Read this manual before operation

- The content include of electric connections and operating steps
- Read the manual to operate the systems

# RDVisionWorks

## Large format visual cutting software

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# COPYRIGHT

# CERTIFICATION DECLARATION

## CE

The product has been certified by the CE (Commutate European) safety certification. It has passed the corresponding conformity assessment procedure and the manufacturer's declaration of conformity, in accordance with the relevant EU directive.

## ROHS

This product has been certified by EU legislation (Restriction of Hazardous Substances) Safety certification; comply with relevant EU environmental regulations.

## FCC

This product has been certified by the Federal Communications Commission for safety, Comply with us electronic safety regulations.

# SAFETY INFORMATION

When using this system, please make sure the operation is correct and the usage is safe. Some signs or text will be used to remind you to pay attention to the dangerous matters and some important information.


**Dangerous：**

Indicates a serious danger. In the process of use, if the operation is improper or the way of use is wrong, it may cause serious injury or even death to the user. Please do not operate it easily until you have made sure that the operation method is correct and the way of use is correct.


**Warning：**

Danger.n the process of use, if the operation is improper or the use is wrong, which may lead to the injury of the personnel, please do not operate the personnel and related personnel easily, until ensure the correct operation method and use method is correct before use.


**Cautious：**

Represents the potential risk of the product. In the process of use, if the use method is wrong or improper operation, it may cause damage to the product or some parts. Please do not use it until you have made sure that the operation method is correct and the usage is correct.

**Important：**

Represents important information to be paid attention to during the use of the product.Please do not ignore this information, this information will provide effective operational help.

This sign indicates laser radiation, which is usually posted on products with laser output. Please be careful with laser and pay attention to safety when using this kind of equipment.

# Sign in、Devanning、Examine cargo

The product itself with plastic or metal shell, can protect the external electrical components from damage. The products are packed in foam bags and anti-static bags. If there is any external damage to the package, check the equipment and notify the carrier and carrier in writing of the damage.

**Inportant:**

After receiving the product, please check whether the outer package is intact, check whether the product is complete after unpacking and whether all parts are intact. If any damage is found, please contact ruida immediately.

Remove all cargo from package and keep packing material and wiring parts. Please take care of the safety of the goods when unpacking them.After taking out the goods, please check whether the parts are complete and intact. If any missing parts or damaged parts are found, please contact ruida technology immediately.Do not install or debug the equipment if any obvious damage is found.

RDVisionWorks Large format visual cutting software,The shipping list is shown in the following table:(As the products are constantly updated, you may receive different accessories from this manual)

| 部件 | 数量 | 说明 |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

# Contents

# Section 1 System Overview

## CONTENTS:



## 1.1 Introduction

The manual, the main content for the large format cutting software (RdVisionWorks1.00.08) method of operation. The software is mainly used by manufacturers, end customers.

RdVisionWorks is a large format vision based smart recognition cutting system. The system (combined with software, camera, cutting system) integrates. Mainly used for visual guidance cutting. Such as fabric, wedding, printed materials and other materials.

## 1.2 Computer Configuration

| | |
|---|---|
| Operating system | Windows 7 |
| CPU | I5 3.0GHZ above |

| | |
|---|---|
| Memory | 8G above |
| Graphics | 2G independent |
| LCD flat | panel display |

## 1.3 Copyright statement

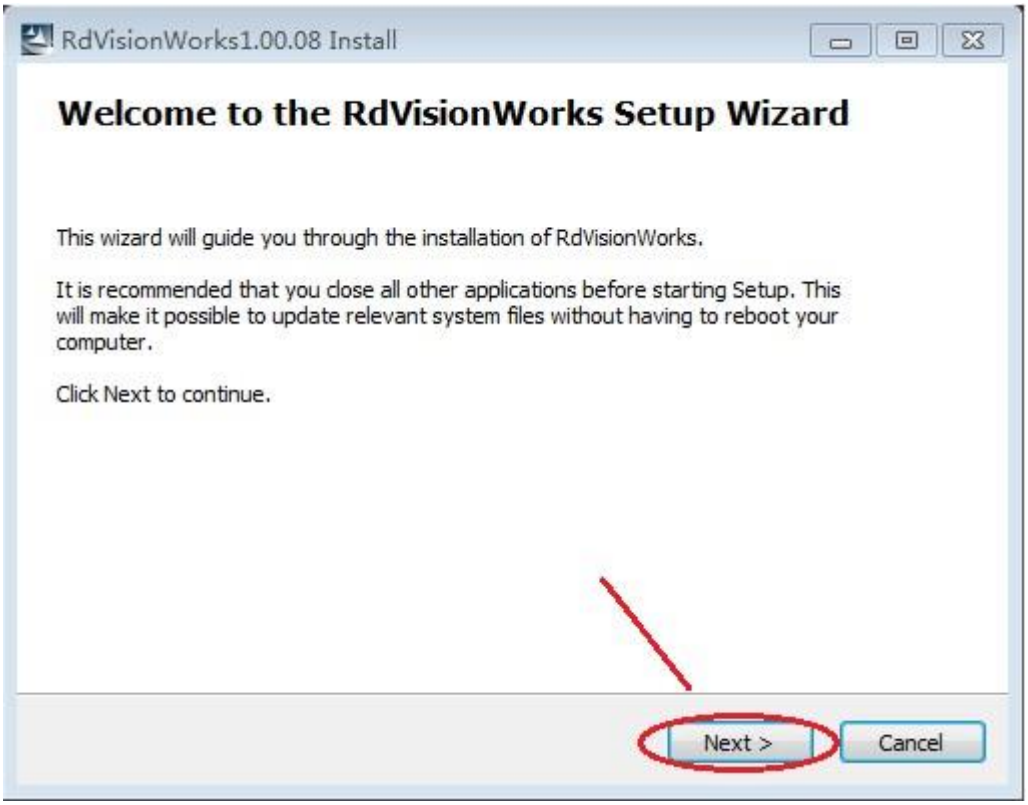


# Section 2 Software installation and configuration

## CONTENTS:

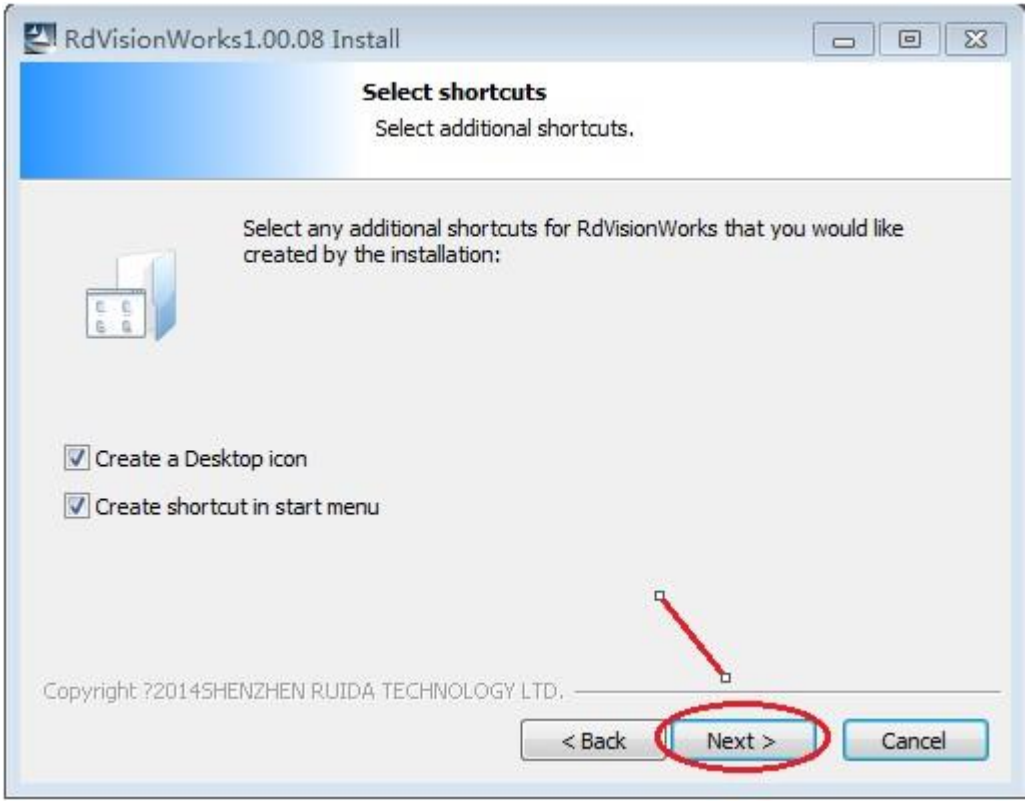
## 2.1 Software installation and configuration

1. After decompressing the installation package, double-click to run RdVisionWorksSetup.exe program.

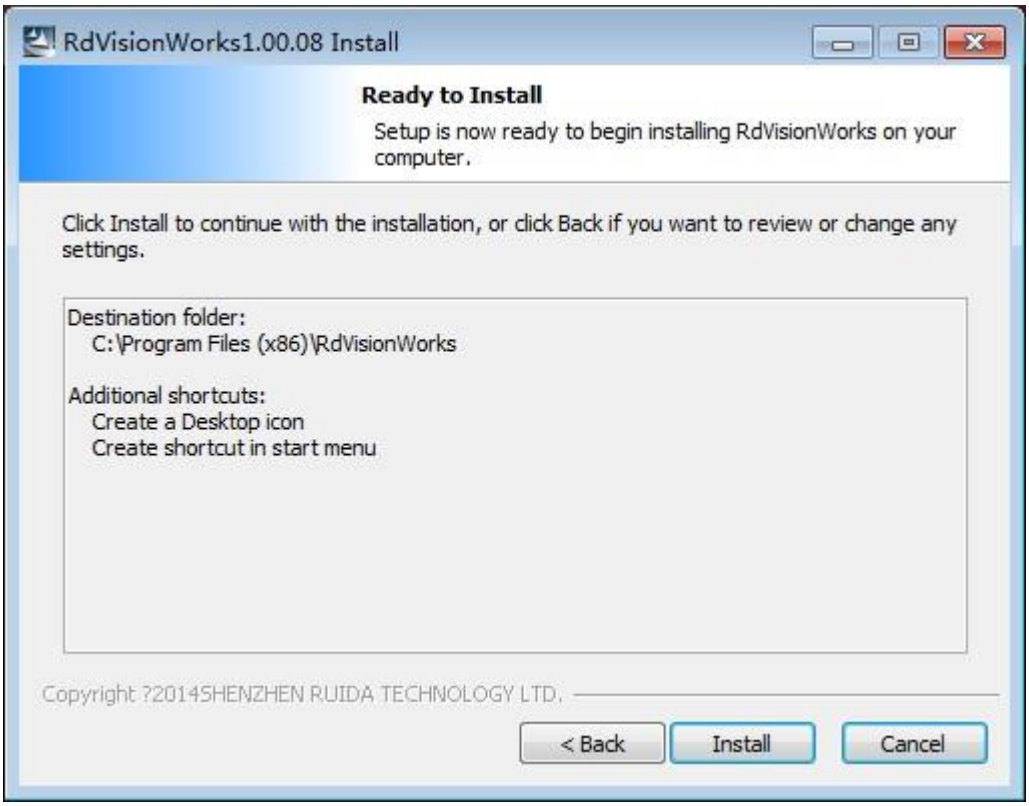



Click "Next"

Click "Next"



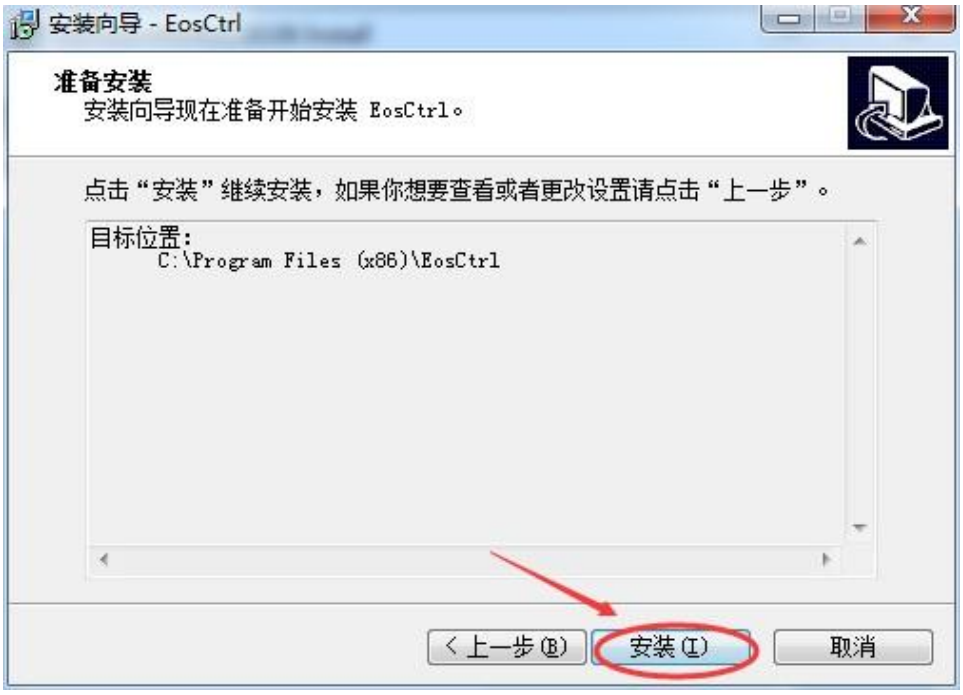

Click "Next"



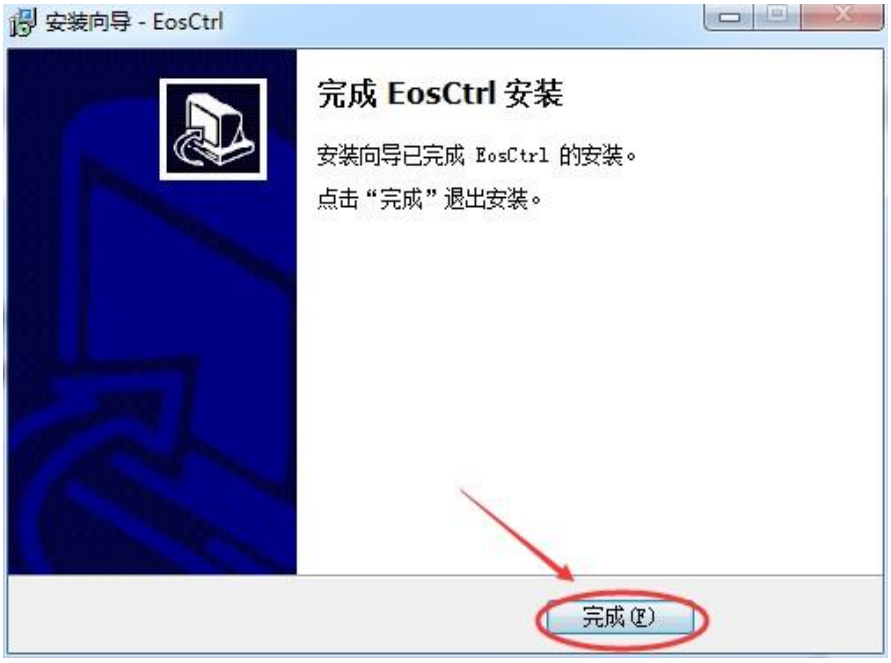

Click "Install"


Next “step”

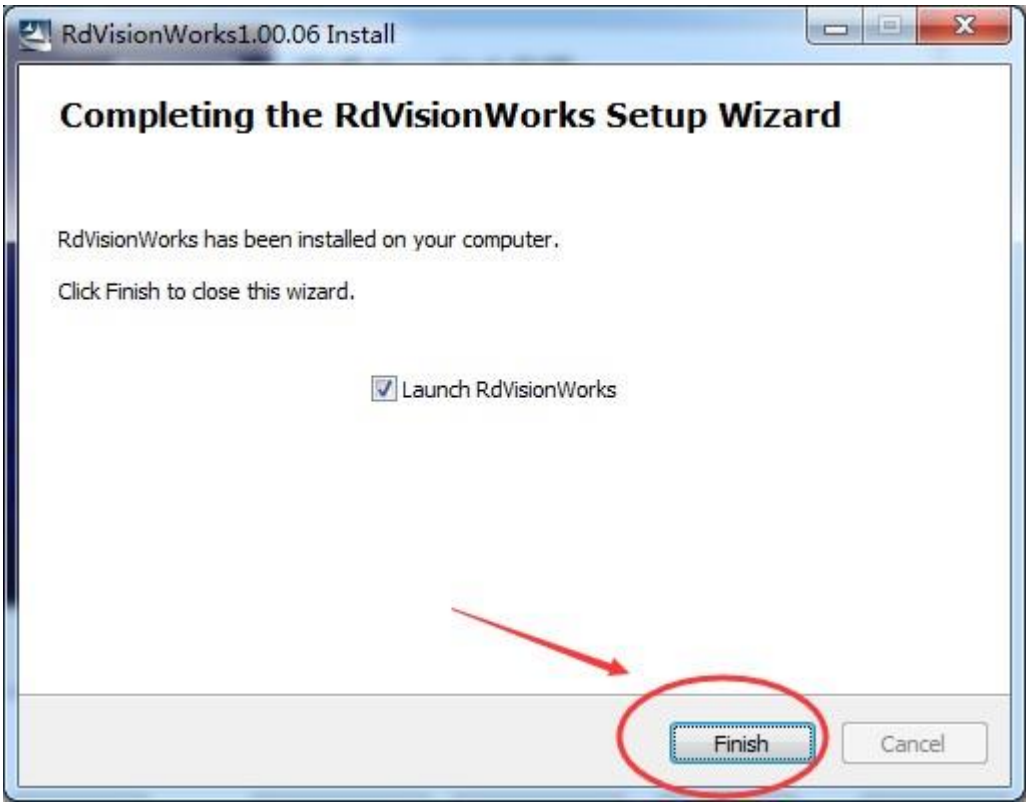

Click "Next"




Click "Install"




Click "Finish"



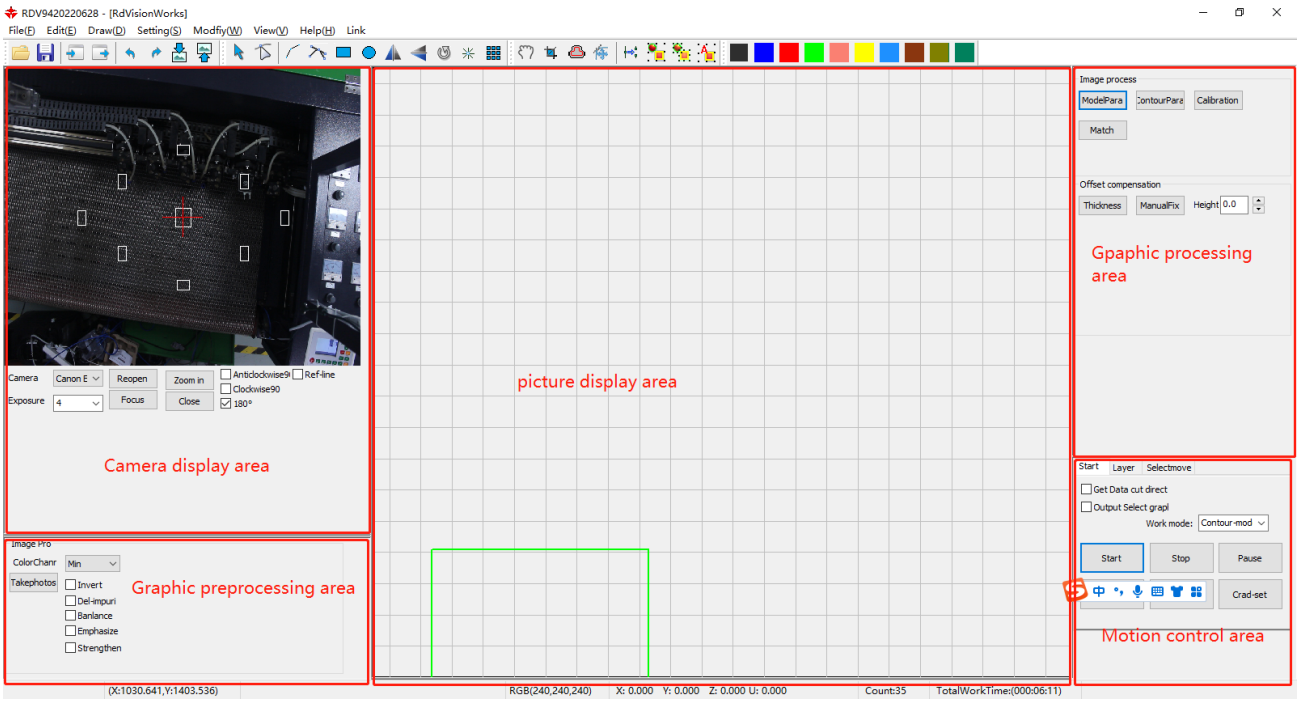

Click "Finish"

At this point, the software installation is completed.

# Section 3 Software main operation flow introduction(Quick Start)

# CONTENTS:

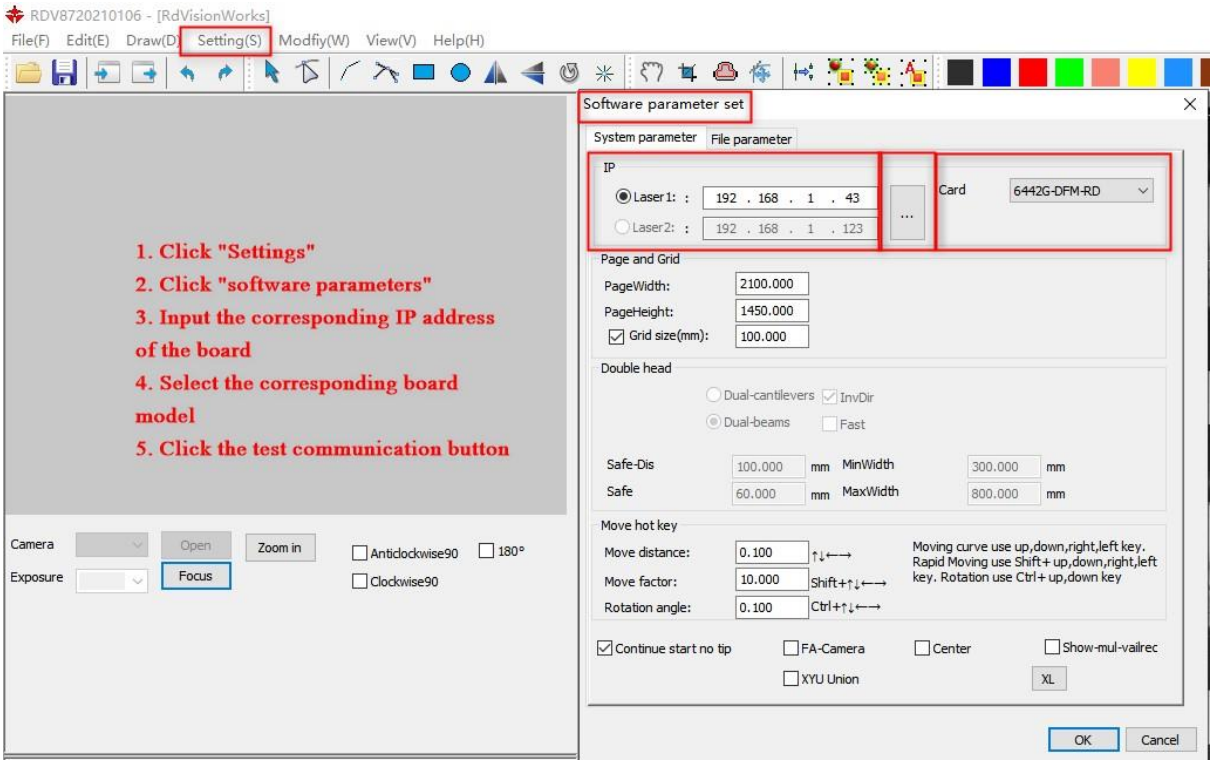
## 3.1 Software overall interface and structure

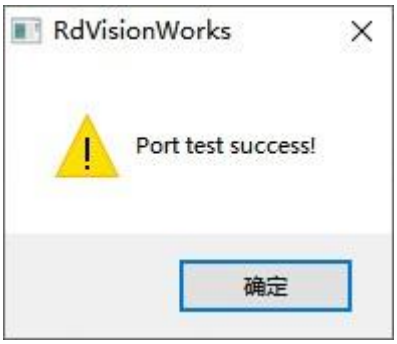



## 3.2 Calibration preparation

After the software is started, some settings must be made on the card so that the machine can work normally.

## 3.2.1 Set the connection between the computer and the card.



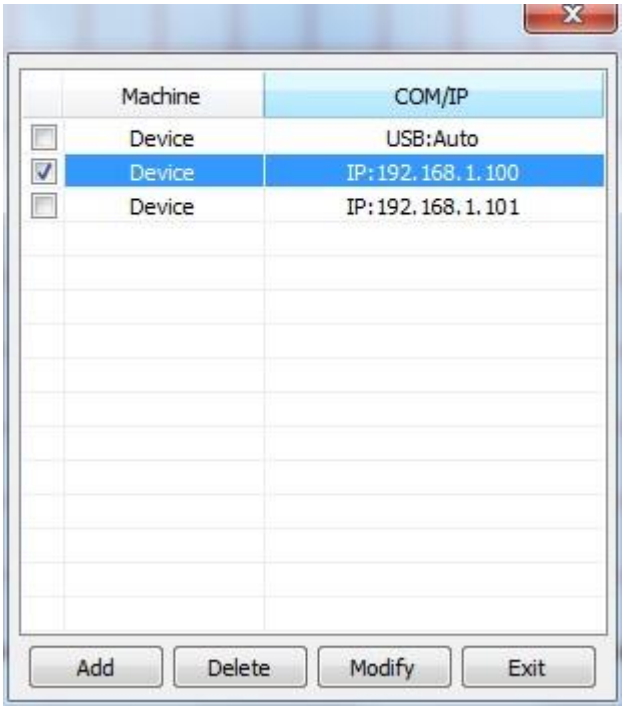




Board factory ip is 192.168.1.100 or 192.168.1.101, it is recommended that the local computer ip set in the range of 192.168.1.102 ~ 192.168.1.254.

If it is a double-headed asynchronous machine, the ip of the two boards have to set up communication success. (It is recommended to use ip connection to communicate more stable) **Connect the device**

The connection between software and machine can be realized by USB data cable and network cable. Network cable connection as follows:

Click on the map  button, pop up the following device list dialog box.




Double-click on a device, open the following IP settings dialog box.


You can change the IP address and click the test button. Note: The IP address here should be the same as the IP address on the control panel. In addition, the IP address of the computer should be the same network segment as the software IP address. Specific settings are as follows： 1, check the control panel on the IP address:

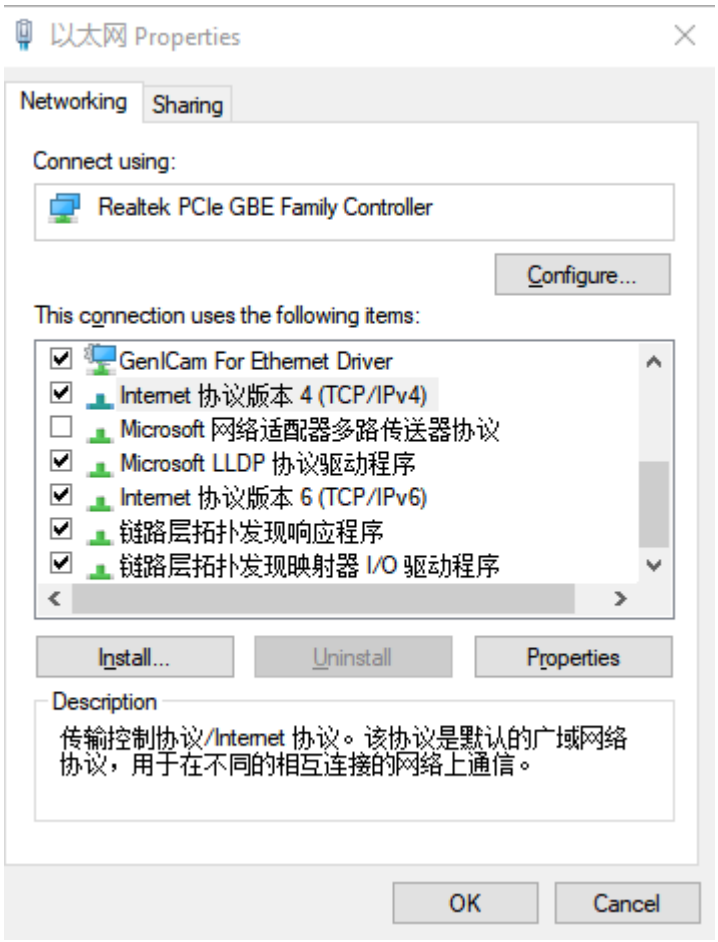
Control panel connection, click on the Z / U button to enter the menu, through the up and down keys to adjust, you can find the IP Settings button, click OK to see the IP address.

2, the computer's IP address settings:

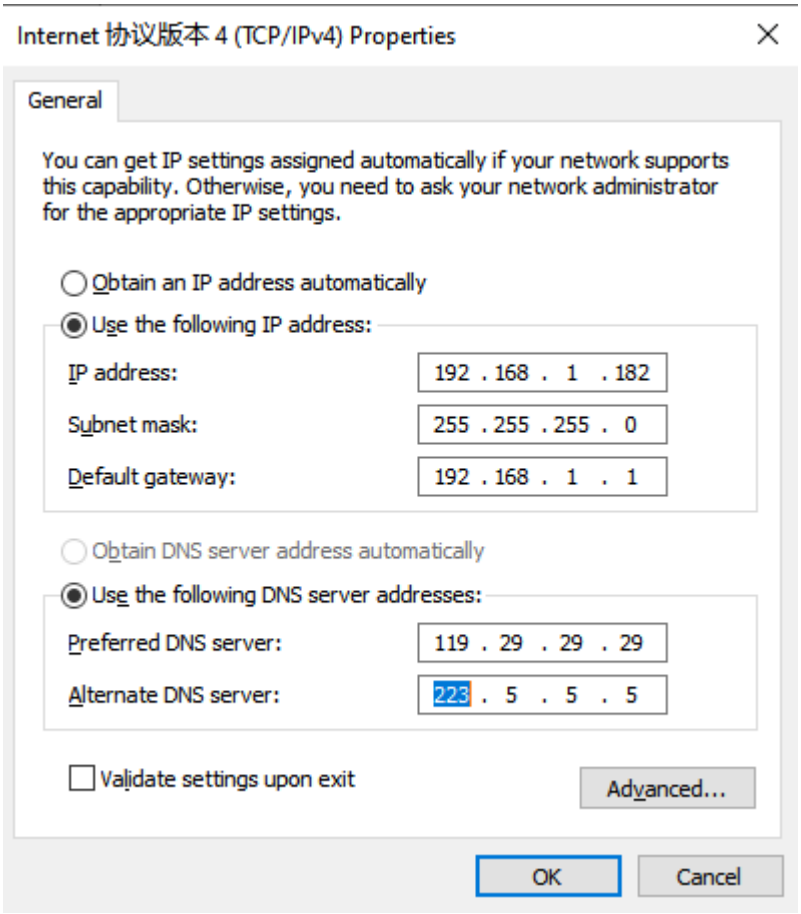
Click the computer's network icon  , open the network and sharing center. Click Local Area Connection to open the Local Area Connection dialog box. 

Click the Properties button


, Open the local connection dialog box. As shown below:




Double-click Protocol Version 4 to open the following properties page. Click Use the following IP address. Write "192.168.1.182", click the subnet mask box below, it will be filled in automatically. Then click OK.



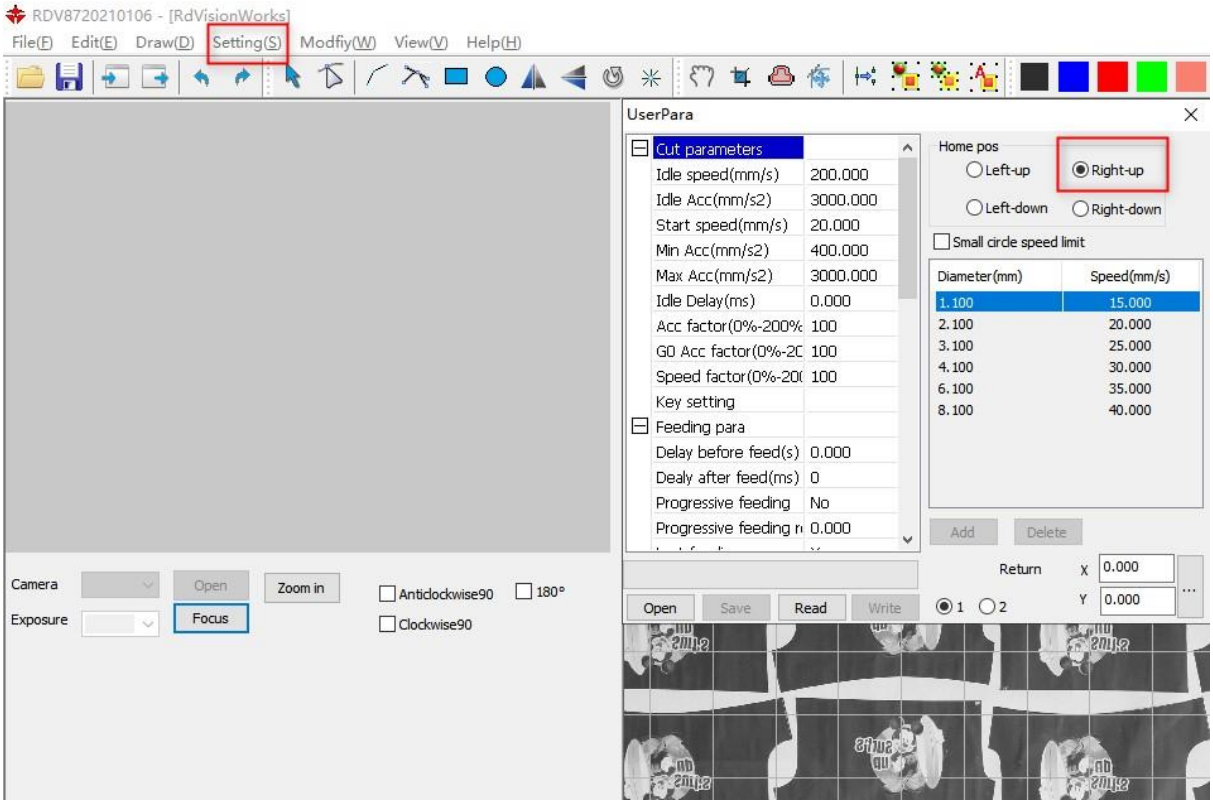

### 3.2.2 Factory settings

Factory settings (set a good pace, the direction of the electrical polarity, format and other parameters)

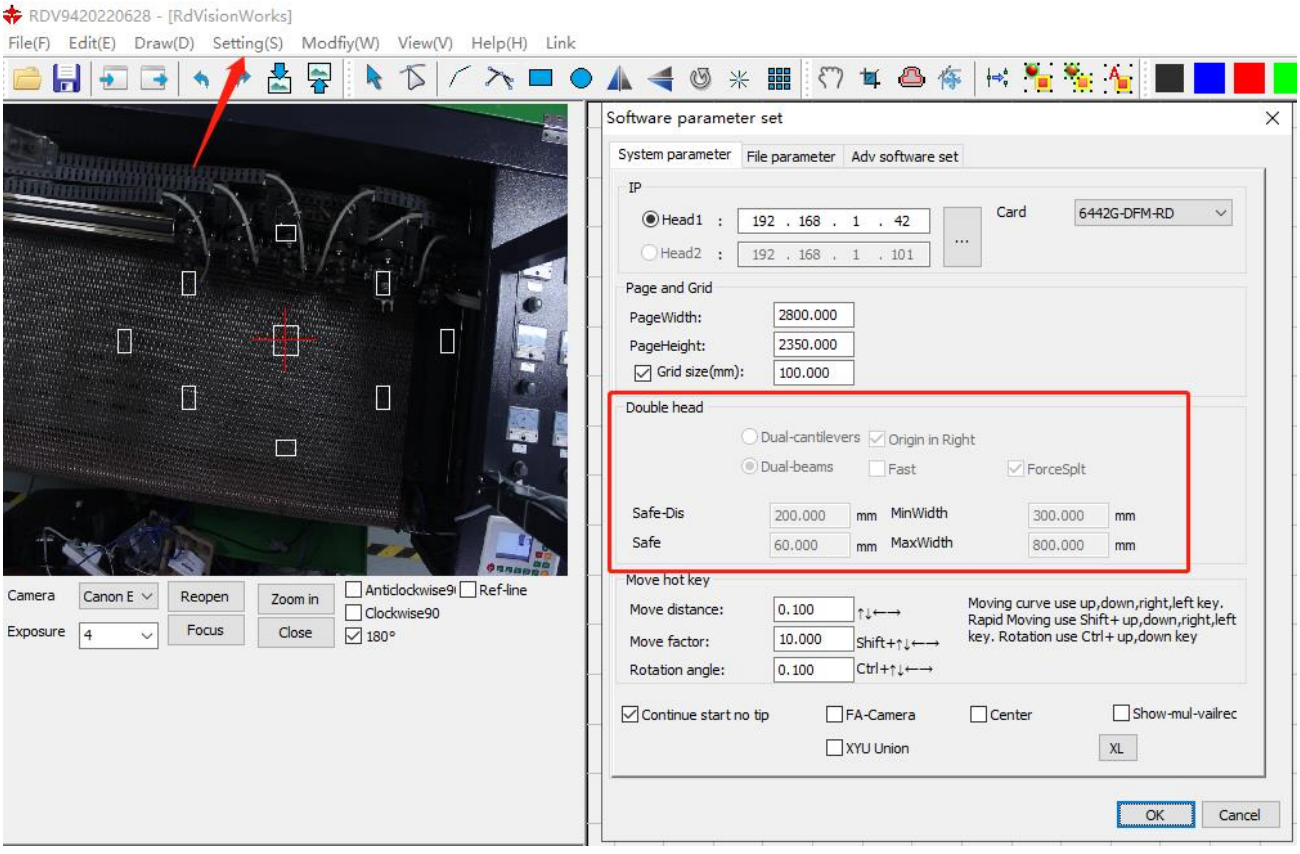
Setting method: Refer to the setting method of ordinary cutting software.

### 3.2.3 Origin set

Origin set, the machine after a normal reset. Single-head machine, set the origin position in the software, as shown below.




If it is double asynchronous machine settings as shown below.



Double cantilever: it means that the origin is at the lower left (main card) and lower right (auxiliary card) of the machine

Double crossbeam: represents that the origin is at the lower left (main card) and upper left (auxiliary card) of the machine

The machine origin is at the rightmost position: when checked, the machine origin is at the rightmost position

Forced splitting: when checked, the work area is divided into two parts, and the two ends are processed in their respective areas.

Small graph acceleration: path algorithm optimization for small graphs

## 3.3 Camera correction

### 3.3.1 Calibration before work

1） To improve the calibration accuracy, the camera should be installed in the center of the machine, the camera imaging and the machine as far as possible parallel.

2） After fixing the camera, make sure the camera is not shaking. Slight sloshing of the camera can also cause a large offset in the cutting position.

3） Anti-shake camera switch off.

4） AF hit the lens that is the AF block.

5） Camera range to adjust the scope of the machine size.

6） Unplug the camera data cable, half-press the shutter, auto-focus, press the shutter all the way to complete the focus. The lens hit mf block.

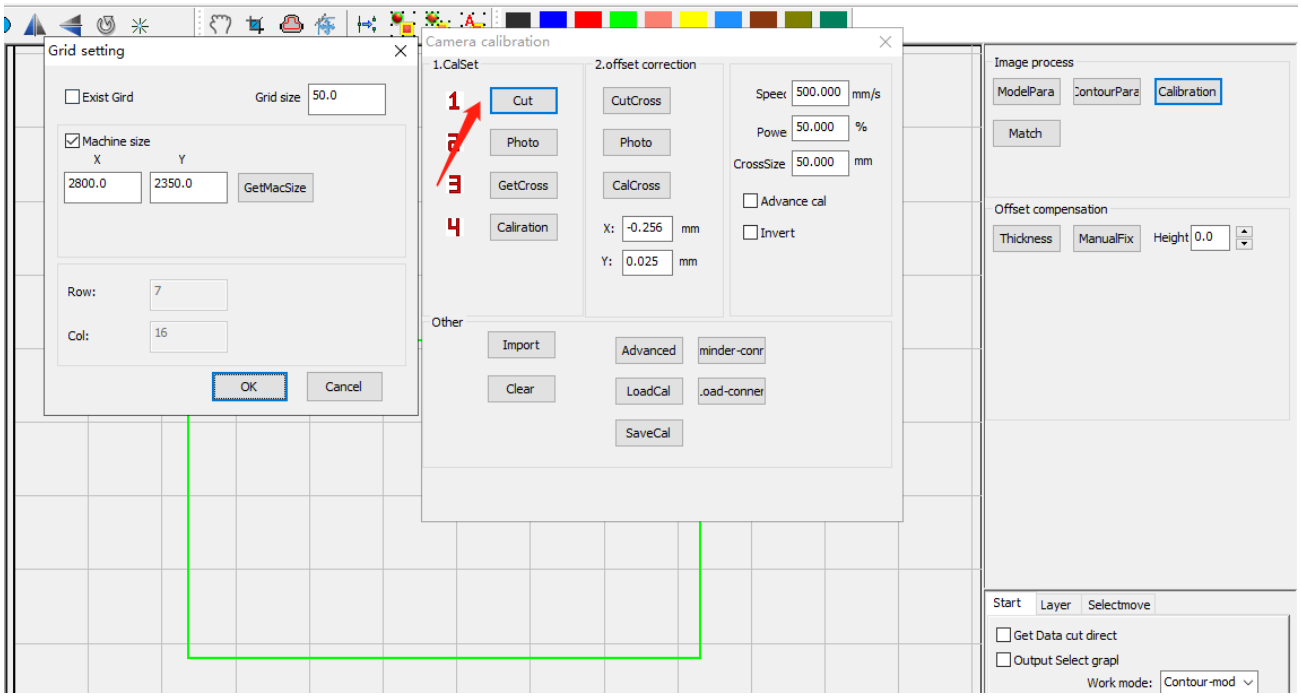
7） Will be covered with white paper on the laser machine work surface, the formation of white paper is not allowed to bulge, bulging will affect the calibration below **(Note: You can use a magnet to fix the white paper, the fan suction white paper at the same time To achieve the effect of white flattening)**

### 3.3.2 Draw a grid

Click the "Calibration" button in the main interface of the software, the calibration dialog box pops up.

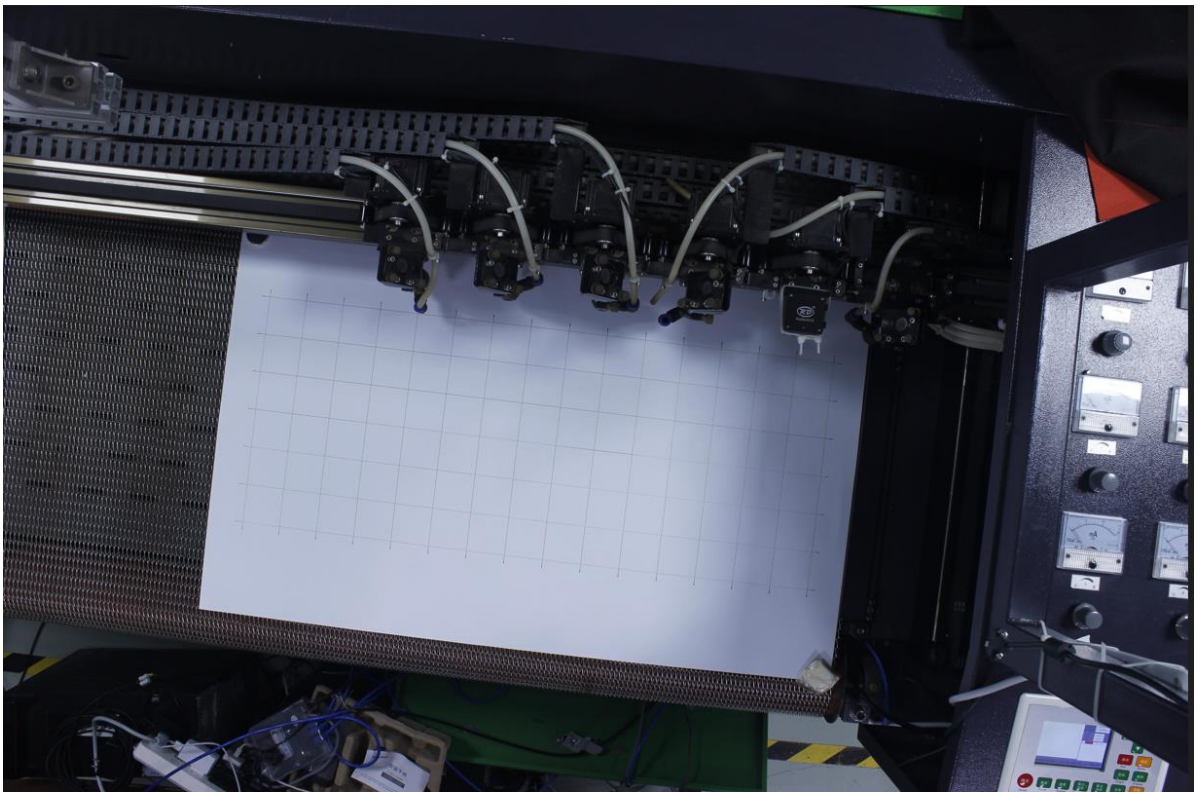
Choose to draw a grid and pop up a grid setting dialog box,Set the appropriate size interval on the machine board(50mm or other size).If the software connection is successful, click ok to start drawing the grid.

At this point, the machine will draw some grid on the laid paper.




### 3.3.3 Take a photo

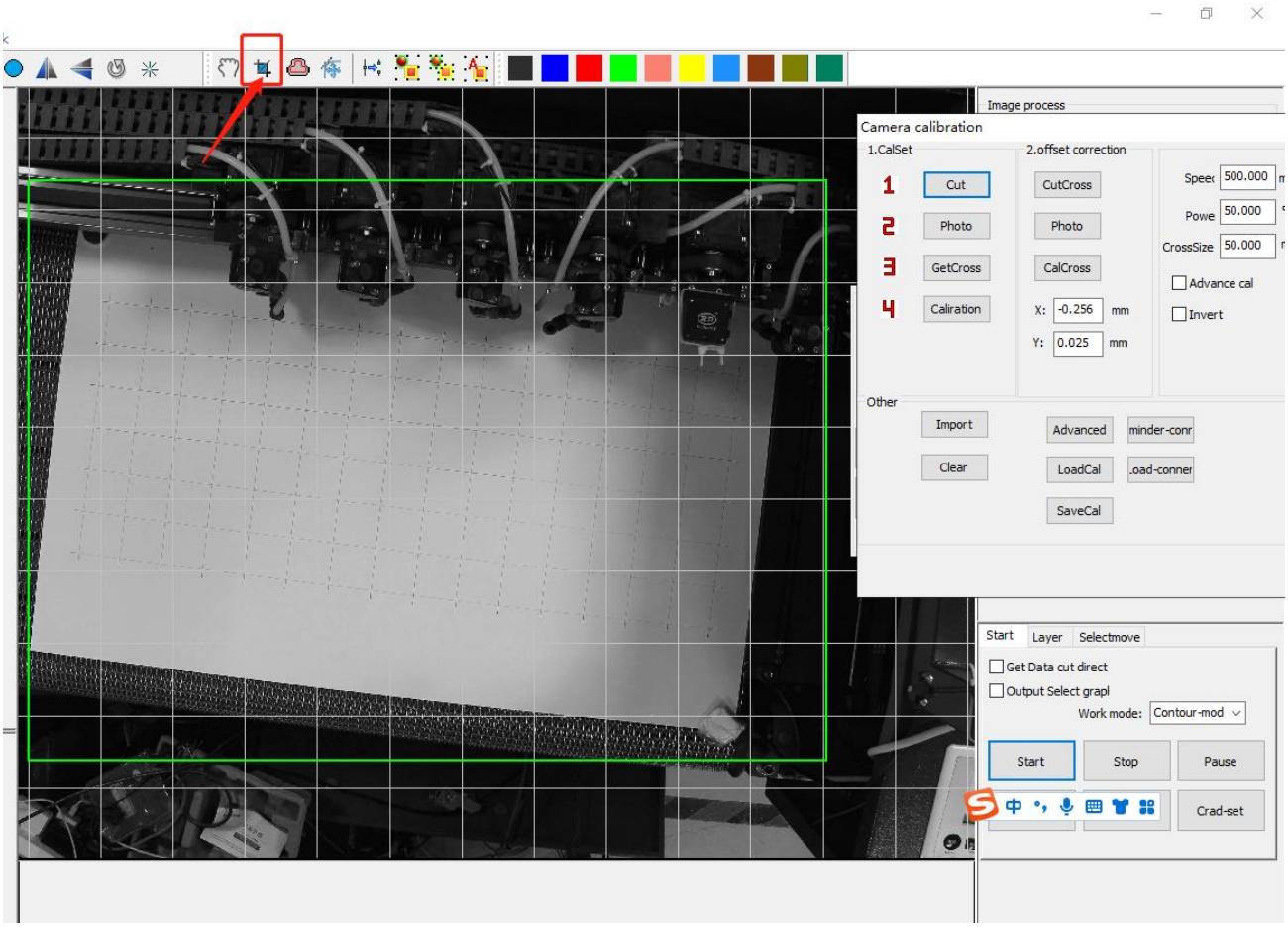
After the grid is drawn, the machine moves to the origin. Click the "camera" button. Get an image. As shown below.



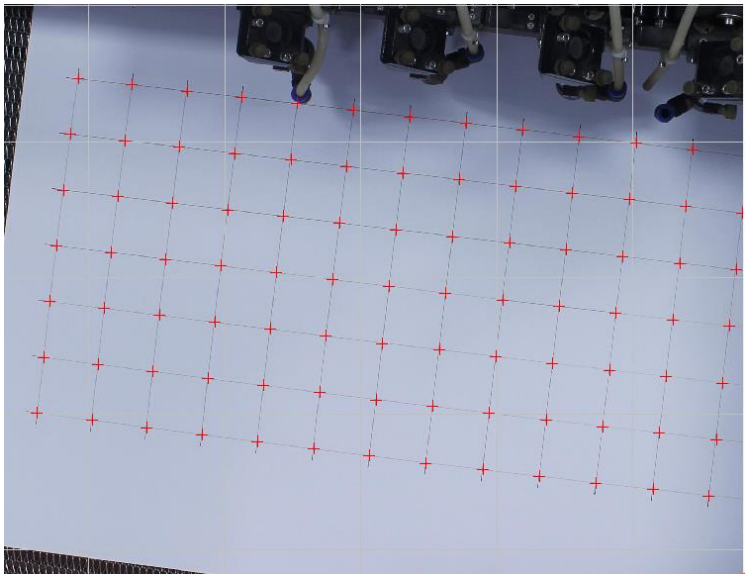
### 3.3.4 Set valid area

Draw a valid area that contains all the grids.

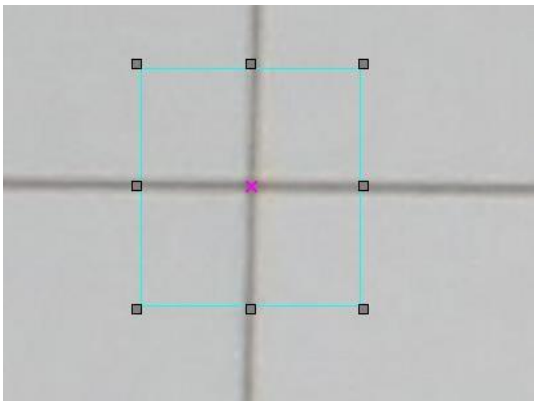
After the setting is successful, a green box will appear, indicating the valid data range.




Click the "Recognition" button, there will be some red cross. As shown below.



If it pops up prompt. Draw a rectangle at the cross of the image as shown below.

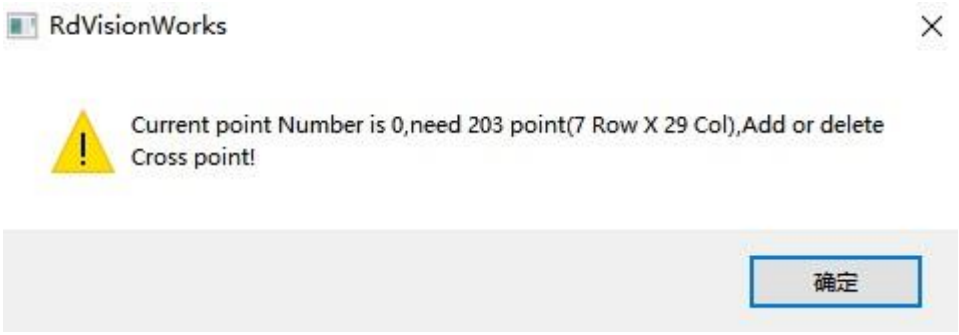
(The rectangle size is about 15mm * 15mm, the center of the rectangle is over -lapped with the laser drawn cross.)

Then click the "Recognition" button. The same will identify some cross at the intersection of drawing lines.

### 3.3.5 Correction

Click the "Calibration" button.

If the number of cue points wrong. As shown below



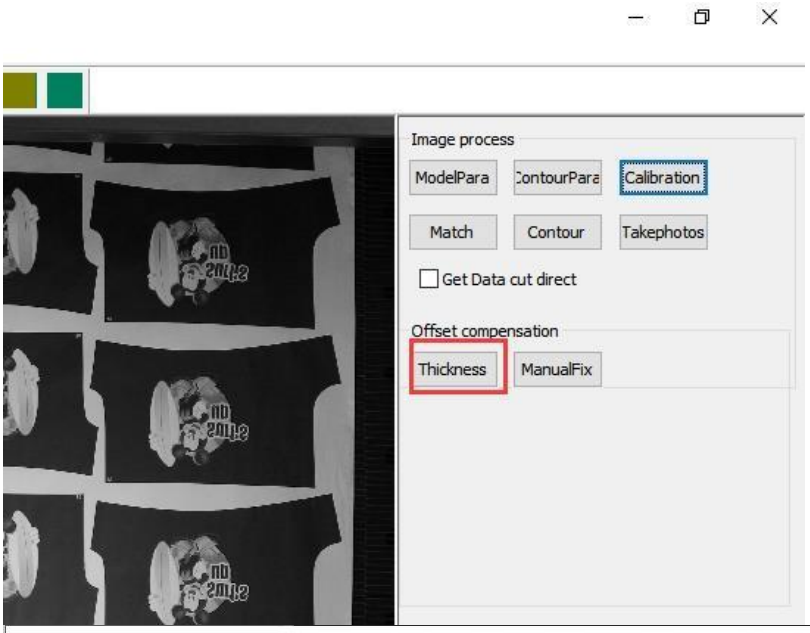

Please check if there are some unidentified cross or wrong cross. If you have, double-click a location to add a cross. Delete key to delete the cross. Selected part of the frame can also delete the selected area within the cross. Or check the advanced settings in the parameter settings are correct.

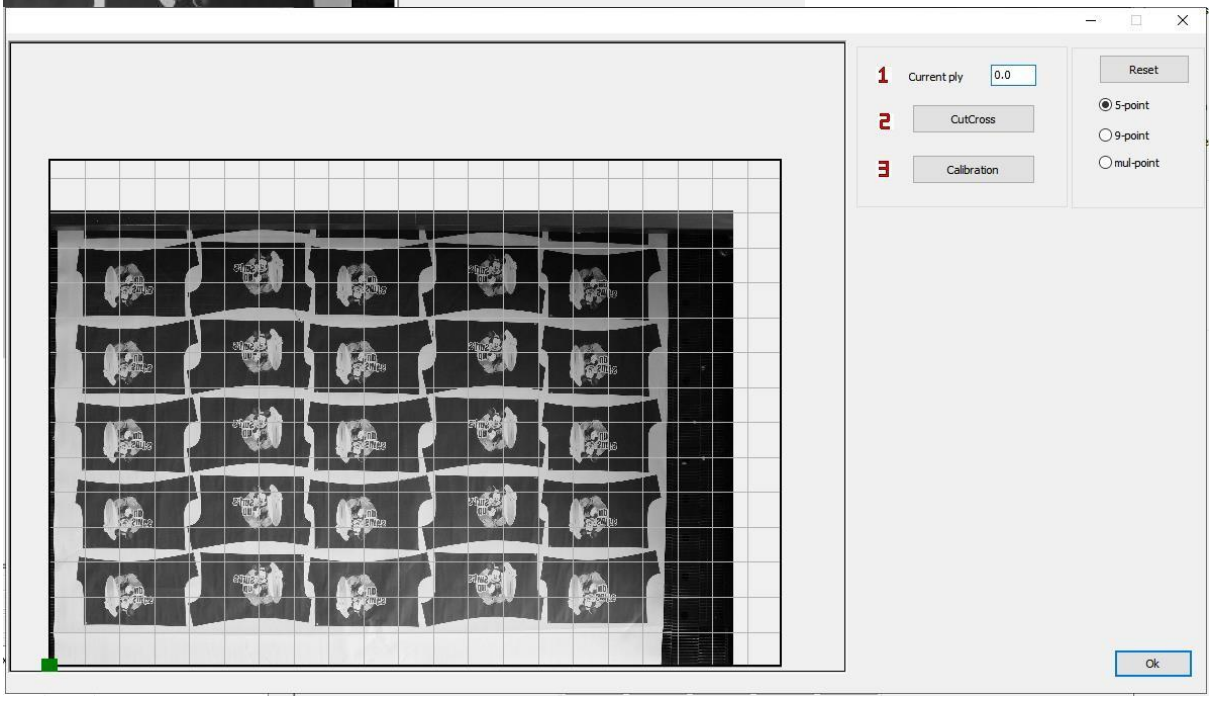
Otherwise there is no prompt, the status bar will display the calibration is completed. After the calibration is completed, restart the software.

## 3.4 Thickness calibration

After the calibration is completed, or after switching the material, if it is found that the center cutting effect is good and the edge cutting effect is poor, the thickness correction can be used to compensate.

As shown below, check the thickness calibration, the "thickness calibration" button is highlighted.



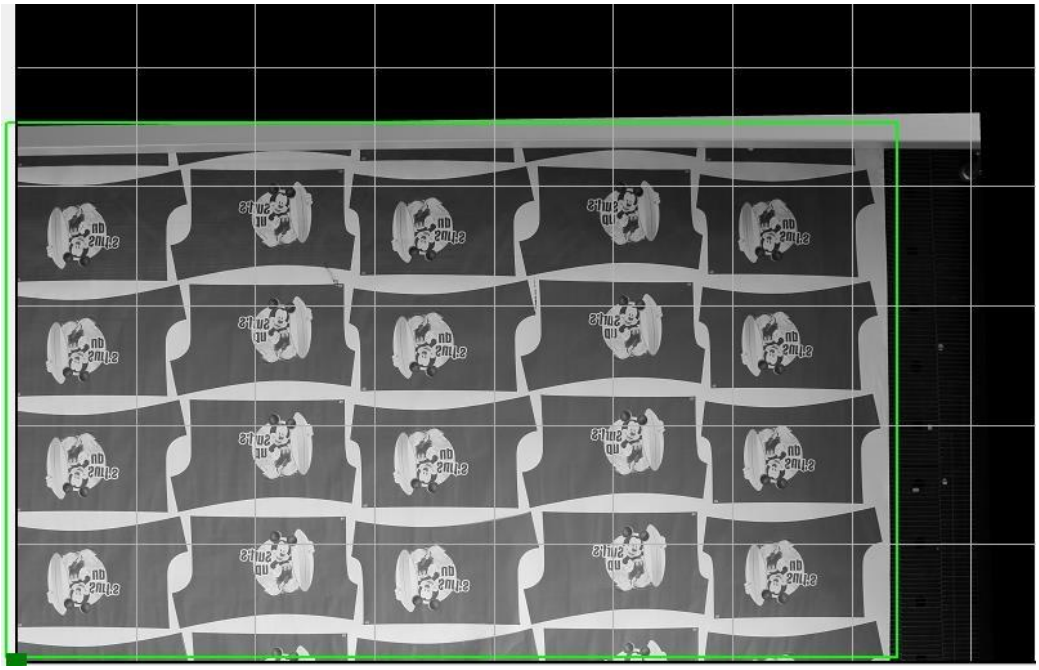



1. Enter the current material thickness value,
2. Select point correction (more points, higher accuracy)
3. Click cut cross to generate a good cross in the format (white paper needs to be laid on the format)
4. After cutting the cross, the photo will be taken automatically, and the generated cross will be moved to the actual laser cutting position
5. Click calibration after moving
6. When switching materials with different thickness, you can directly input the thickness of the current material for cutting without re correction

## 3.5 Template matching

### 3.5.1 Image acquisition and template drawing

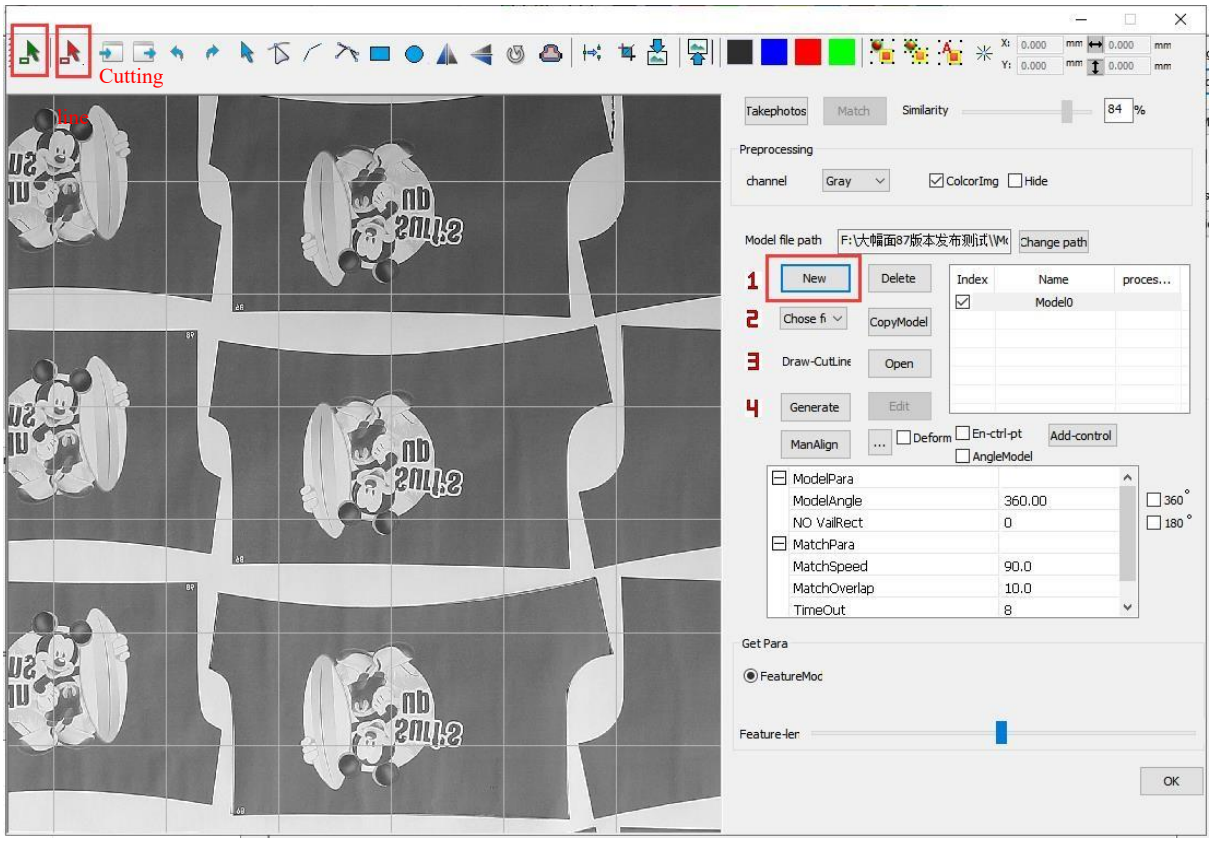
Placed in the machine to cut the material to take pictures, as shown below.



### 3.5.2 Create a template

Click on template management,create a new button to create template.The following figure shows.

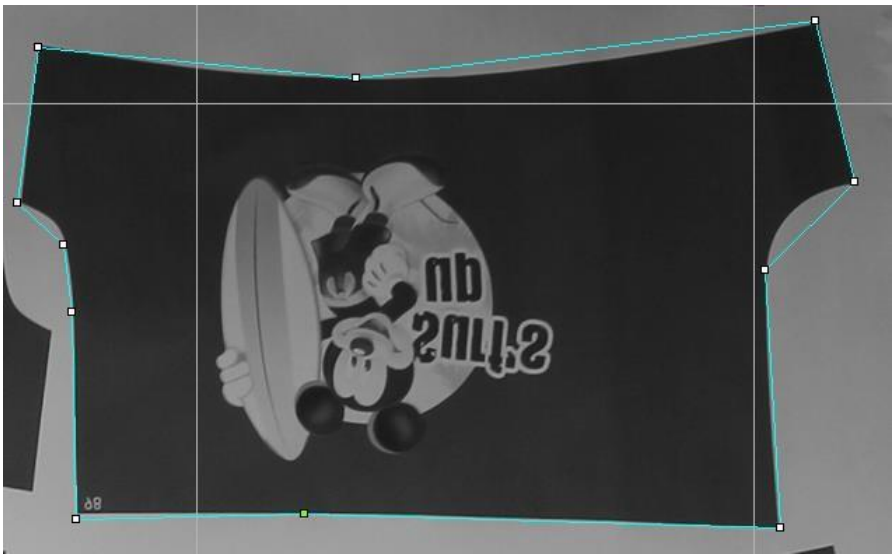
Feat




After creation, select the green arrow in the upper left corner (feature selection)，

【Box selected graphics，At this point the graphic feature line turns blue.After zooming in, the graphics detail is adjusted by editing the feature line.】

【The feature line can only be deleted. If the error can be removed, the feature line can be reset by adjusting the smoothing coefficient slider in the lower right corner.】



【Click to select mobile tool, exit line edit state. Red and green lines.】


After the feature line editing is completed, click the red arrow in the upper left corner, quick box selection to get the contour cutting line, and the cutting line can be defined by other drawing tools.The green line is the characteristic line, the red line is the cutting line.

### 3.5.3 Create a template

After the template editor completes, click the generate template. Click "generate" button.

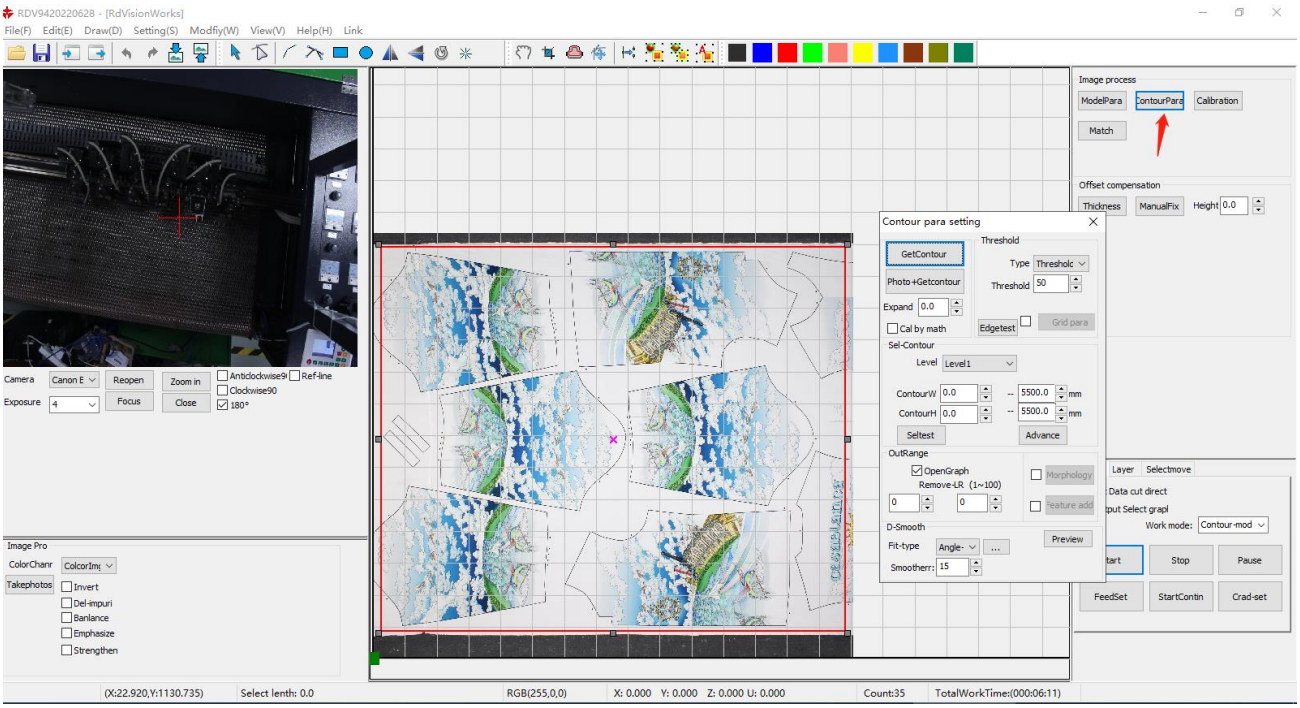
### 3.5.4 match

Click the "Match" button. 【Adjust the similarity value can affect the number of matching graphics. The greater the similarity, the less the number found, the higher the accuracy; the smaller the similarity, the more the number found, the lower the accuracy. 】

## 3.6 Contour extraction

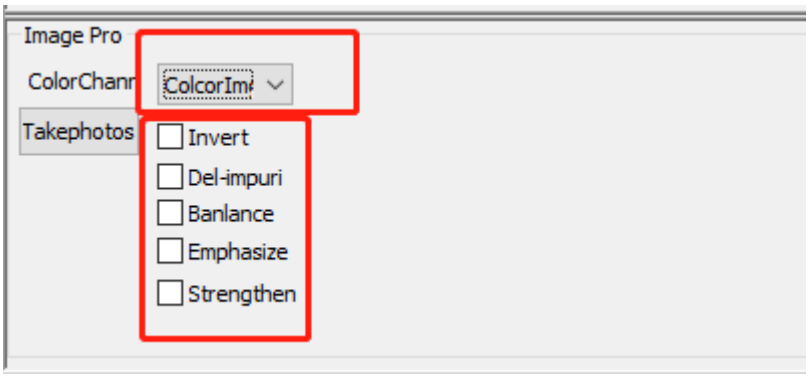
### 3.6.1 Image acquisition

Placed in the machine to cut the material to take pictures, as shown below.



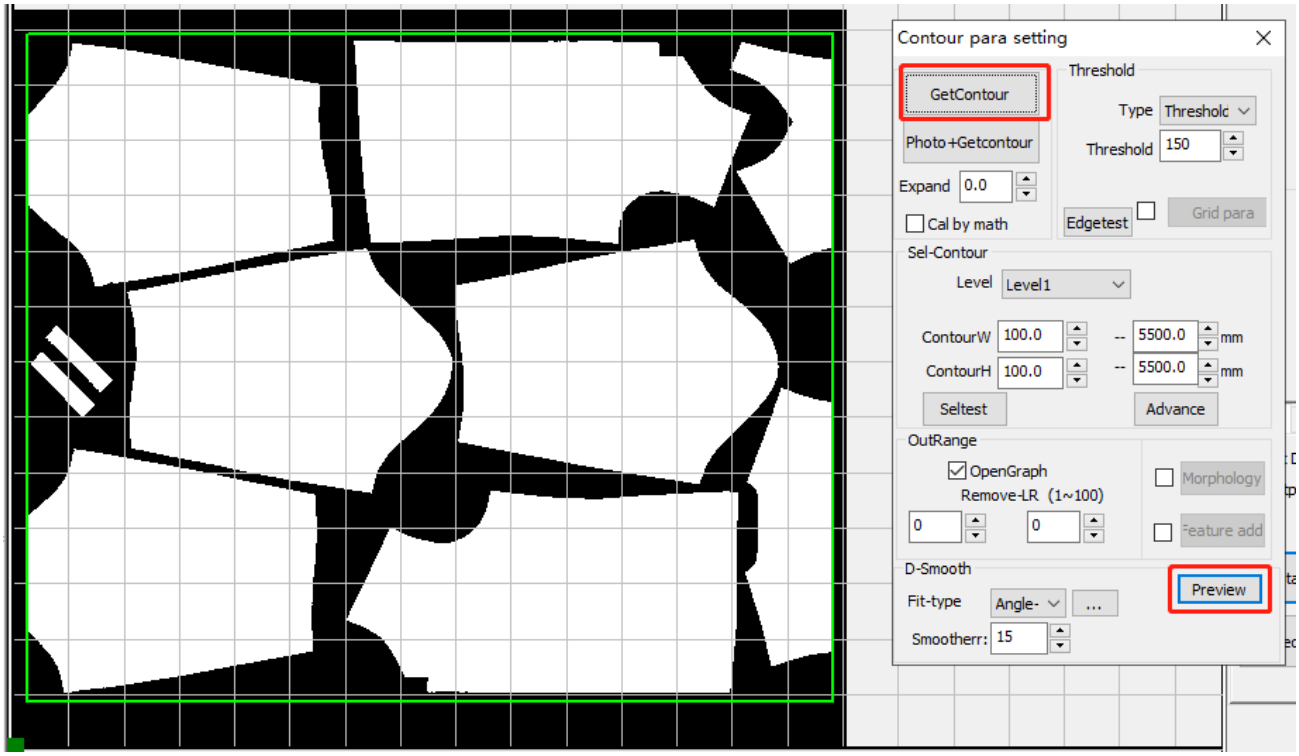
### 3.6.2 Channel settings

The first mention of materials, the first set up a good pre-treatment channel, the first choice of different channels have different effects. We try to choose a strongest contrast channel, as shown below.

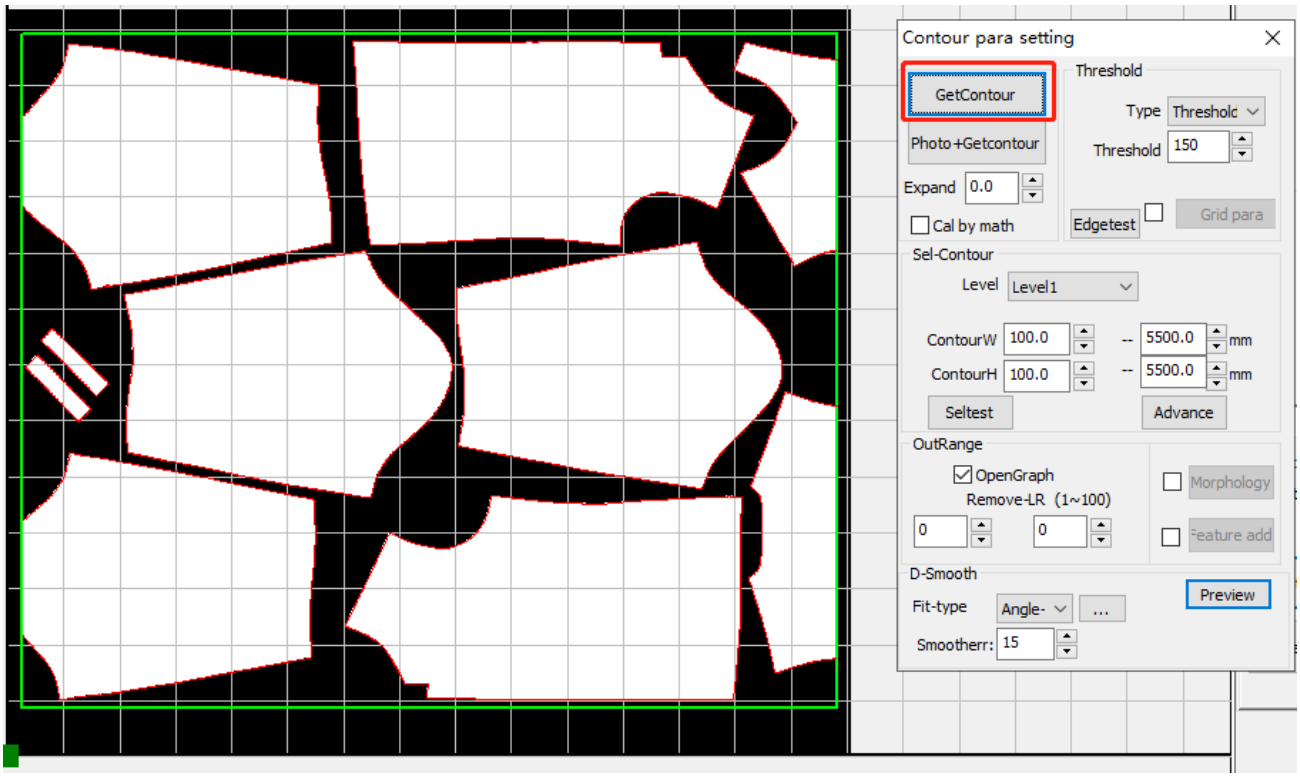



### 3.6.3 Parameter adjustment

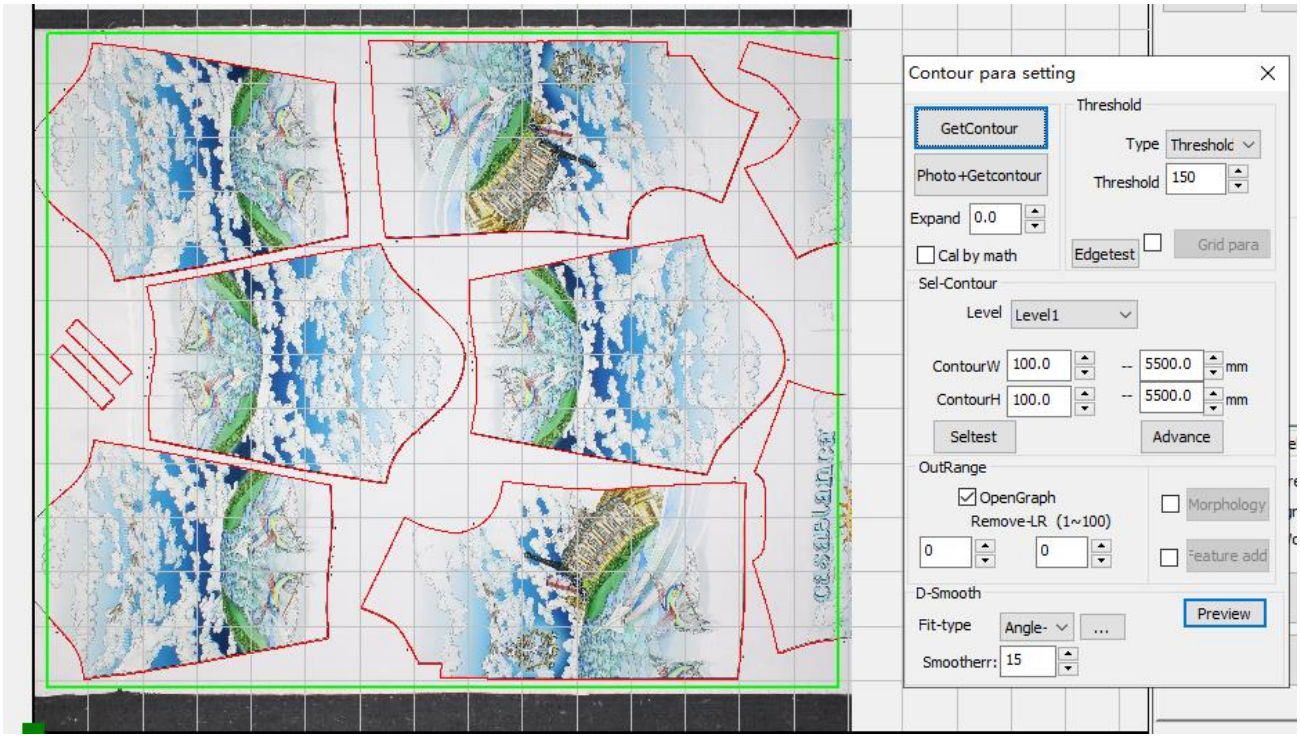
After setting the channel. Open the edge management. There are some parameters can be adjusted. And real-time display adjustment effect. As shown below.




After the contour extraction is adjusted to the desired effect, click edge lifting, and the result is shown in the following figure.




Then point the original map, testing the edge details of the effect. As shown below.




For the introduction of specific parameters, please refer to Chapter 4 "Software Function Details".

# Section 4 Software features detailed introduction

## CONTENTS:



## 4.1 Menu Bar


Figure 2.1 Menu bar and common edit

### 4.1.1 File sub-options introduced

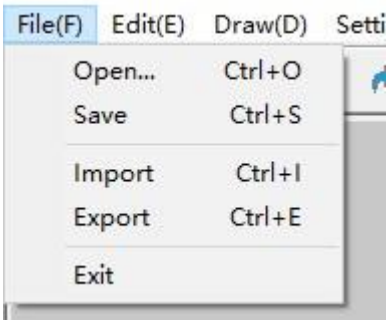


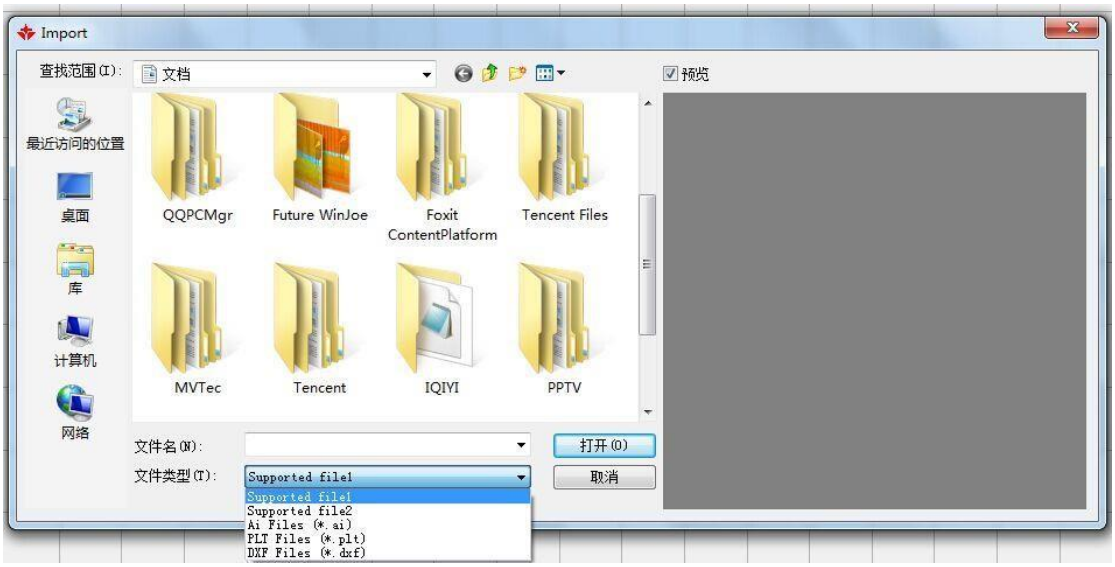

Figure 2.2 menu bar file options sub-options legend

●Open the project: open the template saved before, the format can only be.Pjvw

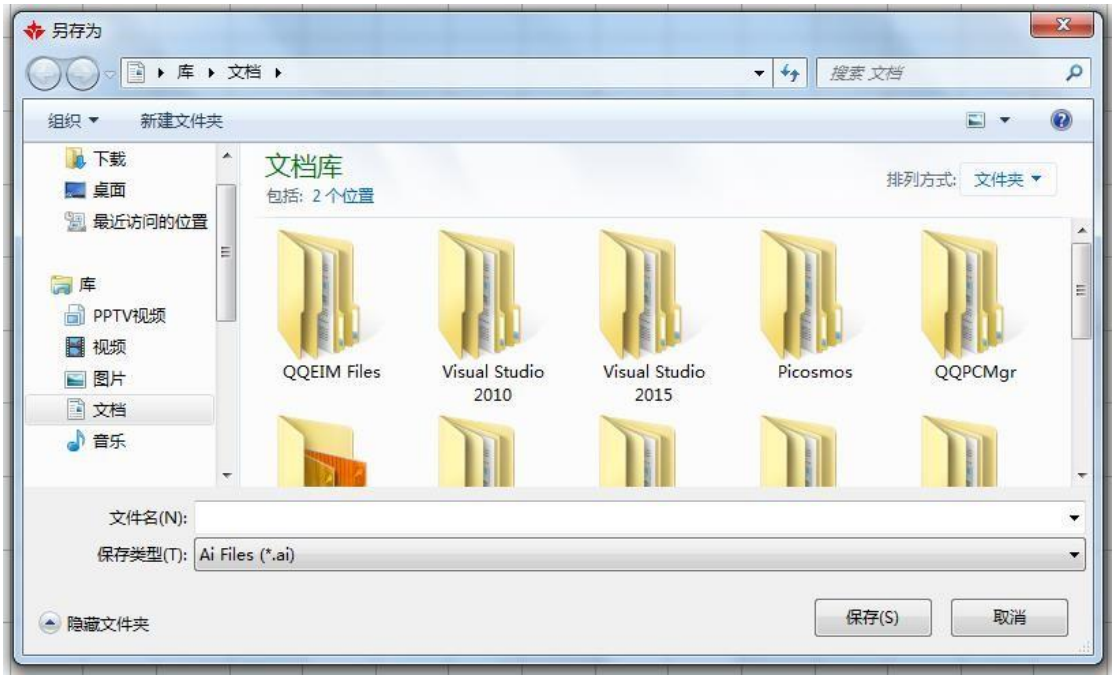
●Save engineering: save template file, format can only be.Pjvw

●Import vector diagram: import graphic format can be.Ai.Dxf.Pltt three formats.

●Select the correct format, click open. The dialog box is like the following figure:




●Export vector diagram: import graphics format can be.Ai.Plt two formats. The dialog box is like the following figure:




●Quit: turn off the software.

Set sub-options introduced

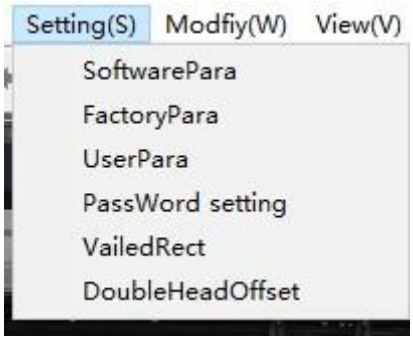
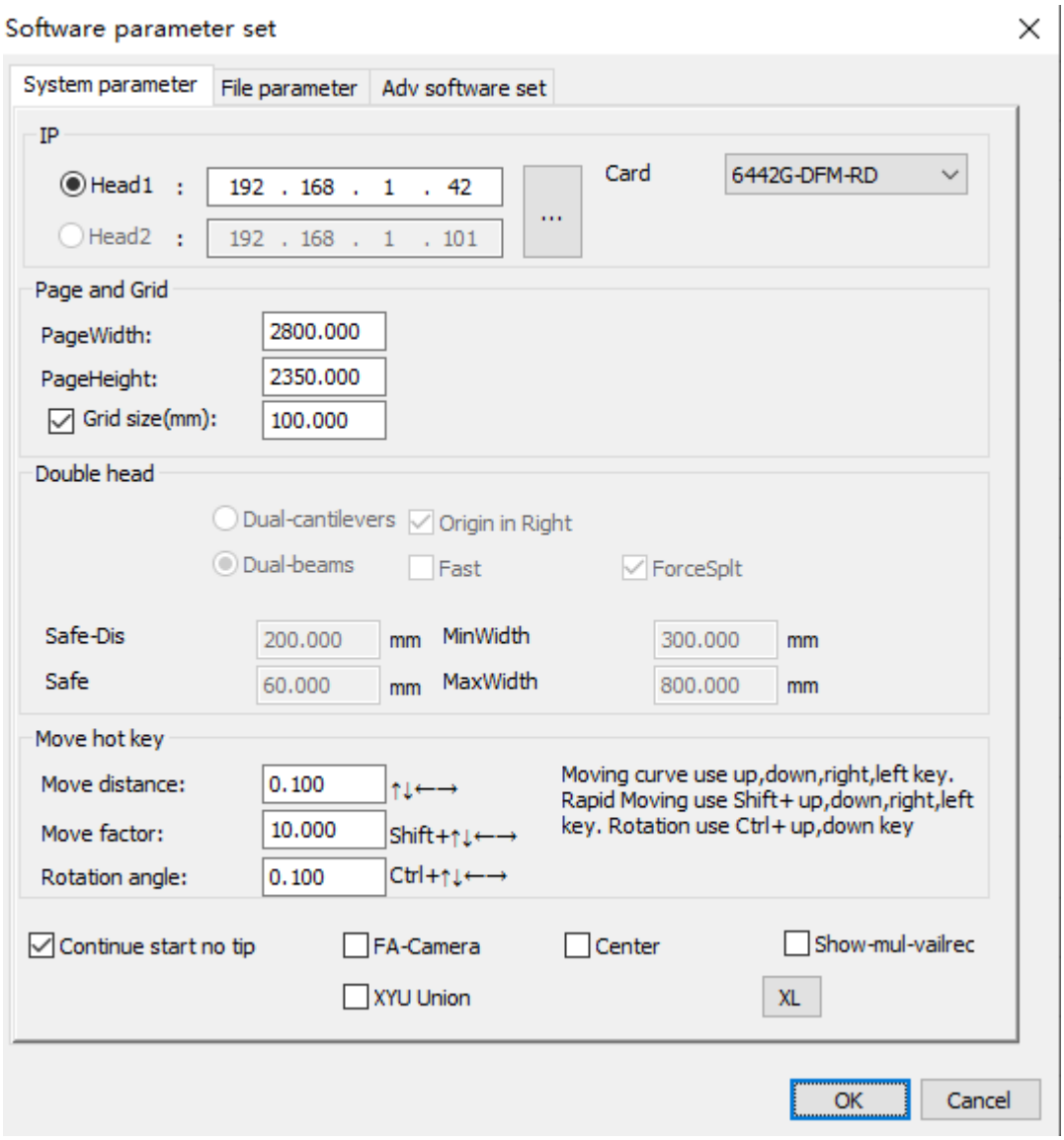



Figure 3.1.2-1 Menu Bar Setting Option Sub-option Legend

Click the system settings, pop-up the parameter dialog box, and select the system parameters page:




● IP address: set the IP address to communicate with the board, click the back button for communication test, and modify the corresponding board model in the board model

Page and grid: the width and height of the page are set respectively. (unit: mm) generally, the system will set automatically according to the width of the working platform of the cutting equipment. Spacing is the grid spacing of graphic pages, which is 100 mm by default

●Double head setting: set the machine type of double track, double cantilever and double beam. Double cantilever: represents that the origin is at the lower left (main card) and lower right (secondary card) of the machine.

●Double beam: it means that the origin is at the lower left (main card) and upper left (secondary card) of the machine.

●The machine origin is on the far right: when checked, the machine origin is on the far right

●Forced splitting: when checked, the work area is divided into two parts, and the two ends are processed in their respective areas.

●Small graph acceleration: path algorithm optimization for small graphs

●Safety distance safety margin: set safety margin and safety distance according to the distance between two heads

Fine tuning distance: used for keyboard to move graphics in a small range. Decide to press the up, down, left and right keys once to move the graph.

(press up, down, left, right)

●Adjusting scale: used for keyboard to move graphics greatly. Decide to press the up, down, left and right keys once to move the graph. (Shift + up, down, left, right)

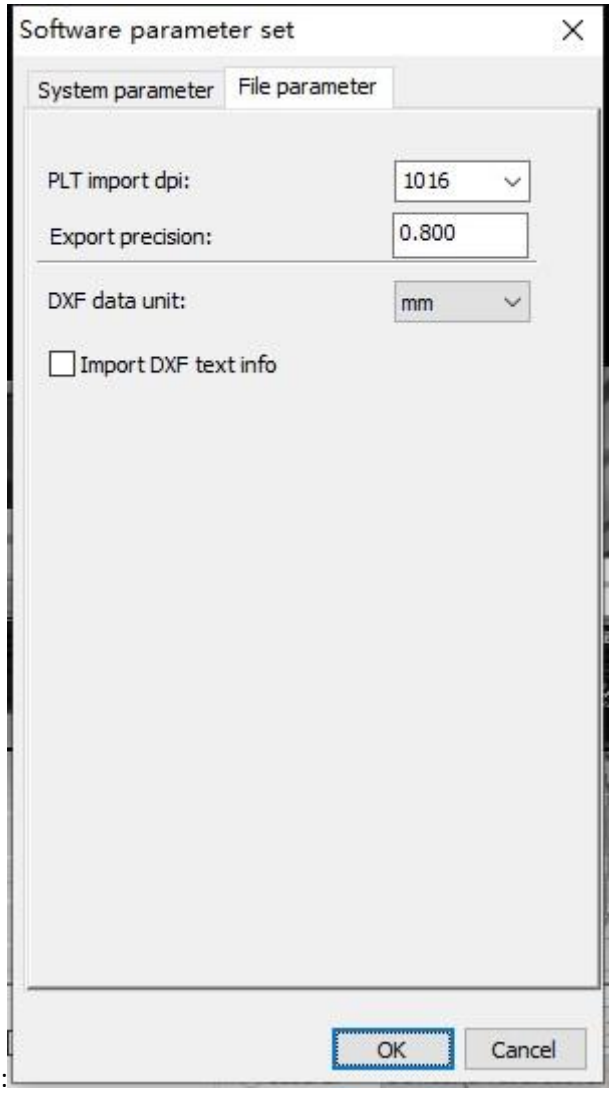
●Adjustment angle: used for keyboard rotation graphics. This text box sets the angle. (mode, Ctrl + up, down, left, right)

●No prompt for continuous start: no prompt for continuous start. When you click continuous start, you will be prompted whether to enter continuous start or not, and no prompt will be given after checking

Industrial camera mode: color industrial camera, check when industrial camera is connected ●

confirm and cancel: click OK to save the modified parameters; click Cancel to make the above parameters invalid. Select the file parameters page, as shown in the following

figure:

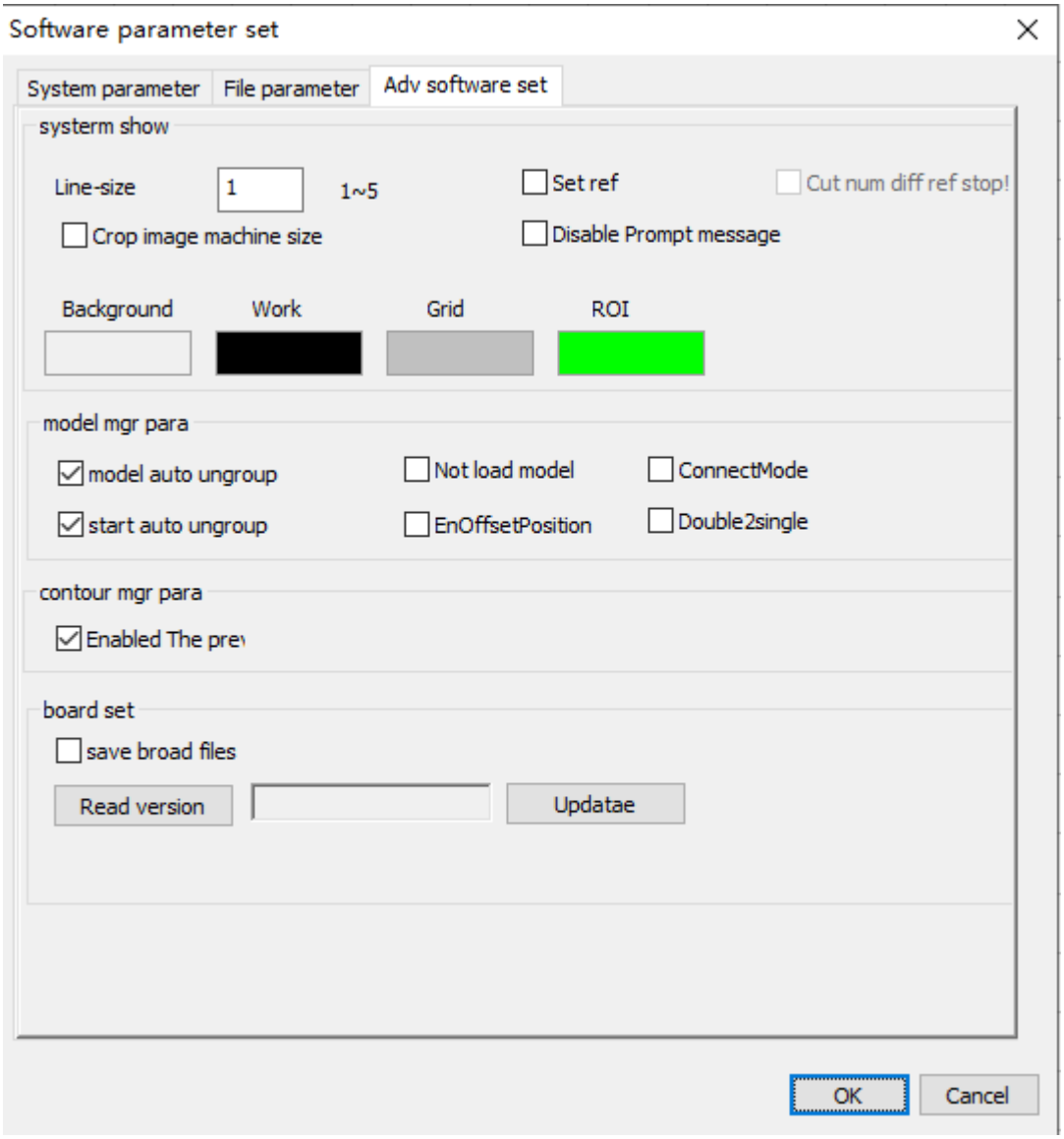



●PLT Graphics Precision: Imported .plt format graphics accuracy. Can be set to 1000 or 1016.

●Output Curve Accuracy: The precision of the exported graph curve.

● DXF data unit: .plt format graphic size units.

● Import DXF text information: When the user only needs the graphic information in Dxf, but does not need the text information in the file, you can uncheck this item.




● Element line thickness: thickness adjustment of vector graph

● Cut the image to machine size: cut out the area outside the format

● Set current reference Alert: set the number of matches. If the number does not match, an alarm will be given

● Template operation automatically dissolves the group: template operation automatically dissolves the group

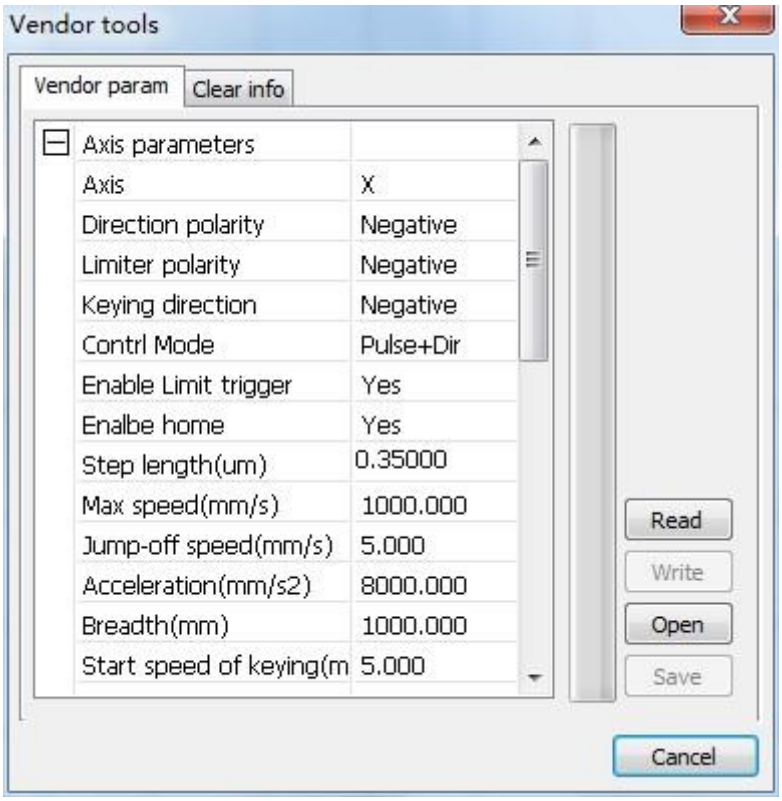
● Automatic change of slot line to single line: the line with raised edge will change two lines into one line

● Automatically dissolve the group during processing: dissolve the group during processing

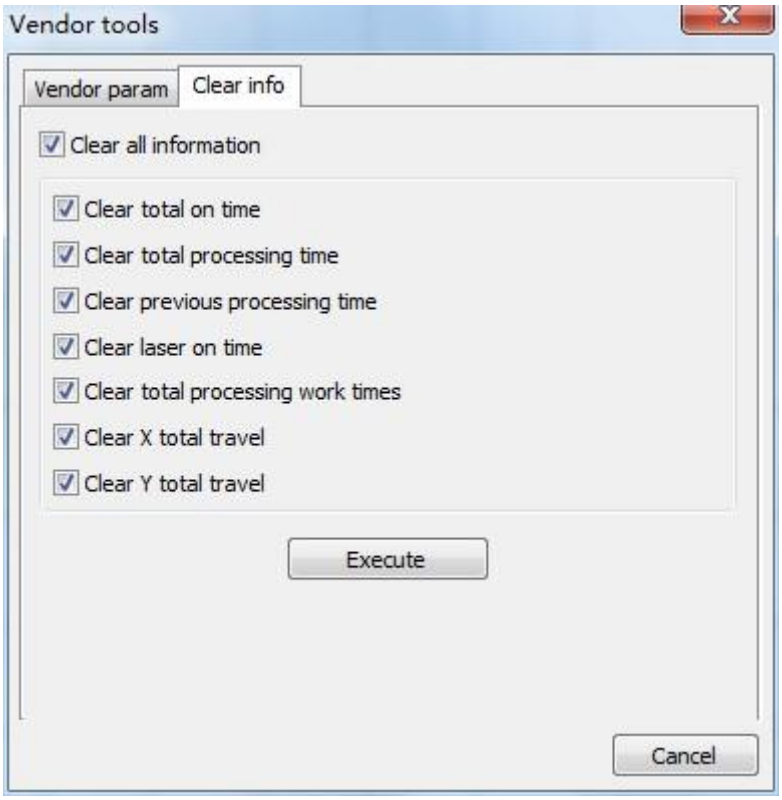
- Enable offset positioning: it is a special use on the vibrating knife. Only the recognized offset is transmitted to vcut software
- No cross connection after matching: remove the adhesion after matching or extracting the contour
- Do not load the last template: the last template will not be automatically loaded after restarting the software
- Enable preview function: add preview function in edge lifting management
- Board management: select the upgrade file to upgrade the motherboard program

## Manufacturer parameters

Click the factory settings, pop-up factory tools dialog box, select "factory parameters" page, as shown below:




The meaning of the parameters is the same as that of ordinary motion control card. Select "information clear" page, as shown below:




**Cumulative boot time:** the total working time of the motherboard. Cumulative processing time: Thetotal movement time, that is, the actual total processing time, including empty time.

**Last processing time:** the last processing run time.

**Accumulated light time:** the total laser working hours.

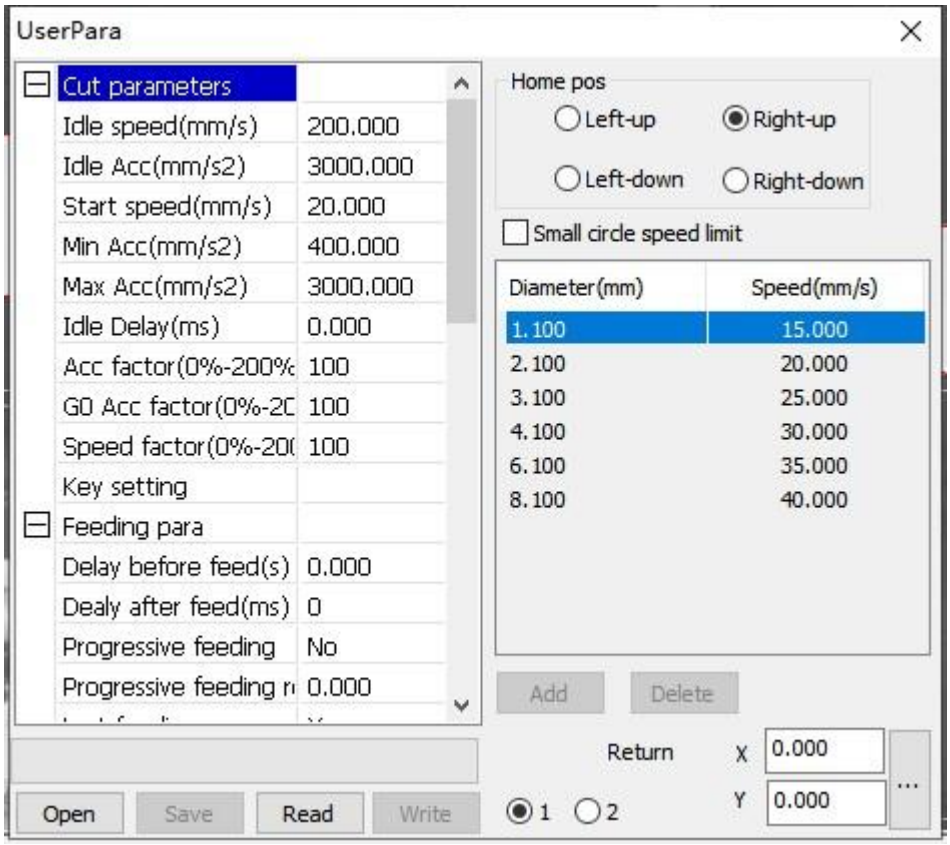
**The cumulative number of processing:** the number of successful completion of the work, not including the end of the processing.

**Total X-axis travel:** The total travel of the X-axis motor.

Y-axis total stroke: The total motor Y-axis travel.

● User parameter

Click the user parameters, pop-up user parameters dialog box, as shown below:




**Null speed:** the highest speed of all non sculpted straight lines during the movement of a machine. If the user sets the parameter illegally, the controller will automatically put it in the above range; if the airway speed is set larger, the working time of the whole graph can be shortened, but the settings are too large, which may cause the trajectory to shake. Move.

**Airway acceleration:** corresponds to the speed of acceleration when walking, airway acceleration and airway speed to match, if set too slowly the actual airway speed may not reach the set value, if set too fast, the mechanical structure may not be able to bear, resulting in jitter. The general acceleration is slightly higher than the acceleration.

**Turning speed:** Corresponding to the lowest speed in the process of carving when turning down, when there are a lot of sawtooth, the turning speed can be reduced appropriately.

**Turning acceleration:** it should match the turning speed.

**Cutting acceleration:** corresponds to the speed of cutting (cutting speed is the layer speed in the layer parameters).

**Idle time delay:** when a machine is not sculpted, it needs waiting time before movement.

**Acceleration ratio:** the coefficient corresponding to the cutting speed, the greater the rate, the greater the cutting speed.

**Null acceleration ratio:** the coefficient of velocity corresponding to the empty travel time, the greater the rate, the greater the speed of the empty path.

**Turning coefficient:** the greater the turning speed, the greater the turning factor.

**Delay before feeding:** Delay before a single feeding when using a feeding device, the user can arrange such processes as picking at this time.

**Delayed feeding:** refers to the feeding device will be delivered to the material in place after a stable period of time before processing.

**Line by line feeding:** the feeding device sends materials one by one to the place in a way of feeding.

Progressive feed compensation: there may be some errors in the use of feeding devices for progressive feed.

**Reset speed:** When the machine starts, return to the original speed, if the machine is larger, can be set reset speed on the high side, but not too large.

X, Y, Z, U boot reset: you can set up whether each single shaft is reset during boot.

**Array processing mode:** two way array and one way array can be selected. Bidirectional walk array: that is, cutting the array back and forth in sequence; one-way walk array: cutting the array from one direction to another all the time. When the one-way walking array is selected, the action mode of each array unit is exactly the same, and the action fluency is completely consistent, but it takes a little time than the two-way walking array. The default choice is bidirectional array.

**Location of return:** mechanical origin, location and non return position. This parameter determines the position where the carving head stops after each work.

**Focal length:** corresponding panel auto focus operation.

**Reverse gap X, Y:** used to compensate for the reverse gap caused by machine transmission.

**Knife lifting position:** the position of the cutter head when the machine starts carving.

**Location of the cutter:** the position of the cutter head when the machine is finished.

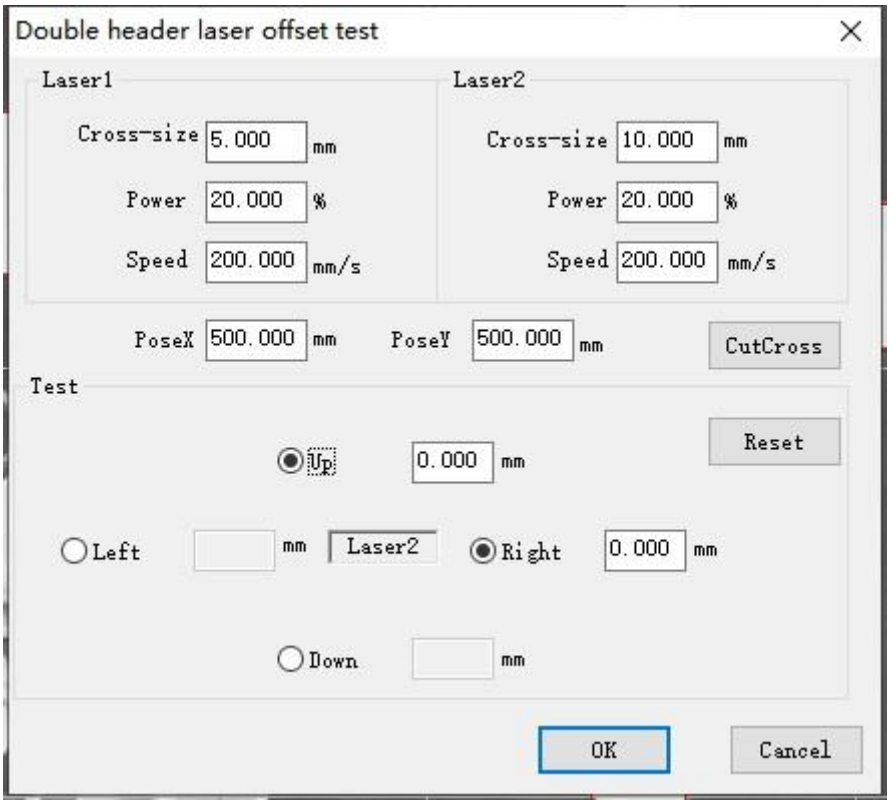
**Docking position:** the position of the carving head after machine carving.

**Cutting speed:** the speed of the cutting head of the carving head when the machine is engraving.

**Pre processing delay:** waiting time before machining.

***Double head asynchronous offset setting**

Click the double asynchronous offset setting, and display the user parameter dialog box as follows:




Parameter setting of laser head 1

Parameter setting of laser head 2

Measurement: laser head offset setting

## 4.2 toolbar

### 4.2.1 Common menu bar

Icon followed by new, open, save, import, export, withdraw, re-execute. Top 5 has been introduced above. The last two are revoked and re-executed.

● Undo: Undo the previous step. If mistakenly deleted the graphics can be revoked point of withdrawal. (You can undo up to 10 steps.)

● Re-execute: Re-execute the previous step.

### 4.2.2 Drawing toolbar

 Select Move: Used to select graphics, line segments and more. General first to select the graphics, graphics-related operations can be carried out.

 Edit line segment: for graphic editing. Click on the drawing is drawing, the graphics will turn cyan, while showing the graphics key points, by dragging, increase (on the line segment), delete the key points to edit the graphics.

 Polygons: Used to draw polygons. Click to draw the line, painted double-click to form a closed area.

 Bezier curve: used to draw Bezier curve, click to draw the line segment, painted a double click to form a closed area.

 Rectangle: used to draw a rectangle.

 Ellipse: Used to draw an ellipse. Hold down the Ctrl key to draw a circle.

 Horizontal Mirror: Mirror the original image along the Y axis.

 Vertical Mirror: Mirror the original image along the X axis.

 Rotate: for graphic rotation. Click in the dialog box to set the rotation angle.

### 4.2.3 Operate the toolbar

 Mobile: The entire work area moves.

 Set the effective area: Set a graphic valid area, image processing only in the effective area.Selecting the valid area can change the size of the valid area.

 Contraction expansion: contraction of the vector expansion.

 Path display: display graphics processing compliance.

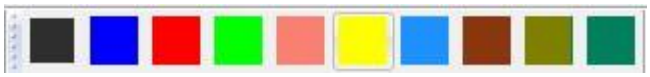
 Segmentation curve: Select the node in the node editing mode, and divide the node into segments.

Groups: Select several graphics, and the point group system divides them into groups.

Disband Group Rent: Select a group, click Disband Group, and the system decomposes the group into a single graph.

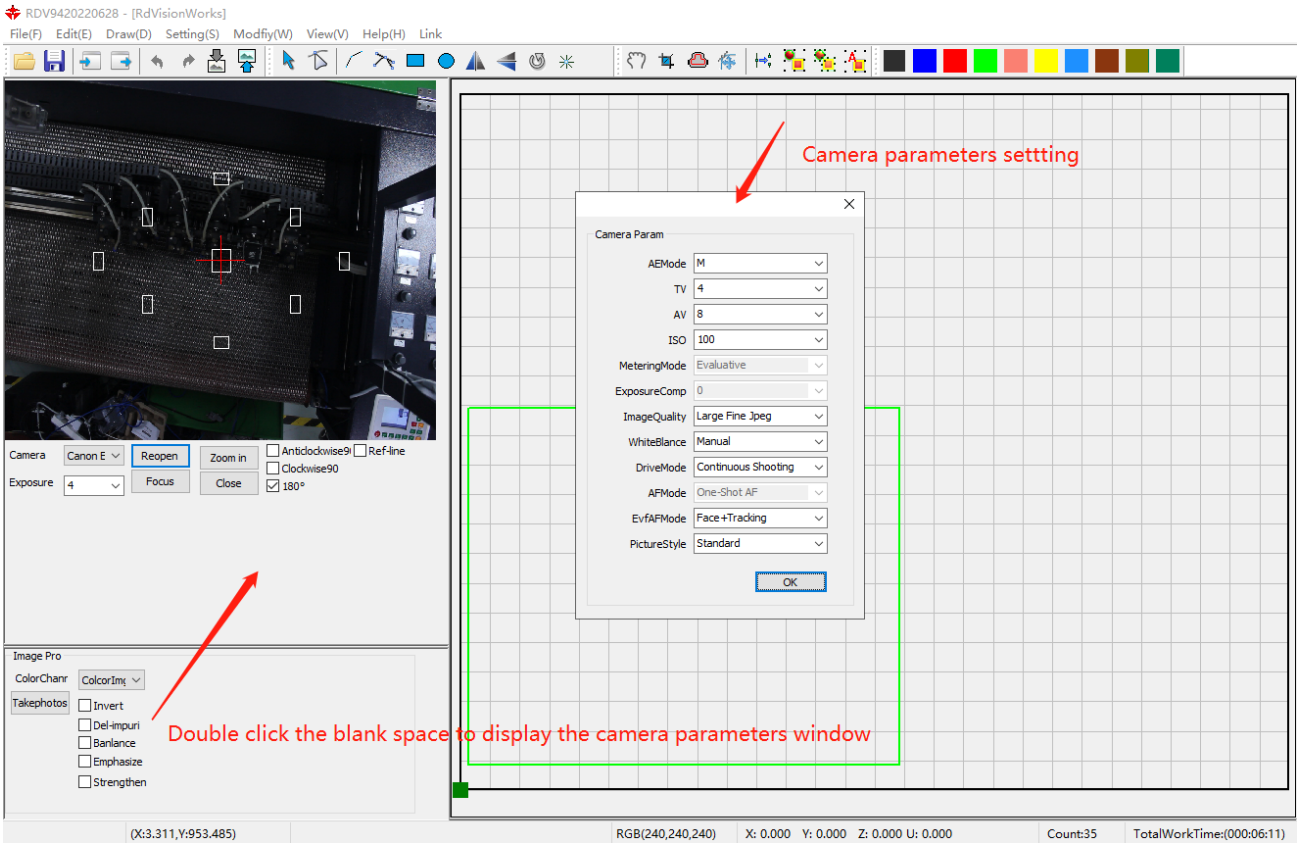
Automatic Grouping: Select several graphics and click on the automatic grouping system to randomly divide the graphics into several groups.

### 4.2.4 Layer toolbar



You can set the color of each graphic. To manage different power, speed and other parameters.

## 4.3 Camera settings and display area

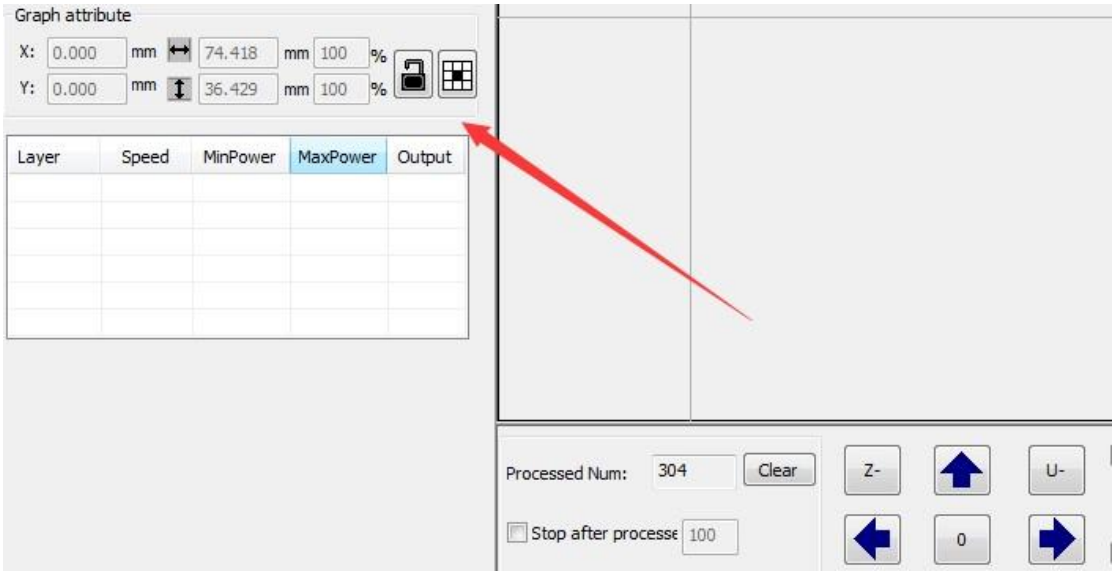



Settings: Click to set the camera's parameters, shutter (exposure) time, to adjust the camera's imaging quality.

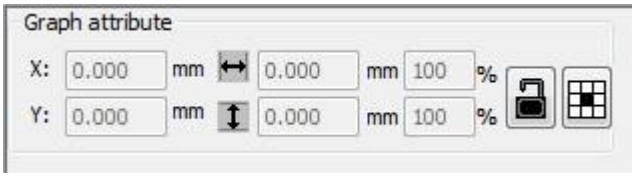
Focus: Camera lens in the af file, click to achieve autofocus.

Zoom in: You can enlarge the display.

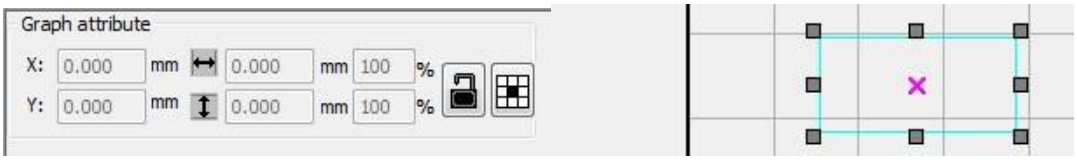
# 4.4 Graphic properties and settings




**Graphic properties：**

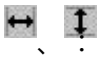



Select the drawing has been drawn, it will display the graphics properties. As shown below：



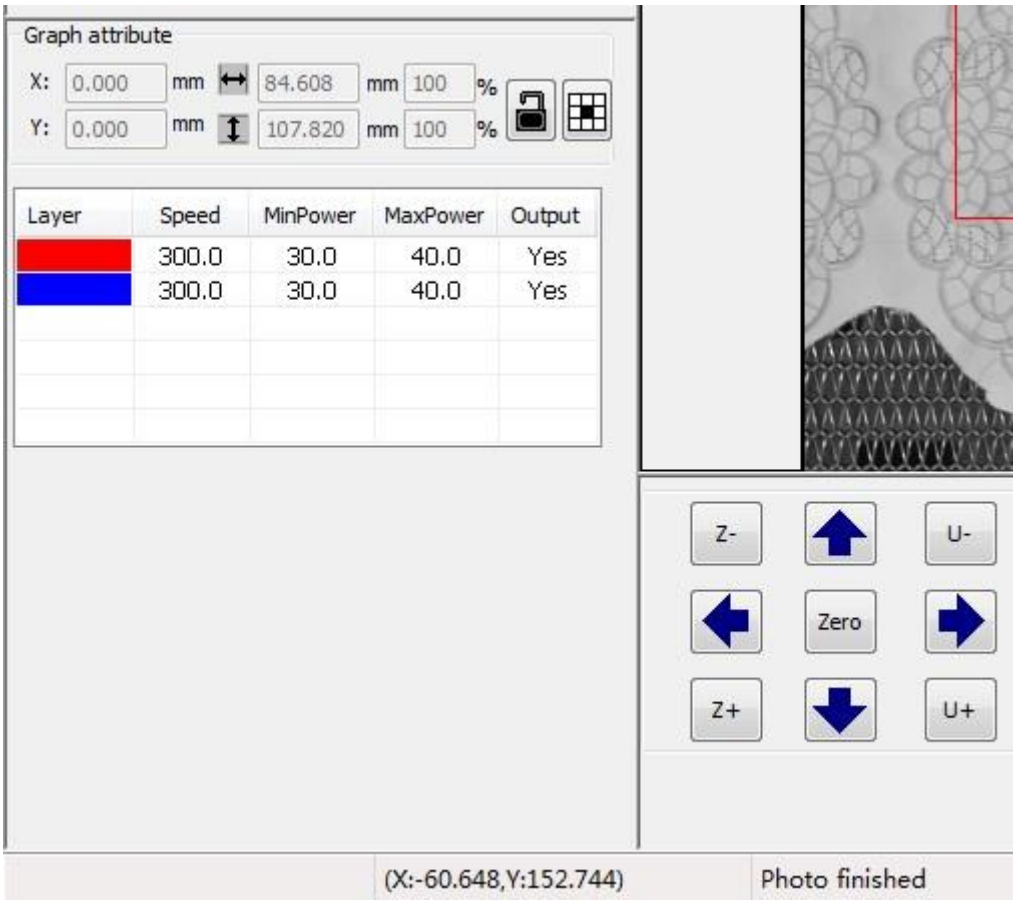

X、Y：Said graphics position, the default coordinates for the center, in millimeters.

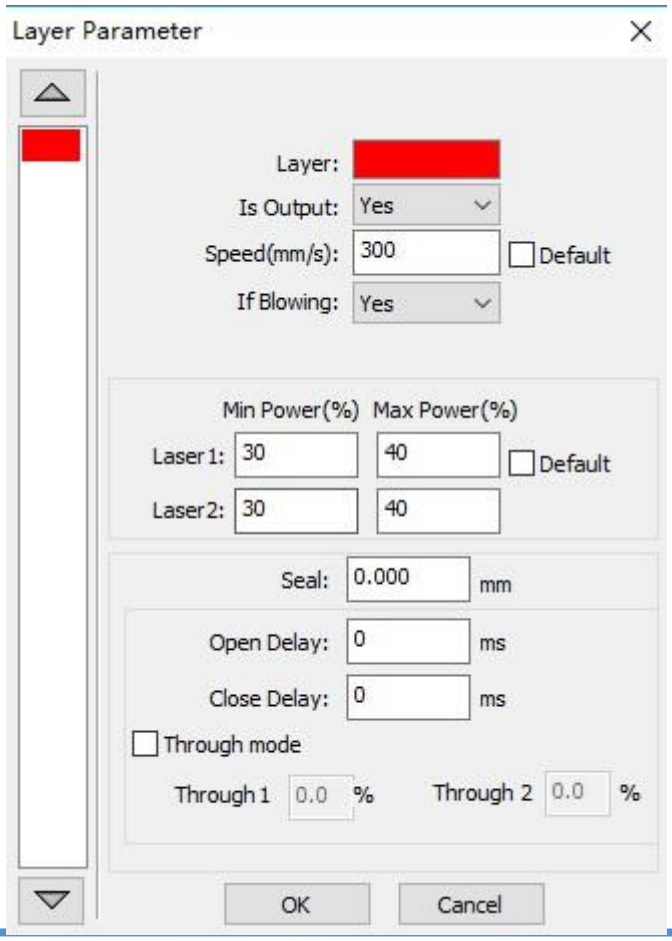
 : You can set the coordinates of the display center point or other eight coordinates.

 : Indicates the width and height of the graphic. 100% means the rate at which the graphic is reduced or enlarged. If both are set to 50, the width and height of the graphic change to 50%.

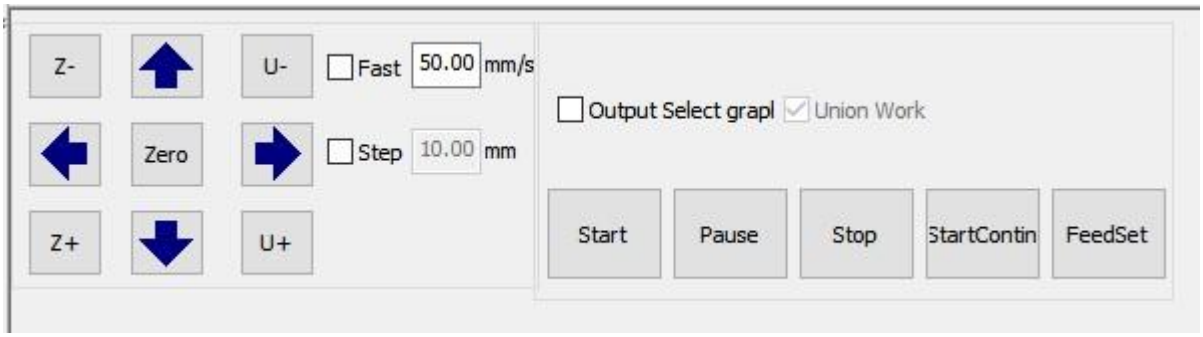
 : Lock closed that length and width synchronization zoom.

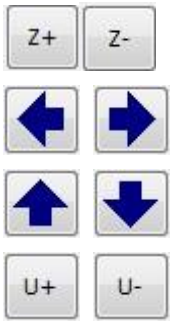
In the same layer. Different layers can have different processing operations. As shown below：


Graph attribute
X: 0.000 mm 84.608 mm 100 %
Y: 0.000 mm 107.820 mm 100 %
Layer Speed MinPower MaxPower Output
300.0 30.0 40.0 Yes
300.0 30.0 40.0 Yes
Z-
U-
Zero
Z+
U+
(X:-60.648,Y:152.744)
Photo finished


Layer Parameter
Layer:
Is Output: Yes
Speed(mm/s): 300 Default
If Blowing: Yes
Min Power(%) Max Power(%)
Laser1: 30 40 Default
Laser2: 30 40
Seal: 0.000 mm
Open Delay: 0 ms
Close Delay: 0 ms
Through mode
Through 1 0.0 %
Through 2 0.0 %
OK
Cancel

## 4.5 Motion control area




**Machine operation module** ：

Laser head up and down movement.

：Horizontal (X-axis) movement.

：Longitudinal (Y-axis) movement.

：Feeding U-axis movement.

In the above picture, up, down, left and right arrows can operate the machine. Of course, the first to USB cable, or cable to connect the control card and the computer can operate. **Single-axis motion**

Only one axis movement can be controlled at a time. Click the left and right arrows, X-axis, respectively, to the left and right to move. Click the up and down arrows, Y-axis forward, backward move. Press once, then move a step distance. Continue to press, then continue to exercise. The middle 0 key, for the xy axis back to the origin.


After drawing or extracting entities, turn on the laser. Click the above button, you can control the machine to cut, pause, continue processing, finishing and other operations. Continuous automatic feeding repeated recognition cut.

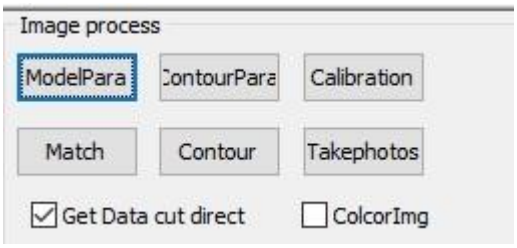
Processed Quantity: System Statistics The total number of graphics processed.

Finish the specified number of stops: when the statistics have been processed the number reaches the specified number will automatically stop.

Processed time: statistical processing time.

Output selected graphics, processing only the selected graphics.

# 4.6 Image processing area




## 4.6.1 Image acquisition and preservation

**Template management：** Create new templates, edit delete templates, and so on.

**Side management:** adjust the edge parameters and get the best side effect.

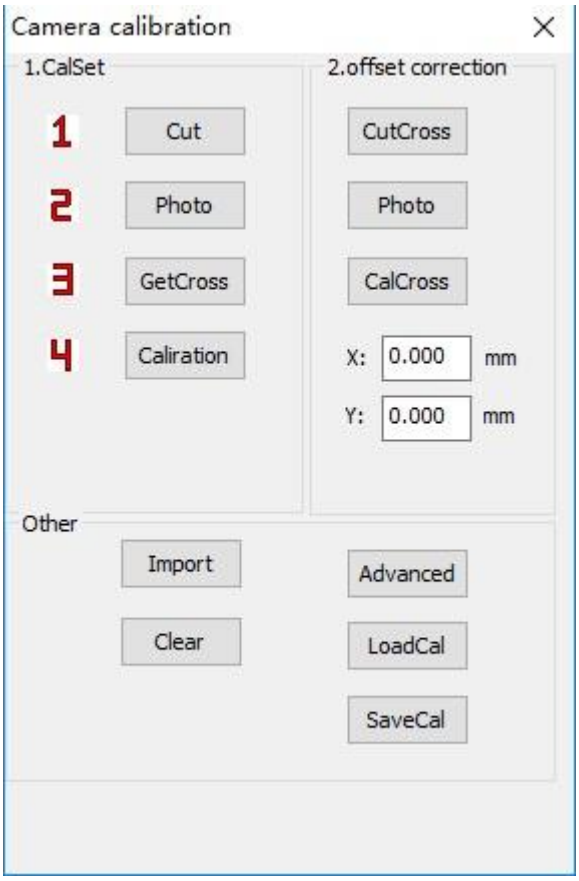
**Match:** match the selected template.

**Edge:** according to the parameters of the lifting side.

Automatic processing after identifying data: after checking, set the feeding parameters, the machine automatically takes pictures after identifying and cutting.

## 4.6.2 Calibration

Calibrate the camera. Make the machine coordinates correspond to the camera.




Draw Grid: The system board gets the card format to automatically generate a set of data for cutting.

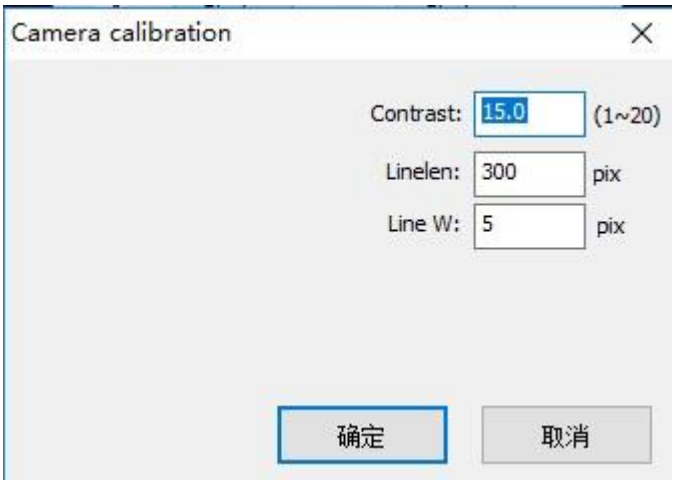
Take a picture: This function is used for image acquisition during calibration.

Identify: Get the grid's cross location.

Correction: Correct the camera.

Advanced

## 4.6.3 advancedsetting




In the advanced settings, you can set Grid detection rate .

**Detection rate:** detection threshold point of the grid points, the smaller the easier detection.

**Line length screening:** identification of the length of the grid parameters.

**Line width screening:** Detection of grid line width parameters.

After modifying the parameters, click OK to take effect.

**Import pictures:** import a picture to correct.

**Clear Grid:** The grid or element in the software will be deleted.

**Cut cross, offset correction:** If the system as a whole offset, use this function to correct.

1. Cut a cross

2. Take pictures

3. Move the software on the cross, with the picture coincide with the cross.

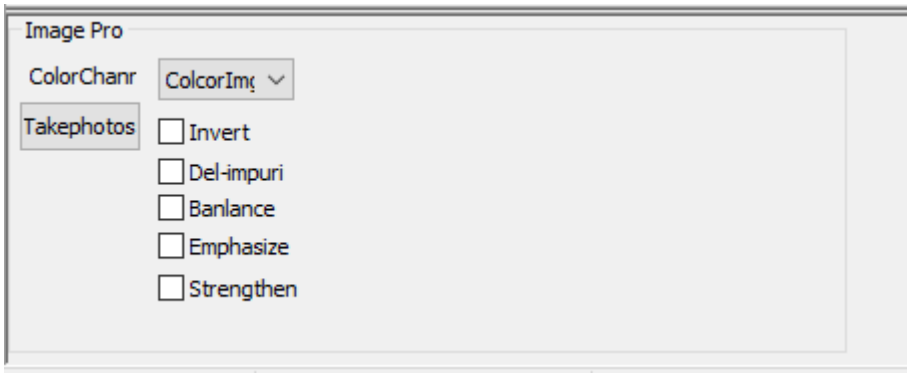
Thickness correction: not the same thickness of the material or corners are not allowed, can improve the cutting accuracy.

Save calibration: Save the calibration file.

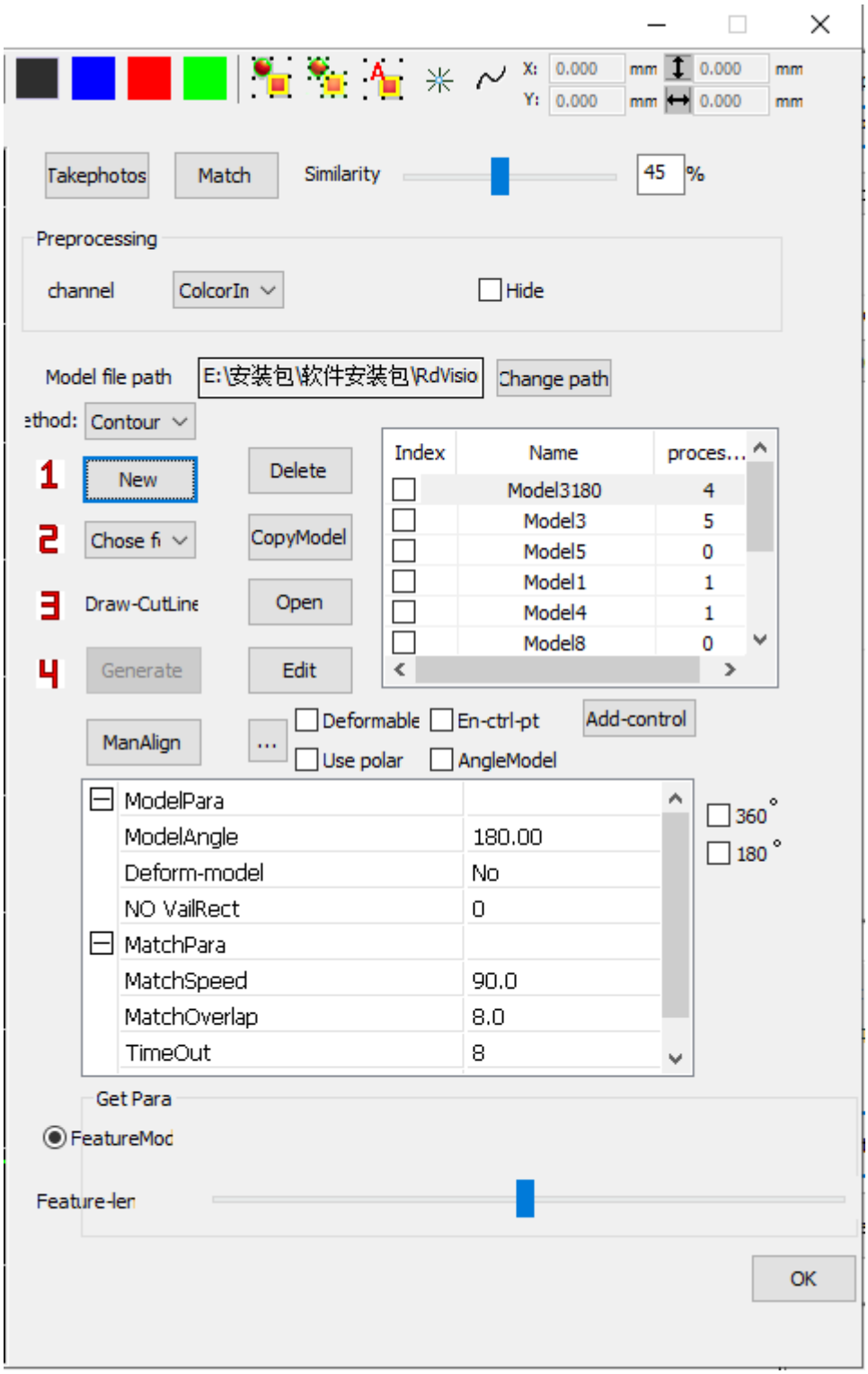
Load Correction: Load saved calibration file.

### 4.6.4 Image preprocessing

Pretreatment 9 channels are optional. Respectively choose the contrast of the most displayed for the next image processing.



## 4.6.5 Matching management




**Matching:** matching calculation, matching all similar graphics.

**Channal：** The display scheme for the current photo.

**New:** Select a feature to generate a template using the features contained in the feature.

**Delete:** delete the selected template

**Open:** open a template file

**Enable control points:** add features to the four corners to reduce the error caused by image deformation

**Recognition enhancement:** match and optimize the materials that are not easy to recognize

**Use polarity:** it can enhance accuracy and stability, but the speed will slow down

**Edit template:** edit and modify the selected template

**Template angle:** the angle specified when generating a template. Search within this range when matching

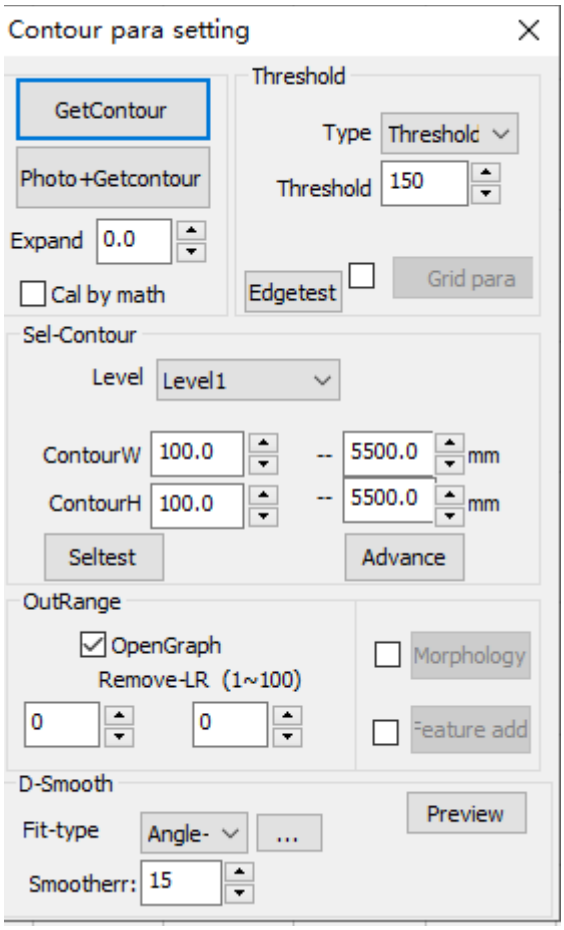
**Matching speed:** the range is 0-100. The larger the value is, the faster the matching speed is. Of course, it may cause the wrong target to be matched

**Overlap degree**: the range is 0-100. The larger the value, the more adjacent overlapping parts of two targets can be recognized

**Matching angle**: generally consistent with the template angle. The angle smaller than the template can only match some targets. The smaller the angle, the faster the speed

**Effective area code**: the whole format is divided into 16 effective areas. Set the area code, and the template will only match the image in the specified effective area.

## 4.6.6 Mention management




**Edge lifting:** Click to carry out edge lifting

**Photographing + edge lifting:** the camera takes pictures and edge lifting

**Expand:** make the edge expand outward or shrink inward when extracting the contour edge

**Mathematical expansion calculation:** carry out mathematical expansion algorithm

**Detection method:** switch different detection methods, global threshold, black edge, color extraction

**Threshold:** adjust different thresholds to obtain edge lifting effect

**Contour level:** select the outermost and innermost three contour filters of all levels

**Contour width and height:** adjust the interval of contour width and height

**Morphology:** morphological compensation

**Feature compensation:** combining edge lifting and matching

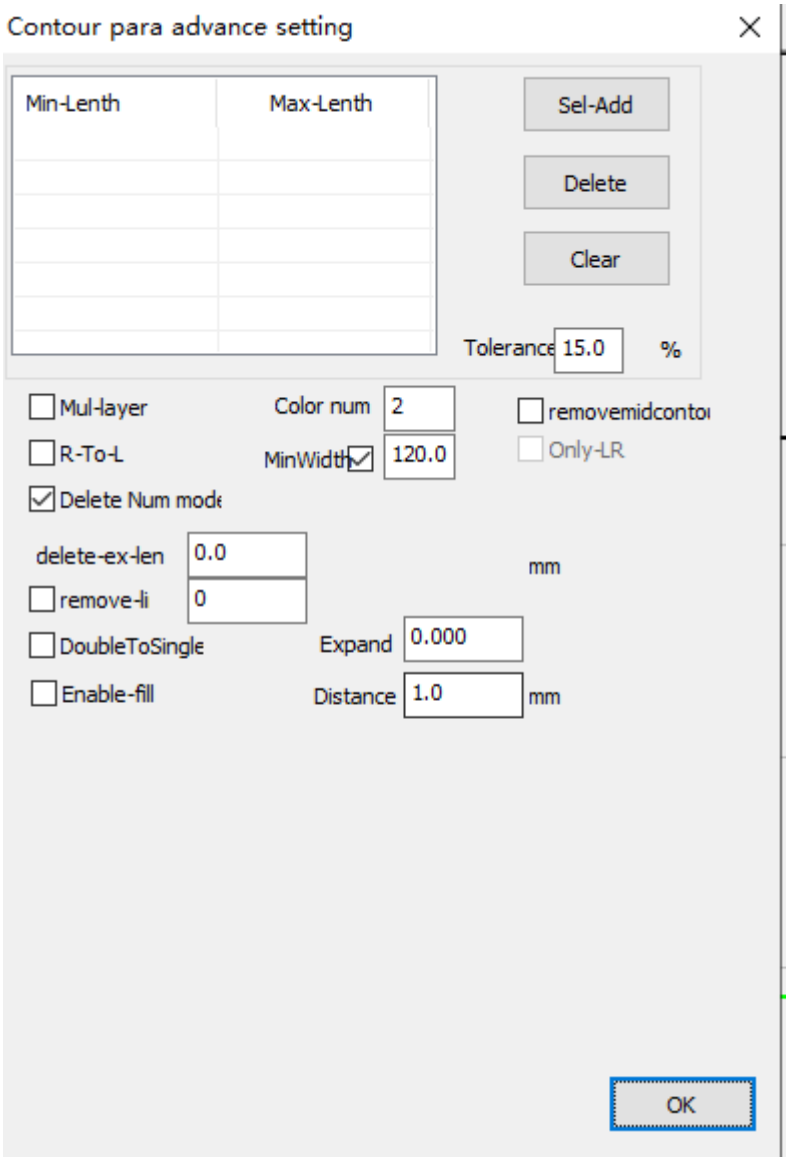
**Remove left and right contours:** remove the left and right contours according to the scale

**Fitting method:** algorithm for adjusting lines

**Smoothing error:** adjust the fineness of lines

**Preview:** view the software processing image effect. Edge lifting: extract the contour edge.

**size.advanced**:




**Select Add:** select multiple profiles to add to the list. When lifting edges, only select from the list.

**Delete:** delete the data in the specified list

**Clear:** clear the data in the list.

**Tolerance:** allowable error range when selecting contour

**From right to left:** raise the vertical line algorithm, count from right to left, exclude redundant lines, and uncheck the default from left to right

**Delete quantity mode:** turn on the vertical line lifting algorithm, and expose the redundant lines according to the sequence

**Super long use multi layers:** check according to the edge lifting content, and different lines are set to different color layers for convenient cutting

**Remove the middle Outline:** suitable for some special patterns that do not need middle lines

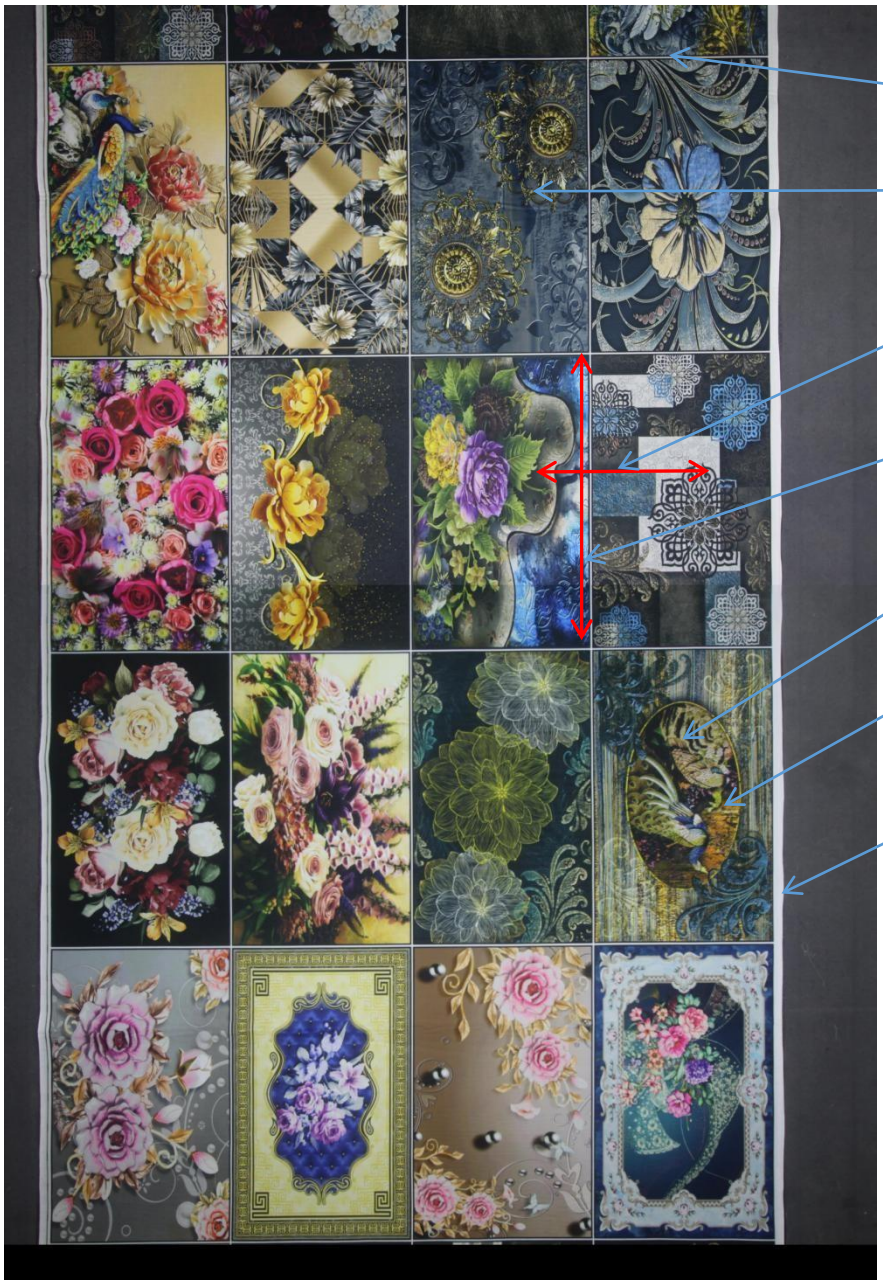
**Double line to single line:** when the extracted contour cutting line is double line, check double line to single line, and the cutting line will be automatically merged into one cutting line (take the middle value of the two cutting lines)

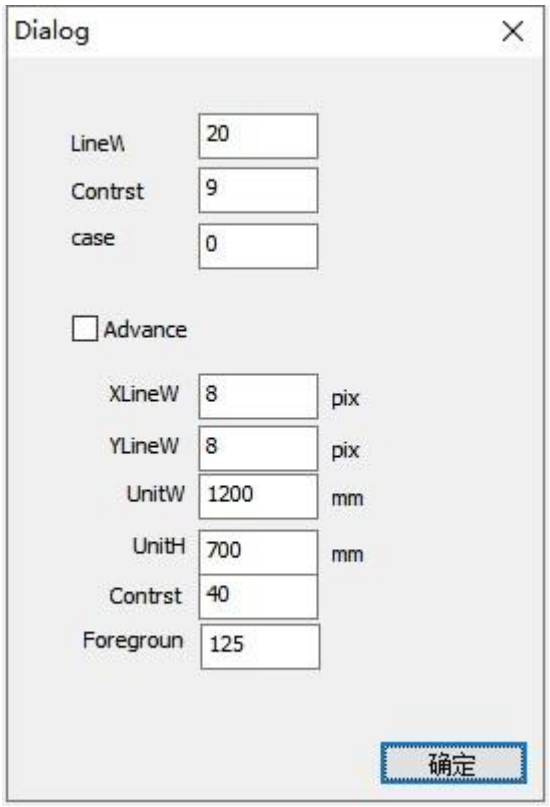
**Extension:** extend the line of raised edge, with the length of mm

# Mesh parameters

**Grid parameters:** extract the centerline of the grid layout materials with black edges

**Detailed explanation of grid parameters：**


Width of orizontal
Vertical line width
Width of single block
Single block material
prospect
background
It's not the




Detailed explanation of grid parameters

Foreground: indicates the pattern to be cut, that is, the printing pattern in the picture

Background: the printing pattern is printed on white cloth, which is the background. The white background in the picture (Note: not the gray black background in the picture) 1. Meaning of common parameters Line width:

The line width of the center line, in pix Contrast:

The contrast between foreground and background, with a value range of 1-255, is used to separate foreground and background, and the unit is pix. If the gray level at the junction of foreground and background is 100, the background is white, and the gray level is 200, the contrast setting must be less than 200-100 = 100, for example, 20. The lower the contrast setting is, the more unclear lines can be detected, the longer the corresponding detection time will be, and more miscellaneous lines will be detected. If it is a white background pattern, the contrast is generally set to 20 ~ 30.

Case：

Algorithm type parameter. That is, different algorithms are selected to extract the midline, the value range is 0 ~ 2, and the default value is 0. If the No. 0 algorithm fails to meet the expectation, try to use No. 1 or No. 2 algorithm. If all are expected, check advanced algorithm.

2. Advanced parameter meaning:

First, check advanced. The meaning of the corresponding parameter is as follows Width of horizontal line:

The width of the midline in the horizontal direction to be extracted, in pix Vertical line width:

The width of the midline in the vertical direction to be extracted, in pix Width of single material:

The width of the printing pattern, if there are multiple printing patterns, and the size is not the same, then take the minimum width. The unit is mm Single block material height:

The height of the printing pattern, if there are multiple printing patterns, and the size is not the same, then take the minimum height. The unit is mm Contrast:

The contrast between foreground and background, with a value range of 1-255, is used to separate foreground and background, and the unit is pix. If the gray level at the junction of foreground and background is 100, the background is white, and the gray level is 200, the contrast setting must be less than 200-100 = 100, for example, 20. The lower the contrast setting is, the more unclear lines can be detected, the longer the corresponding detection time will be, and more miscellaneous lines will be detected. If it is a white background pattern, the contrast is generally set to 20 ~ 30.

Foreground: it is used to extract the general area of the foreground. The value range is 0 ~ 255, and it can be set to 0 (to detect the whole picture) be careful:

1. The width and height of cutting material can be set roughly accurately, and the error between setting width and height and the real width and height should not exceed 25%. The size of each printing pattern in the detection image should be approximately equal.

2. If there is a black line stroke on the edge of the material, the contrast represents the contrast between the black line and the background (generally white). At this time, the contrast is generally set to 20 ~ 30

3. Foreground threshold is mainly used to extract rough ROI. For materials with black line and white background, the foreground threshold can be set between black and white (120). Setting the foreground threshold to 0 means processing the whole picture. For convenience, the foreground threshold can be set to 0

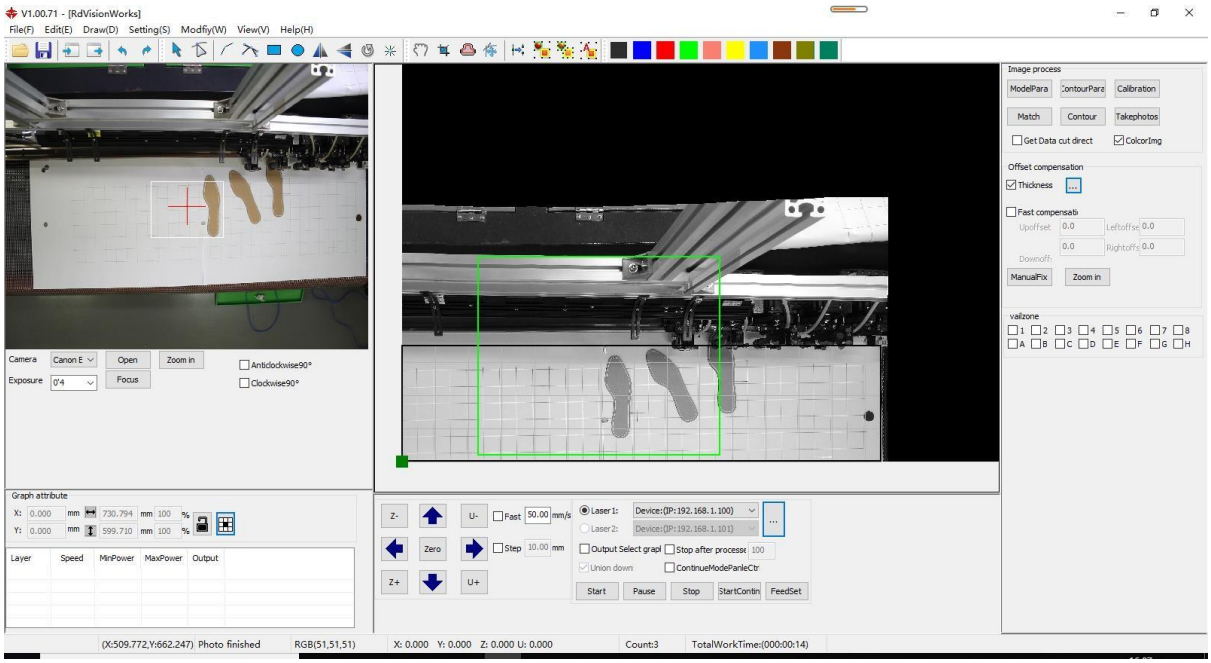
# Section 5 large format vibration knife cutting

## CONTENTS:

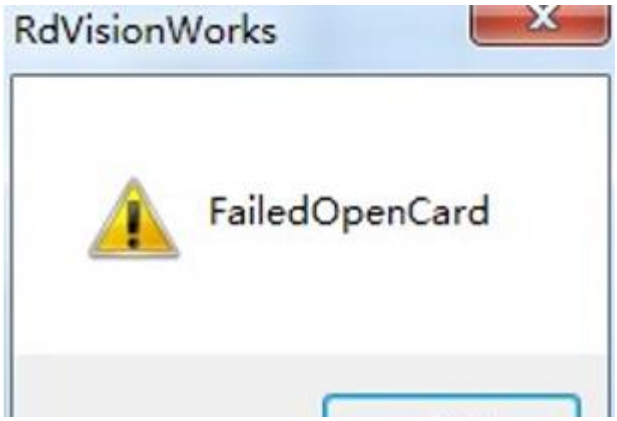


## 5.1 Open the software

Open the ordinary cutting software, the machine and the computer connected successfully. Then click the menu bar Additional(I), select "SCCD vision", You can open the large format vision software for Vibrating Knives. Software interface as shown below:



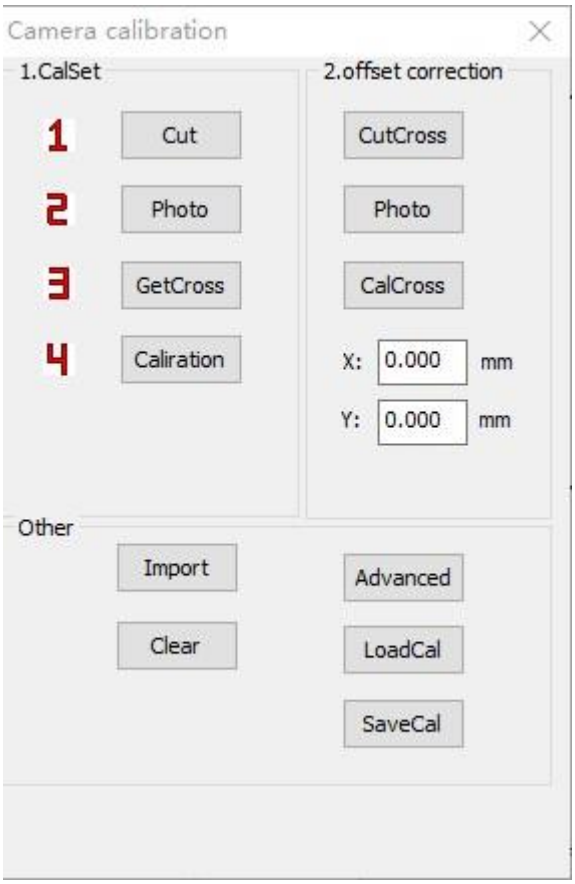

If the following dialog box pops up, it indicates that the card connection fails. You need to re-test the card connection, open the software again.




## 5.2 Camera correction

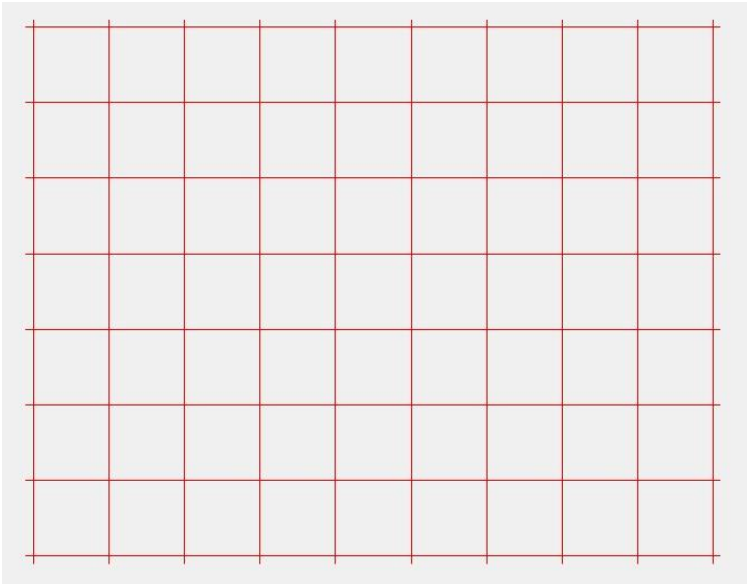
The camera is connected in the same way as the previous laser cutting system. Click on the 

button in the upper right corner, the following dialog box will pop up:

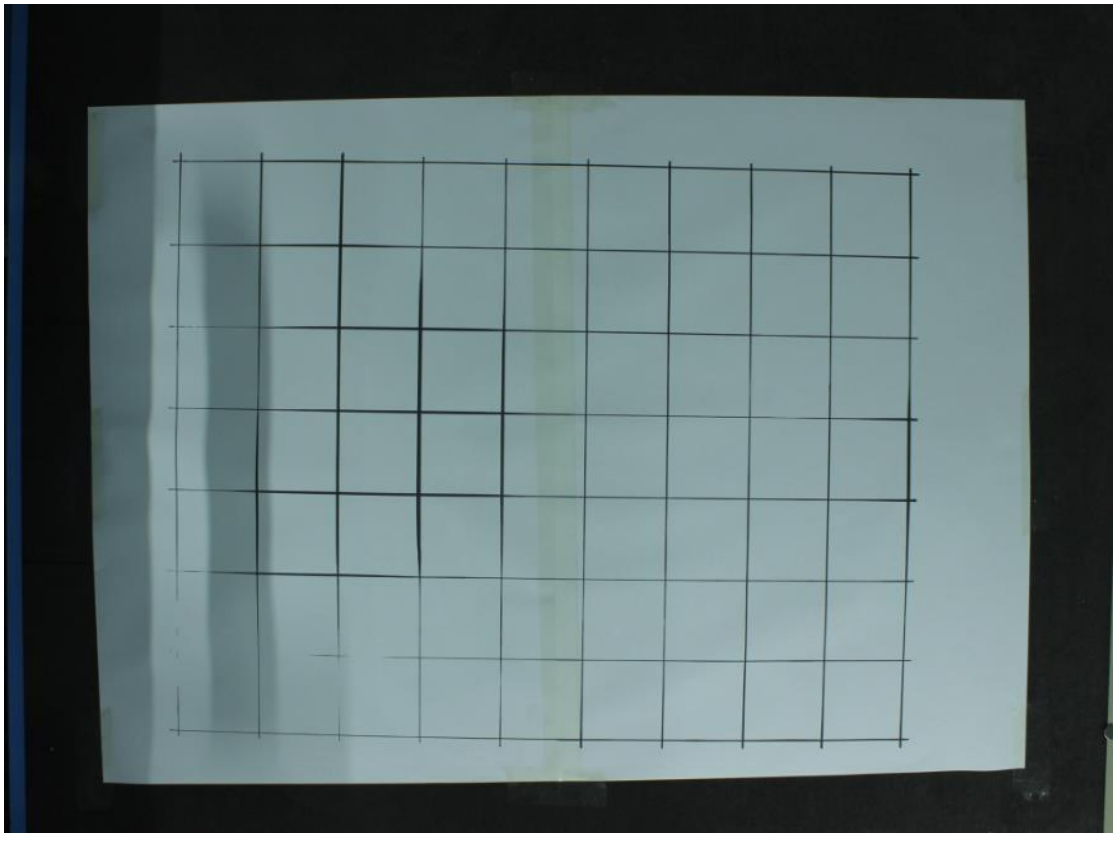



1.Shop paper, grid set. Flatten one or more sheets of white paper on the machine and fasten it with scotch tape. If it is initial calibration, it is usually necessary to adjust the position and size of the grid. Click Advanced button, through the grid offset, a single grid size, machine format to set.

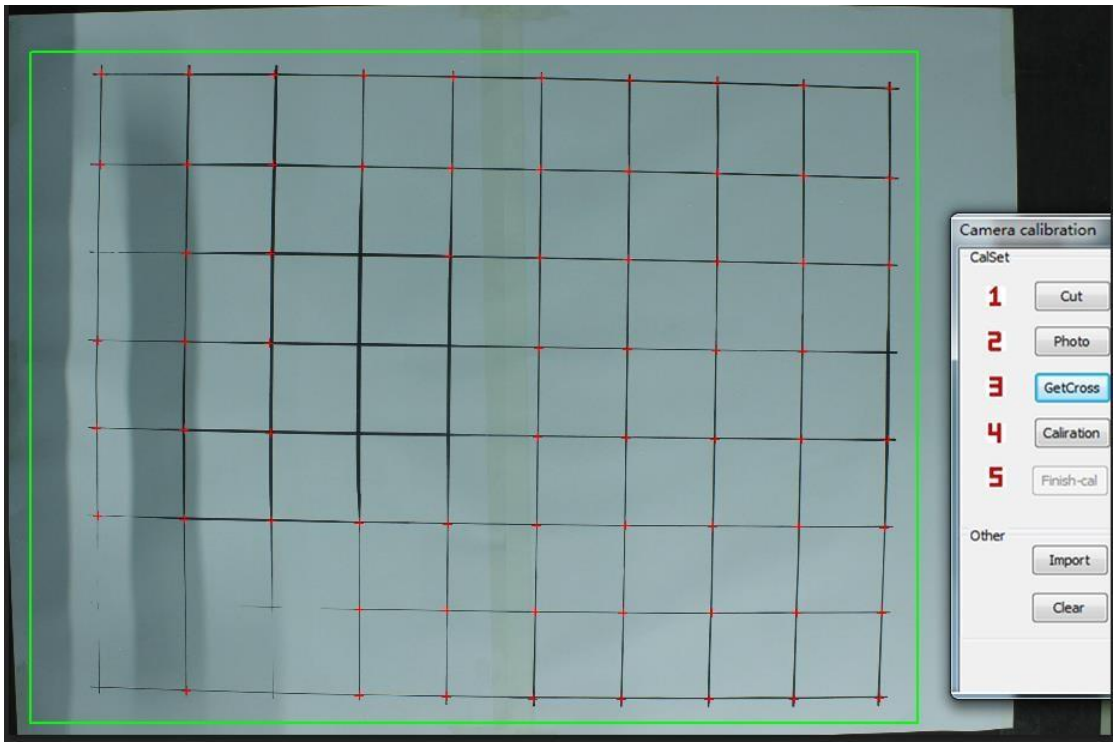

Cut 2.Click . The graphics area will generate a grid, as shown below. You can see if the size is right by walking the border on the control panel (brush or tool when walking around the border), and machining (drawing) if appropriate.



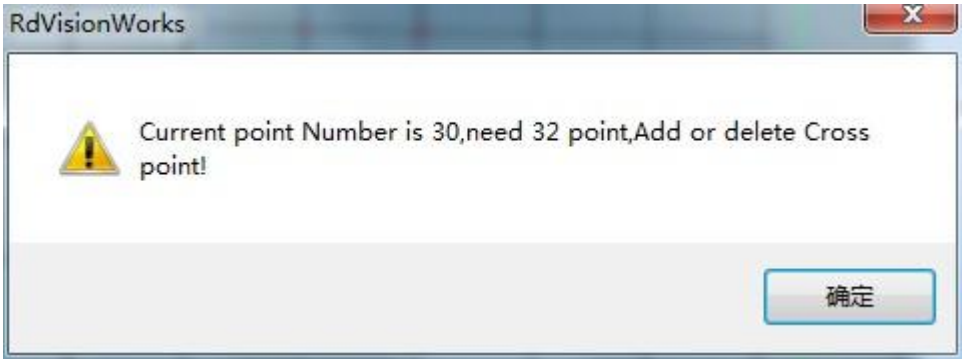
3.Take a photo Grid processing is as follows:



4.Recognize.




If the number of calibration points is not enough, the following dialog box will pop up. At this point, double click to add a calibration point.




5.click to complete the correction. Prompt correction is successful. Restart the software and the camera is calibrated.

6.correction effect test. Close the camera calibration page. Draw several small rectangles in the four corners of the calibration range. After processing photos. By observing the rectangle after processing and the rectangular coincidence degree. The higher the coincidence degree, the more accurate the correction is.

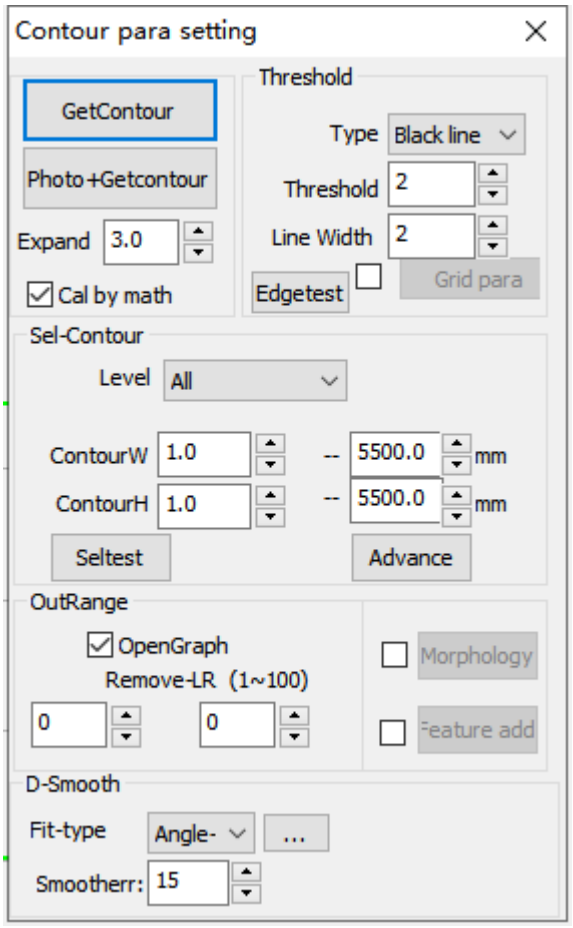
【Caution】 If the calibration fails or the error is too big, which will affect the cutting precision, you can recalibrate according to the above steps.

## 5.3 Contour extraction

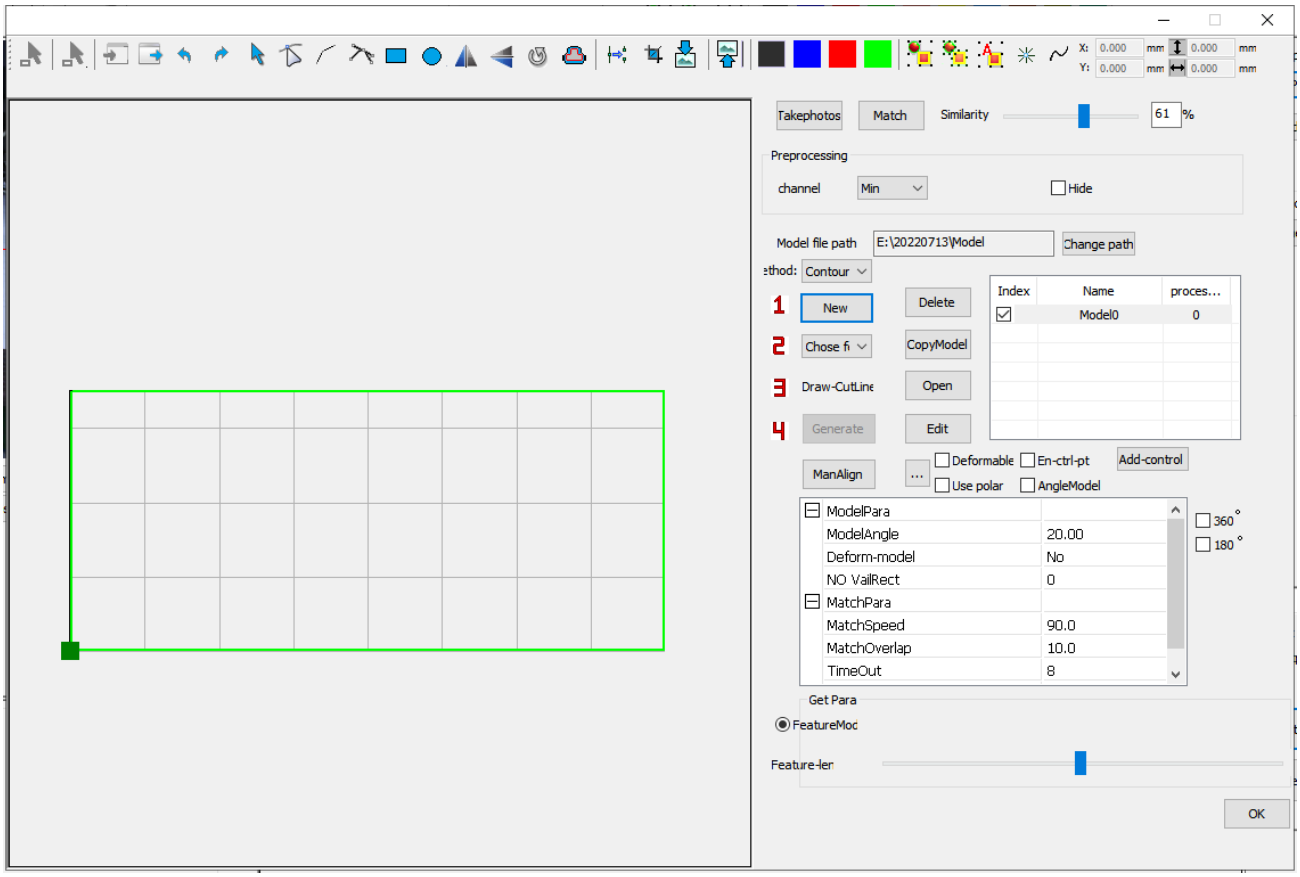
You can get the outline of the image for processing by using the edge or template matching method. This part of the software features and visual part of the previous consistent, you can refer to Chapter V content.

The general steps of the template matching operation are: taking a photo - creating a new template - selecting a feature - editing a feature - defining a cutting line - generating a template - matching.

The general steps for trimming operation are: photo-preview-channel, threshold, image processing, contour selection and other parameter settings-trimming-edge smoothing. Preview as shown below:



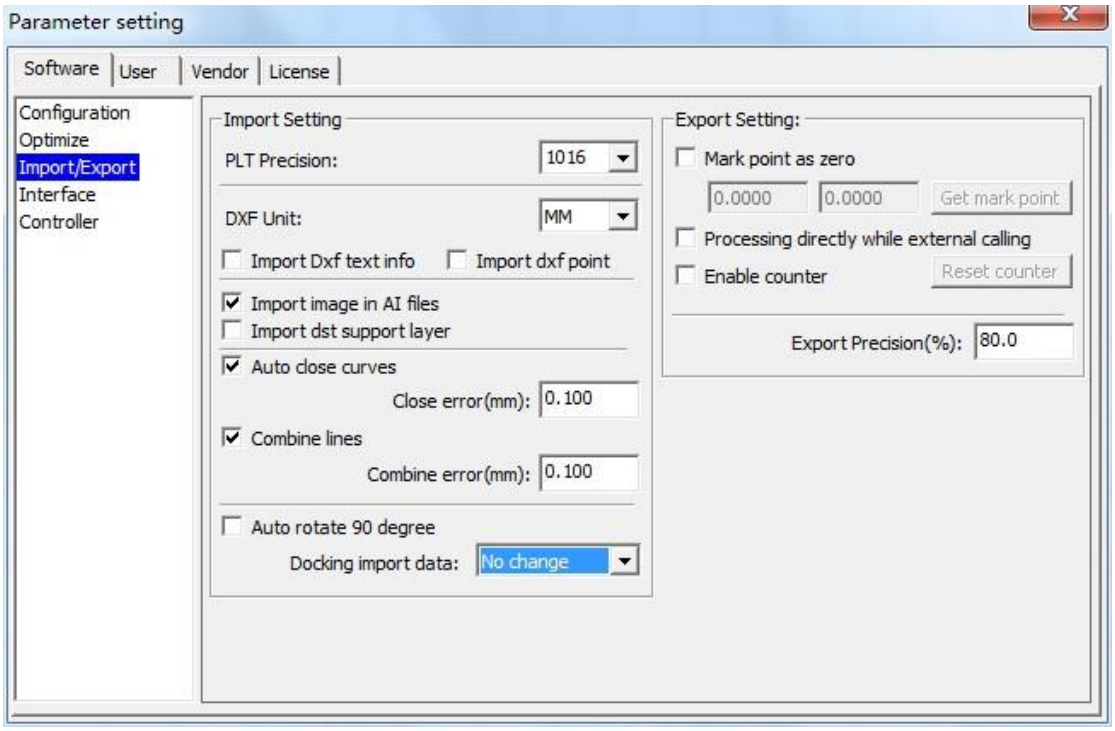

After the edge as shown below:




【Note】 mention edge, if the phenomenon of stuck when matching, click on the bottom of the software Stop button。

## 5.4 Processing

Return to normal cutting software. Click the menu "File", "System Setting" to open the "Parameter Settings" dialog box. Select "Import and Export" item, import graphic parking position "No change." "Direct external processing calls" is not checked by default. As shown below:




Lower right corner, graphics location, select "absolute coordinates."

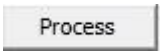

Then, return to the visual software, click 

Button, the graphics to be processed will be displayed on the ordinary cutting software. If only part of the output, select the graphics, and check 

。

If you need to download the file to the panel, click 

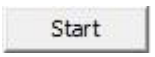
button, click on the document page 

button, a list of downloaded documents is displayed in the document table. Select the document to be processed, click the 

button.

【Note】 After finishing the above steps, please click 

button. Otherwise, some functions of the visual software can not be used normally, suggesting that "the connecting card fails."

If you do not need to download, click directly 

button.

Thank you for your selection of our production!



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