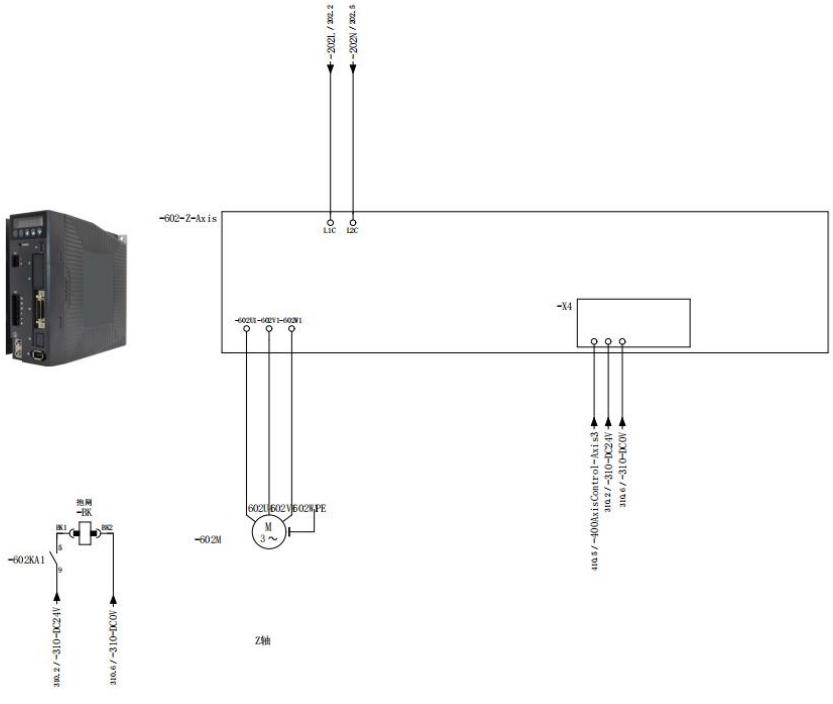
Y轴伺服控制器与板卡接线图

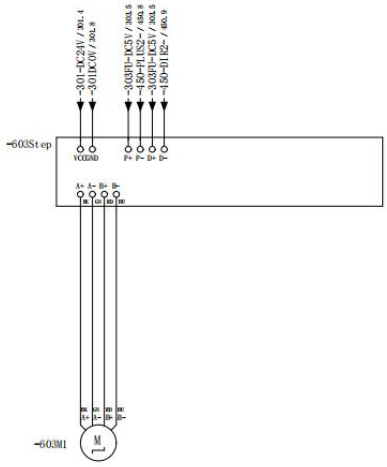




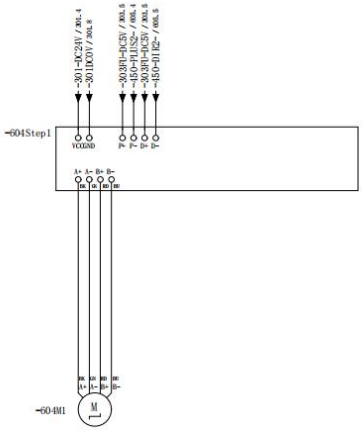
Z轴伺服控制器与板卡接线图



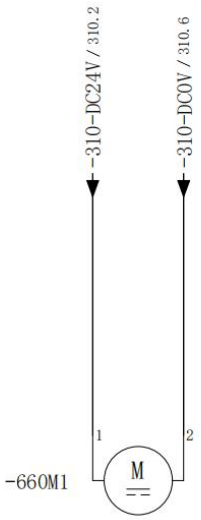


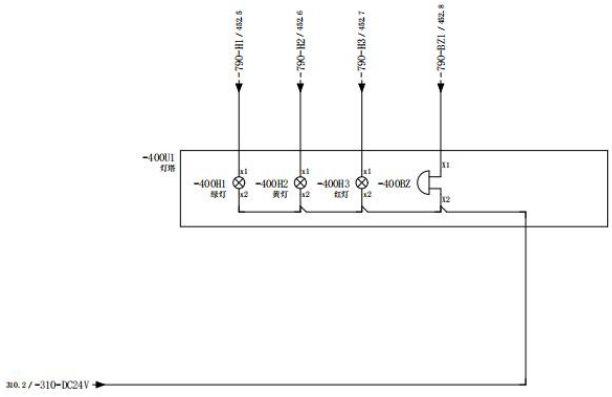


调宽步进



前轨道步进


-310-DC24V / 310.2
-310-DC0V / 310.6
1
2
-660M1
M


-790-H1 / 402.5
-790-H2 / 402.6
-790-H3 / 402.7
-790-HZ1 / 402.8
-400U1
灯塔
-400H1
绿灯
-400H2
黄灯
-400H3
红灯
-400HZ
X1
X2
310.2 / -310-DC24V