

Read this manual before operation

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

# RDWork

## Laser Engraving Cutting Software

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# CERTIFICATION DECLARATION



## CE

The product has been certified by the CE (Conformité Européenne) 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.



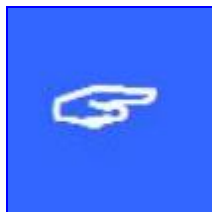
## **Warning:**

Danger. In 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 repacked 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.



## Important:

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.

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# Section1 Overview

## CONTENTS:

- Laser engraving  
cuttingsystem  
introduction
- Software supported file  
formats
- Environmental  
requirements



## 1.1 Laser engraving cutting system introduction

Laser engraving cutting system through a computer numerical control machine tool to achieve effective control, according to the user's different requirements of the completion of processing tasks.

The system including control board and control panel, and supporting software. This manual describes how to use the software to complete the task of laser processing. (Motherboard wiring and control panel operations, see the accompanying manual and control panel wiring board operating instructions)

## 1.2 Software supported file formats

Vector format: dxf, ai, plt, dst, dsb...etc.

Bitmap format: bmp, jpg, gif, png, mng, ...etc.

## 1.3 Environmental requirements

- (1) Windows XP operating system and above, XP recommended.
- (2) CPU 586 and above, it is recommended that the PIII or PIV and above
- (3) It is recommended to use more than 1G of memory.

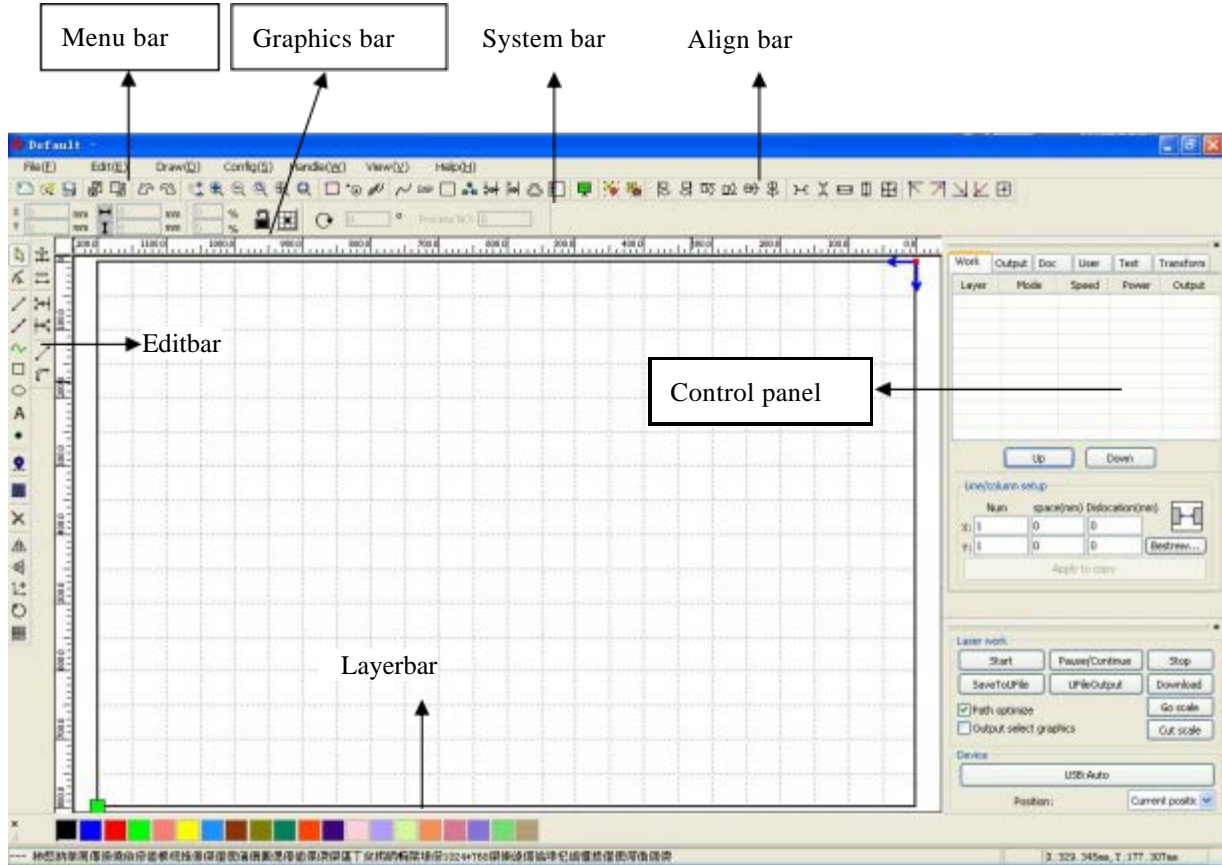
# Section 2 Software Basic Operation

## CONTENTS:

- The main interface operation
- Language settings and manufactures information
- Page Setting
- File Open and Save
- File Import and Export
- Basic graphics creation
- Object Selection
- Object Color
- Object Transformation
- Object Align
- Object View
- Group and UnGroup
- Important Tool

## 2.1 The main interface operation

After start the software, you can see the interface shown in the following figure.



**Menu Bar :** The main function of this software are available through the implementation of the Menu Bar.

Execute the menu command is the most basic mode of operation. Menu Bar including:

Document、Edit、Draw、Setting、Processing、View and Help.

**System Bar:** On the System Bar, placed some most commonly command buttons which is chosen from the menu.

**Graphics Bar:** Graphics property bar is the basic attributes of graphics operations, including graphic location, size, scale, number processing.

**Edit Bar:** The Edit Bar default on the left of the work area. In the Edit Bar placed frequently used tools to make the operation more flexible and convenient.

**Align Bar:** Alignment of these selected objects.

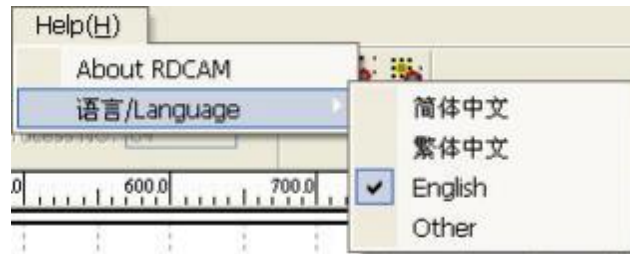
**Layer Bar:** Change the layer of these selected objects.

**Control Panel:** Using the Control Panel to complete laser processing of multiple tasks, Layer parameters settings, axis control, processing... etc.

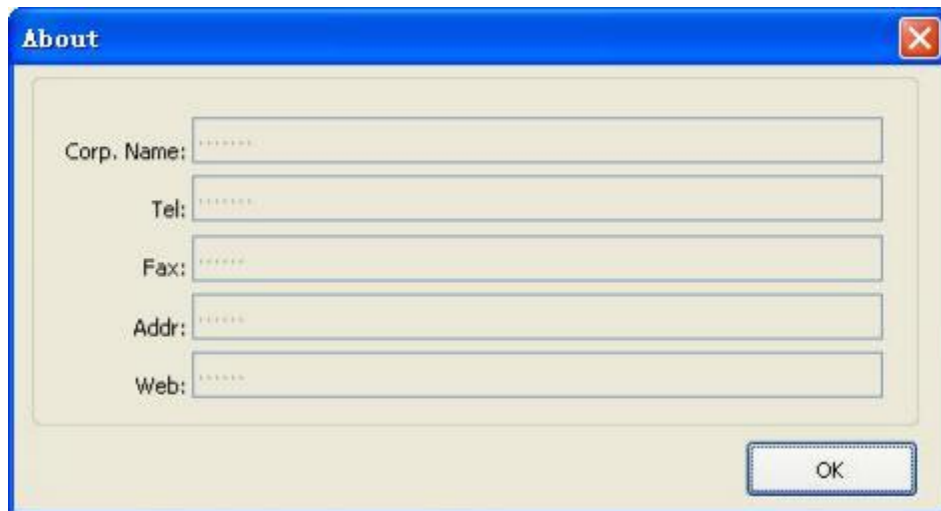
## 2.2 Languagesettingsandmanufacturesinformation

In addition to installationprocesscanset thesoftwarelanguagetype,youcaneasilyswitchin differentlanguage.

ClickMenuBar **【Help】** -> **【语言/Language】** expandmenu, selecttherequiredlanguagetypes.



Toobtainmanufacturersinformation,sothatwecanprovideyouwithbetterservice.ClickMenuBar **【Help】** -> **【AboutRDCAM】**



Howtosetmanufacturers,referto 《RDCAMsoftwareinstallationinstructions》

Thebottomofthedialogboxshowsthecurrentsoftwareversionnumber.Asdifferentversionsofsoftware may be havesomedifferencesonthefunctionsandinterfaces,youcaneasilycontactand communicate withmanufacturers through software versionnumber.Parameter Setting.

## 2.3PageSetting

ClickMenuBar **【Config】** -> **【Pagesetting】** thefollowingdialogboxappears:



【Pagewidth】：Softwarepagewidth,usuallyassociatedwithmachineXbreadth.

【Pageheight】：Softwarepageheight, usuallyassociatedwithmachineYbreadth.

Under normal circumstances, if you have connected to the motherboard, the software will automatically format for the current work of the machine, as a page size.

If the board is not connected, or need their own custom page size (such as to set the page size by material), you can use the page setting to reconfigure the page size.

#### 【Grid】

Setting grid space and whether enable grid.

#### 【Keyboard】

User can use arrow key to move or rotating the selected graphics.

#### 【Color config】

Setting the color of the work area.

## 2.4 File Open and Save

The software uses rld file format to save graphic information、layer parameters of various layers and processing sequence of the graphic elements.

### 2.4.1 Open File

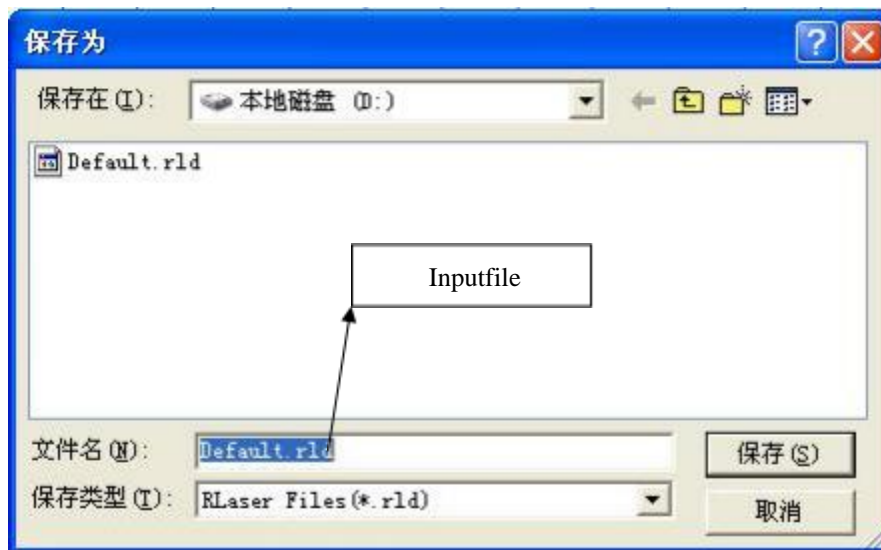
(1) Click menu 【File】 -> 【Open】 , or click icon , the following dialog box appears:



(2) Selectfile(e.g.Default.rld),click 【Open】 .

## 2.4.2SaveFile

(1)Clickmenu 【File】 -> 【Save】 ,orlickicon ,thefollowingdialogboxappears:



(2)Enterthefilenameintheeditbox, thenclick 【Save】 .

## 2.5FileImportandExport

Because this software is rld format, so to make or edit the use of other materials will be done by importing. After using the Export to graphic files for others software.

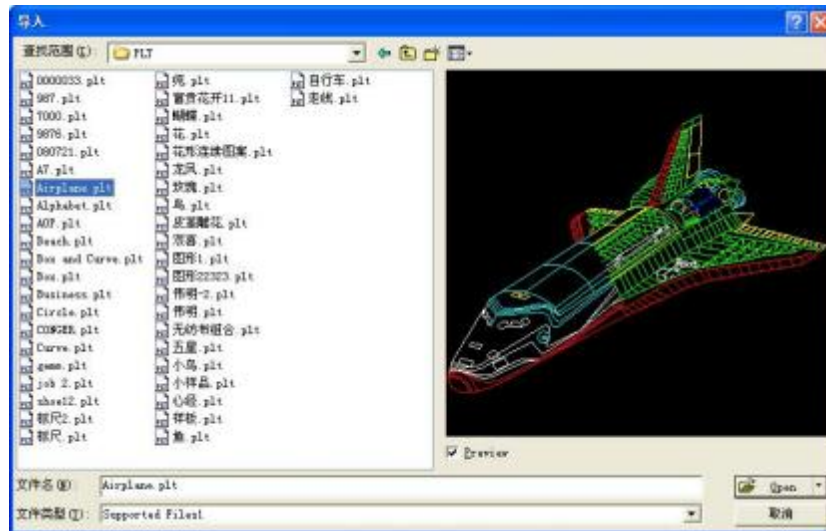
Supported file format for import: dxf, ai, plt, dst, dsb...etc

Supported file format for export: plt

## 2.5.1 File Import

Click menu **【File】** -> **【Import】**, or click icon . The following dialog box appears.

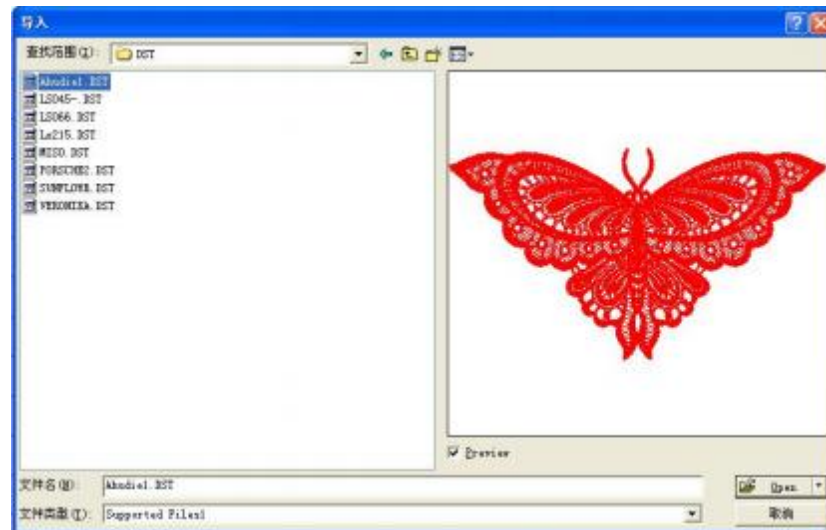
Select file, and click **【Open】**.



◆ Select **【Preview】**, the selected file can be shown.

For most vector file, data automatically imported into the corresponding layer of RDCAM software according to the layer description.

For some special documents such as DST/DSB, data will be imported into the current layer.



Current



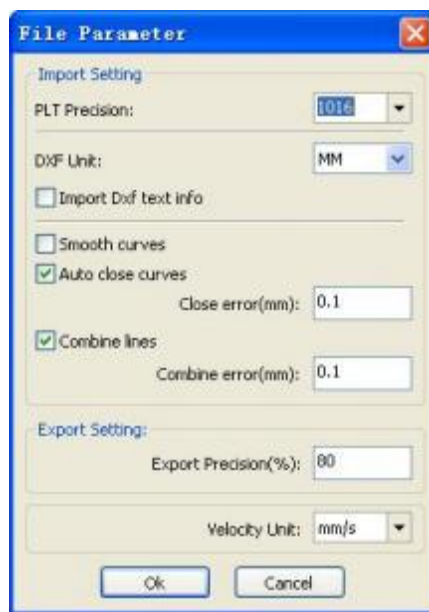
## 2.5.2 File export

Click menu **【File】** -> **【Export】** or click icon . The Export dialog box appears.

Input filename, and click button **【Save】**.

## 2.5.3 File parameters setting

**PLT Precision:** According to the accuracy of the original plt file to select the appropriate import unit.



**Smooth curves:** When import vector file, automatically smoothing the original curves. For the original graphic is smooth or need to repeatedly adjust the smoothing effect, you can uncheck this button. Do not do smoothing curves may reduce time of import processing.

**Auto close curves:** According to close tolerance automatic check and closed curve

**Combine lines:** According to merge tolerance, auto-connecting curves.

**Color map automatically switch to grayscale :** Because under normal circumstances, graphics are based on gray scale. If the imported bitmap is a color image can be converted to grayscale.

**Import Dxf text message:** When the user need only Dxf the graphic information, not need the text information within the file, do not check this.

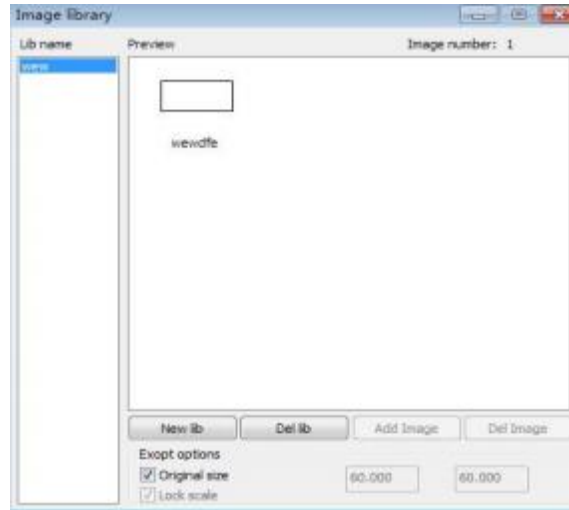
**Export precision:** The precision of export plt file or output file.

**Velocity unit:** Software supported two types of speed unit: mm/s、m/min. Selected according to usage. After it was selected, the speed of parameters on the interface unit will change with it.




## 2.5.4 Image Library

For some frequently used graphics to be stored in the gallery is commonly used in the ease of use



## 2.6 Basic graphics creation


### ◆ Line

Click menu **【Draw】** -> **【Line】**, or click EditBar , drag the mouse on the screen you can draw an arbitrary line. Press the "Ctrl" key while dragging the mouse to draw horizontal or vertical line.

### ◆ Polyline


Click menu **【Draw】** -> **【Polyline】**, or click EditBar . Drag the mouse on the screen you can draw an arbitrary polyline.

### ◆ Rectangle

Click menu **【Draw】** -> **【Rectangle】**, or click EditBar . Drag the mouse on the screen you can draw an arbitrary size rectangle.


Press the "Ctrl" key while dragging the mouse to draw square.

### ◆ Ellipse


Click menu **【Draw】** -> **【Ellipse】**, or click EditBar . Drag the mouse on the screen you can draw an arbitrary size ellipse.

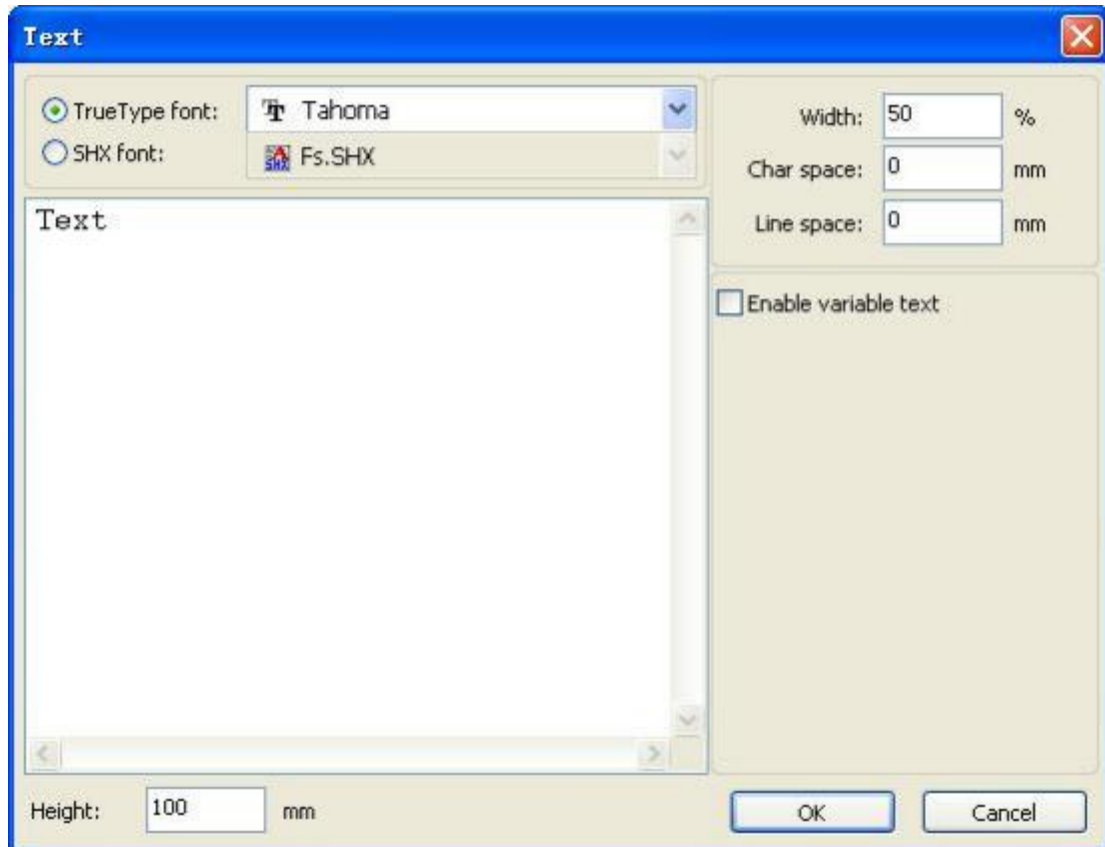
Press the "Ctrl" key while dragging the mouse to draw round.

◆Point

Click menu 【Draw】 -> 【Ellipse】 , or click EditBar  . Click the mouse on the screen, you can draw a point.

◆Text

Click menu 【Draw】 -> 【Text】 , or click EditBar  . And then in a drawing area any position click, pop-up text input dialog.



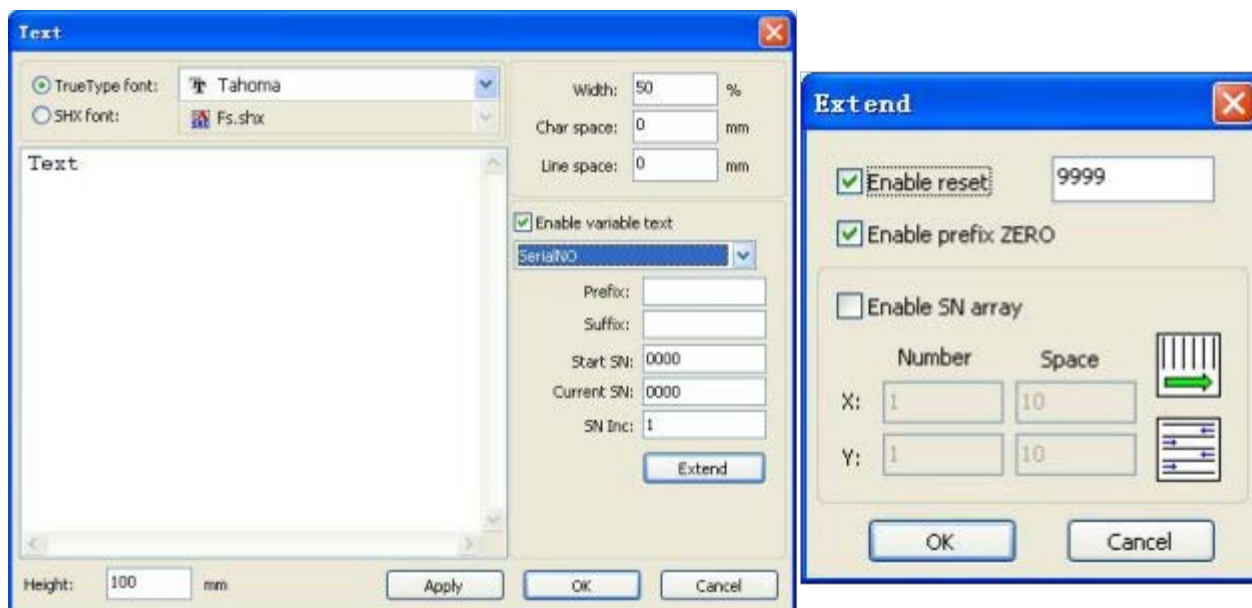
Choose font word, input text word, then set high , wide, word spacing, line spacing. Click again 【OK】 .

This software also supports variable text, this so-called variable text, the text is needed according to certain rules change, every output processing time, text to be automatic change again. For the system variables have character type date variables and serial number.

Variable is the date when the current every time processing take the current system of computer time output. Software offers a variety of date format for customers to choose.

Users can also set the date migration, have the day by the month according to the years 3 kinds.

As in packaging carved on the expiration period can use the product.

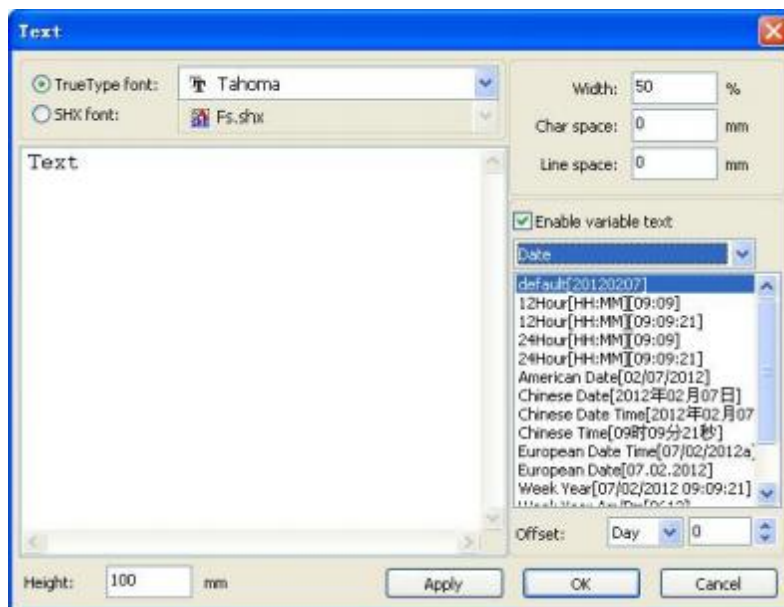


If ABC0001DEF processes repeatedly, ABC0002DEF, ABC003DEF until ABC9999DEF a group of serial number.

【Prefix】: serial number prefix, example ABC is leading string.

【Suffix】: the serial number of the suffix, example DEF is the string after.

【StartSN】: from which a specified number start manufacturing, example is to start to 0001 serial number



【CurrentSN】

: the current processing to which, serial numbers, can also be used to specify the current to processing which serial number.

As in the processing a group of serial number, leakage processing the one, but through the designated the current serial number to make processing, not set start, serial numbers, because in some cases a group of serial number requires repeated processing,

namely to a serialnumber,need to goback tothetartserialnumberstartmanufacturing.

【SNInc】: the interval number can be prescribed sequence number. Example will in turn processing from 0001 to 9999 serial number, the increment is 1.

If only need to output even or odd number serial number, can set incremental is 2.

【Enable reset】: when serial number processing to reset the serial number, 【current SN】 will be automatically reset to 【start SN】.

Example requires repeated processing from 0001 to 9999, serial numbers, so can be designated 9999 as reset, serial numbers, when processing the 9999 serial number, text will automatically change to 0001.

【Enable prefix ZERO】: if not lead to zero, the system will automatically remove the first in the serial number of zero digital before the zero. Such as the example, serial numbers, if not the leader's zero can ABC0001 DEF will become ABC1 DEF. But it is worth noting that, if we want to output serial number is ABC1 DEF, ABC2 DEF until ABC9999 DEF, we can't through the will 【start SN】 set to 1 to achieve, but through the cancel 【Enable prefix ZERO】 to achieve, this is because set in the specified number from the start the serial number which one, beginning outside, all specify the number of significant digits, such as will begin to serial numbers set to 1, the change of the serial number order is: 1,2,3,4,5,6,7,8,9,0,1,2,3,4,5... Serial number won't change to 10, because the effective serial number had 1.

【Enable SN Array】 to the array of way, one-time processing more serial number.

for instance:

0001 00020003	after this batch processing serial number,	0015 00140013
0006 00050004	skip directly to the next group of	0007 0008 0009
0016 00170018		0016 00170018

#### ◆ Capture

Click menu 【Draw】 -> 【Capture】




If the computer has been connected to the image device, the dialog box will appear. After it was selected, you can collect the pictures from the specified device.

## 2.7 Object Selection

In the process of drawing and edit graphics, first of all is to select the object.

When the object is being selected, in the center of this object will have a shaped mark "x", and surrounded by eight control points.

Click menu **【Draw】** -> **【Select】**, or click EditBar , switch to status "Select". Under this status, you can select object. The following are five kinds of method of selecting:

- ◆ Click menu **【Edit】** -> **【Select All】** (Shortcuts Ctrl+A), select all objects.
- ◆ Click mouse on the screen to select single object



- ◆ Select object using select box




Press the mouse and drag, as long as the box come into contact with the object will be selected.

- ◆ Increased select object / minus select object

Increases select: Press "Shift" key, click or box select to increase select object.

Minus select: Press "Shift" key, click or box select the selected object.

- ◆ Select object according to layer

Layer	Mode	Speed	Power	Output
	Cut	100.0	30.0	Yes
	Cut	100.0	30.0	Yes
	Cut	100.0	30.0	Yes
	Cut	100.0	30.0	Yes

Up Down

Right-click the selected layer, then the part of all objects in the layer will be selected.

## 2.8 Object Color

The color of object that is the color of the object contour. You can click the color button on the Layer Bar to change the color of the object has been selected. The color of the pressed button is the color of current layer.



## 2.9 Object Transformation

Transformation of object mainly include: object location、orientation and size. But does not change the basic shape of the object and its characteristics.

Transformation of object for users, provides a convenient user interface. User can mirror and rotation through

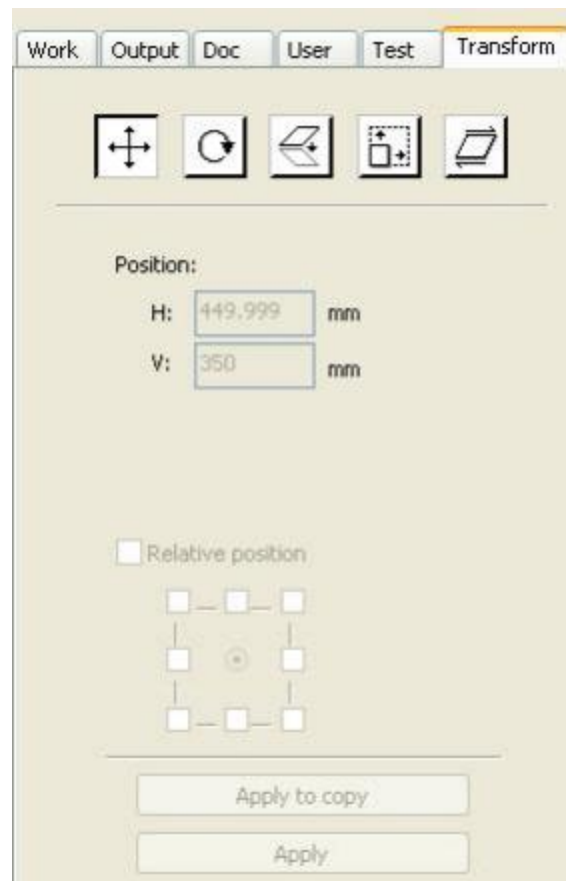


within the draw toolbar.

You can also use the Object Properties toolbar





You can also use the right transformation tools to transform and copy the graphics.

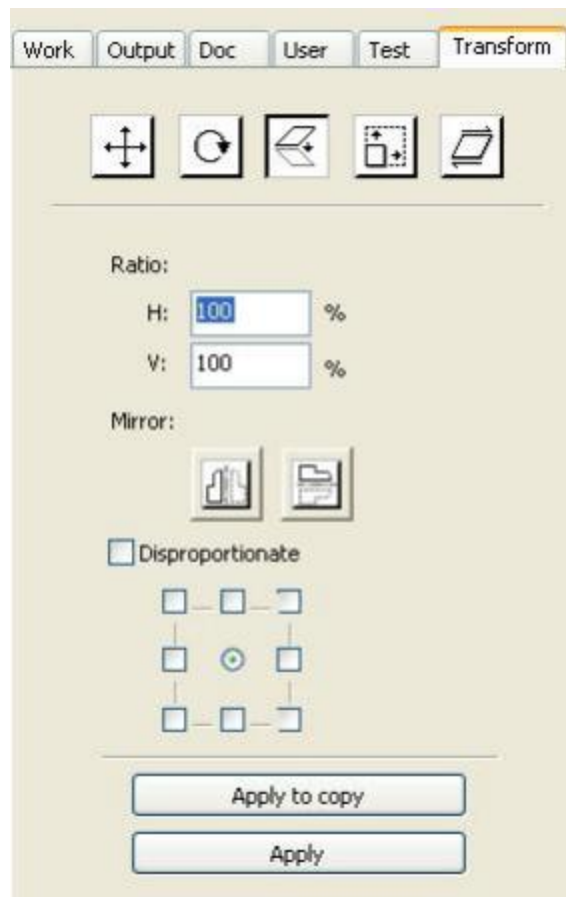


## 2.9.1 ObjectImage

ObjectImage is flip the selected object in the horizontal or vertical direction.


Click EditBar , flip the selected object horizontal.

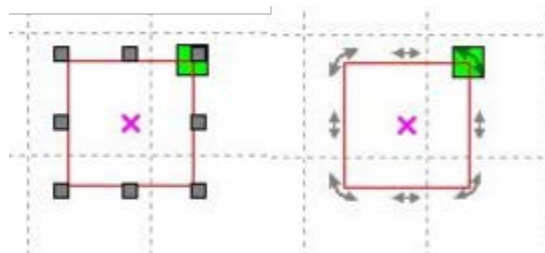
Click EditBar , flip the selected object vertical.



Or through the mirror to the transformation tools, horizontal and vertical mirror, and copy.

## 2.9.2 ObjectRotate

The selected object, next, double-left click on 

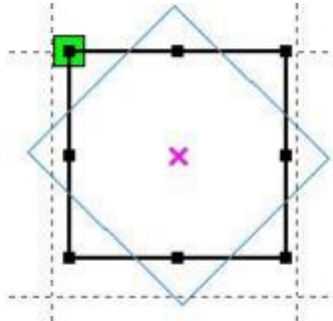






If you want to drag rotation, can move the mouse to then press the left key.

Dragging the mouse to adjust the rotate angle, in the dragging process, there will be followed by rotating wire-frame outline.



X	445.91	mm	↔	235.989	mm	100	%	🔒	🔄	0	°	Process NO:	1
Y	299.208	mm	↕	208.549	mm	100	%						

Or directly enter the rotation angle in the Object Properties toolbar.

Work
Output
Doc
User
Test
Transform

Rotate:  
H: 0 °

Center:  
H: 445.91 mm  
V: 500.791 mm

☐ Lock rotate center  
☐ Relative center

Apply to copy

Apply

Or use the spin rotation transformation tool to transform. In the rotation transformation tool can be set to the center of rotation and locking center of rotation.

## 2.9.3 Object Size

X	445.91	mm	↔	235.989	mm	100	%		0 °	Process NO: 1
Y	299.208	mm	↕	208.549	mm	100	%			

You can set size and center position of theselected object.

Work
 Output
 Doc
 User
 Test
 Transform

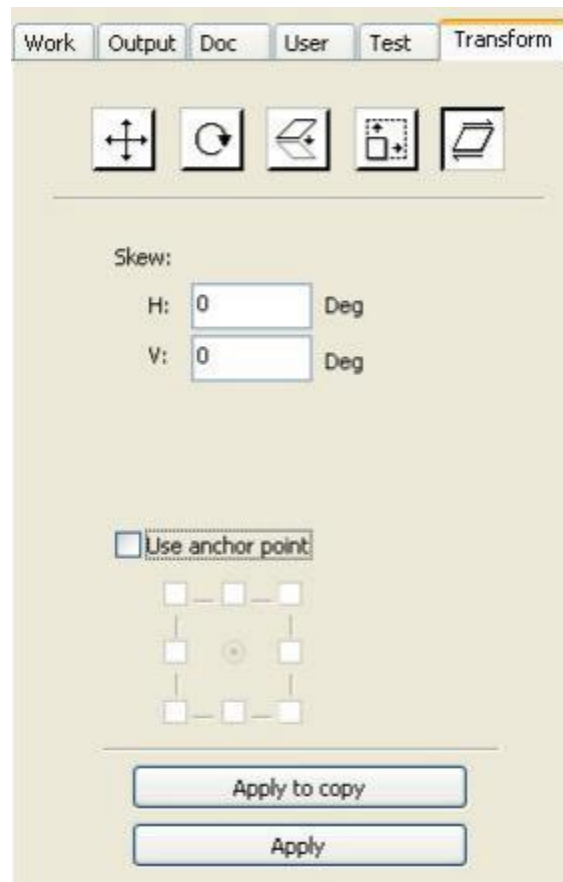
Size:
   
 H: 235.989 mm
   
 V: 208.549 mm

☒ Disproportionate

Apply to copy
   
 Apply

Or use the size transformation tool bar to change the size of object. Can modify the size, choose whether to lock the aspect ratio, and set the position relative to the object to transform.

## 2.9.4Tilt

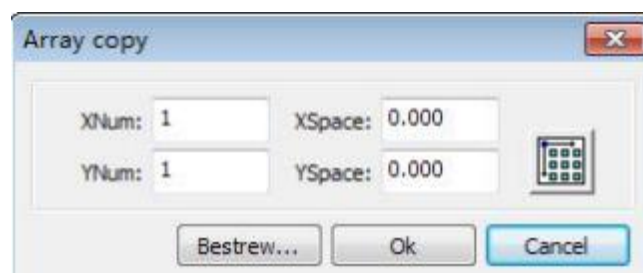


Object can be tilted by the tilting transformation tools. It can be set the tilt anchor and the tilt angle.

The tilt will cause distortion of the bitmap and the practical application of small, currently only supports the tilt vector graphics.

## 2.9.5 Object Array Replication

Click Edit Bar , select object want to copy. Then click , the following dialog box appears:



Width of a single graphic (mm)



Height of a single graphic (mm)

You can array replication object along different directions. The direction of copy is based on the

original graphics. Such as choose the array direction lower right, then the original graphic will appear on the upper left corner. where if it is to the upper left array, then the original graphic appears in the lower right.

After setting the array number and array spacing, click button **【Apply】**, you can see the actual graphics array.

There are two forms of array spacing: center spacing and edge spacing.

Choose center spacing, then **【XDistance(mm)】**、**【YDistance(mm)】** representing the distance of the two graphic center.

If not choose center spacing, then **【XDistance(mm)】**、**【YDistance(mm)】** representing the distance of the graphic edge.

Center distance X = Edge distance X + width of object

Center distance Y = Edge distance Y + height of object

Switch between the two kinds of calculation method, **【XDistance(mm)】**、**【YDistance(mm)】** will be calculated automatically.

Click **【Bestrewing breadth】**, The software will automatically calculate the array number according to the workpiece size、width、height、X distance and Y distance.

Adjust spacing can be directly input values, and click **【Apply】**.

Can also press the direction keys to adjust object spacing.

Check **【Center】**, then after object array replication, graphics will be centered on the work area.

Scroll the mouse wheel to zoom view of the graphics.

Drag the mouse to pan view of the graphics.

## 2.9.6 Place Object To The Origin

Place the object is to facilitate the viewer orientation. The following tools are provided by software:



, selected object will be placed in the center of the page, that is the object center coincides with the center of the page.



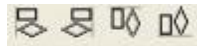
, Selected object will be placed on the page left, upper right, lower right, lower left, upper left corner of the object, upper right, lower right, lower left and upper left corner, top right, bottom right, bottom left corner of coincidence.

## 2.10 Object Align

Select objects, click tools on the Align Bar



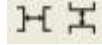
Which include:



Left alignment、Right alignment、Top alignment、Bottom alignment



Vertical center alignment、Horizontal center alignment、center alignment



Horizontal equidistance、Vertical equidistance




Same width、Same height、


Same size. Benchmark object:


If you press “Shift” key and select object one by one, then the benchmark object is the last object.


If you select object by select box, then the benchmark object is the object which curve number in the final.

## 2.11 Object View


Move: Click menu 【Edit】 -> 【Move】 , or click  . Then hold down the left mouse button in the drawing area, and drag pan.

Zoom Out: Click menu 【Edit】 -> 【Zoom Out】 , or click  . Each click it, the drawing area zoom out once. Move mouse to the drawing area and click, each click, mouse position as center drawing area zoom out once.

Zoom In: Click menu 【Edit】 -> 【Zoom In】 , or click  . Each click it, the drawing area zoom in once. Move mouse to the drawing area and click, each click, mouse position as center drawing area zoom in once.


View Select : Click menu 【Edit】 -> 【View Select】 , or click  . Move the mouse to the drawing area, hold down the left mouse button and drag , a dashed border box will show in the drawing area, release mouse button , then the region in the dashed border box will display in the drawing area with the largest proportion.

View Page Frame: Click menu 【Edit】 -> 【View Page Frame】 , or click  . The page frame will full display.

View Data Frame: Click menu 【Edit】 -> 【View Data Frame】 , or click  . These selected objects will full display.

## 2.12 Group and Ungroup

Edit graphics, and sometimes need to be a part of the operation as a whole (such as multi-line text for typesetting).

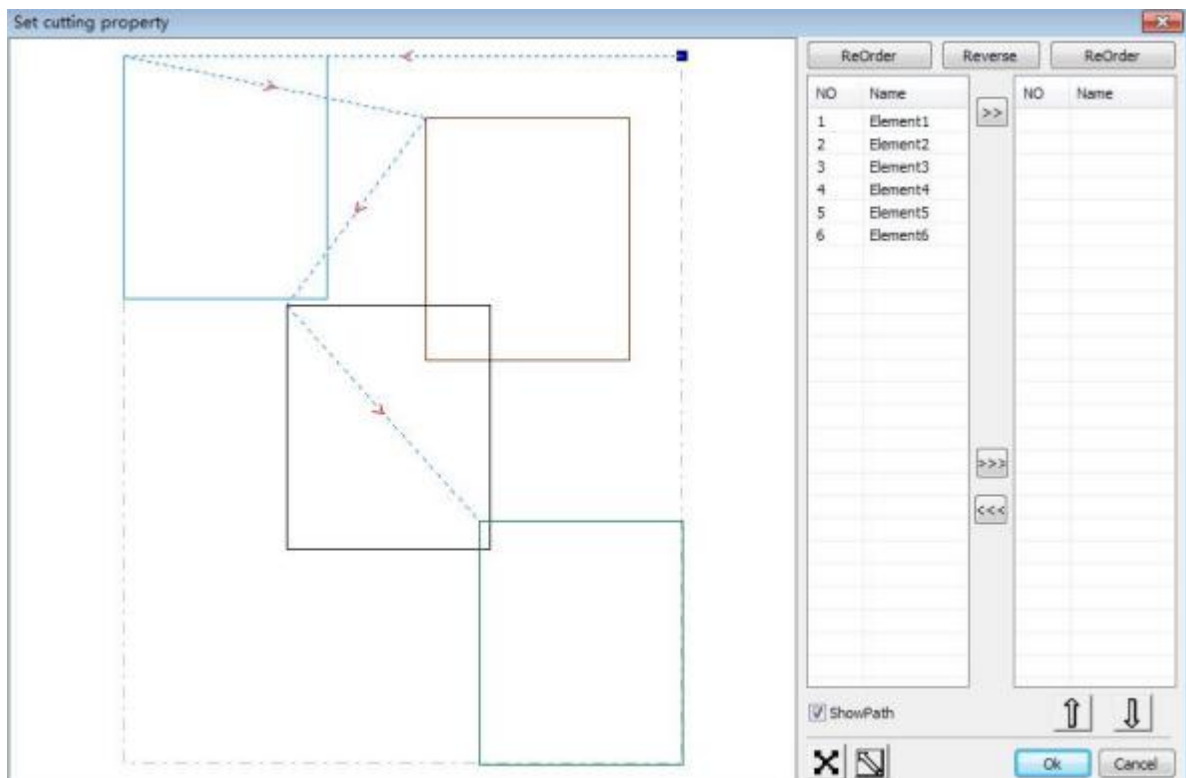
Method: Select the group of graphics, and then select the menu **【Edit】 / 【Group】 ( 【UnGroup】 )**, or directly select the toolbar .

## 2.13 Important Tool

Here are some frequently used tools. Using these important tools, can make the current document in the graphics more orderly, and make the processing of output more fast.

### 2.13.1 Manual sorting and the set of cutting point and the cutting direction



Software provides users a convenient tool for the manual sorting. Select **【 Edit 】 -> 【 Set cutting property 】**. Cutting property dialog box will popup. All with manual sorting, and cut points, cutting the direction of these settings in this dialog box can be completed.



#### Show path

First check the "show path", it will display the current graphics cutting order and the cutting direction.

#### Manual sort

Select . This button is used to switch the current status of the operation to editor view. Then you can marquee or click the graphics in the graphics display area (or click one pixel or check many pixels). After selecting the graphic, select , these graphics to be redirected to another list, to be processed.

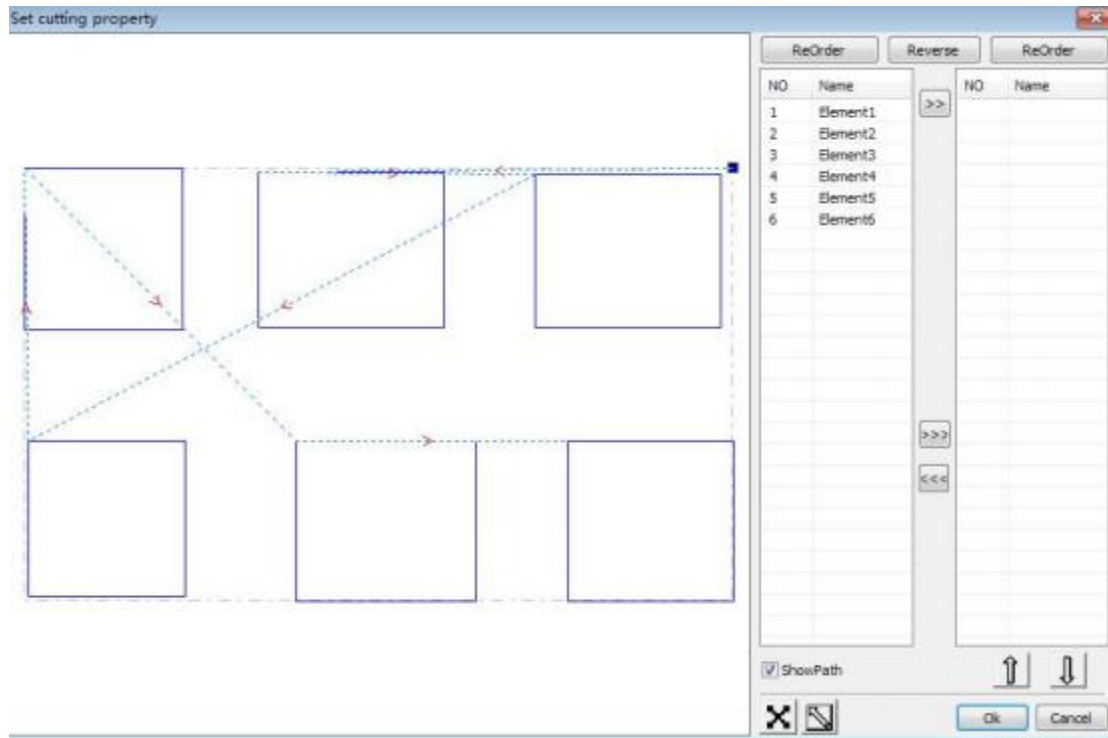
as the first primitive. Primitives followed by repeated operations, to complete sequencing of all graphics.

Change the direction of graphic processing

Mouse select the graphic in the graphics display area or in the list. And then click

Reverse

### Change the cutting point




Select the graphics that should be changed the cutting point, it will show all the nodes in the current graphics. Select the starting point, double-click the mouse, it will change the starting point of the current graphics. After the completion of all changes, click

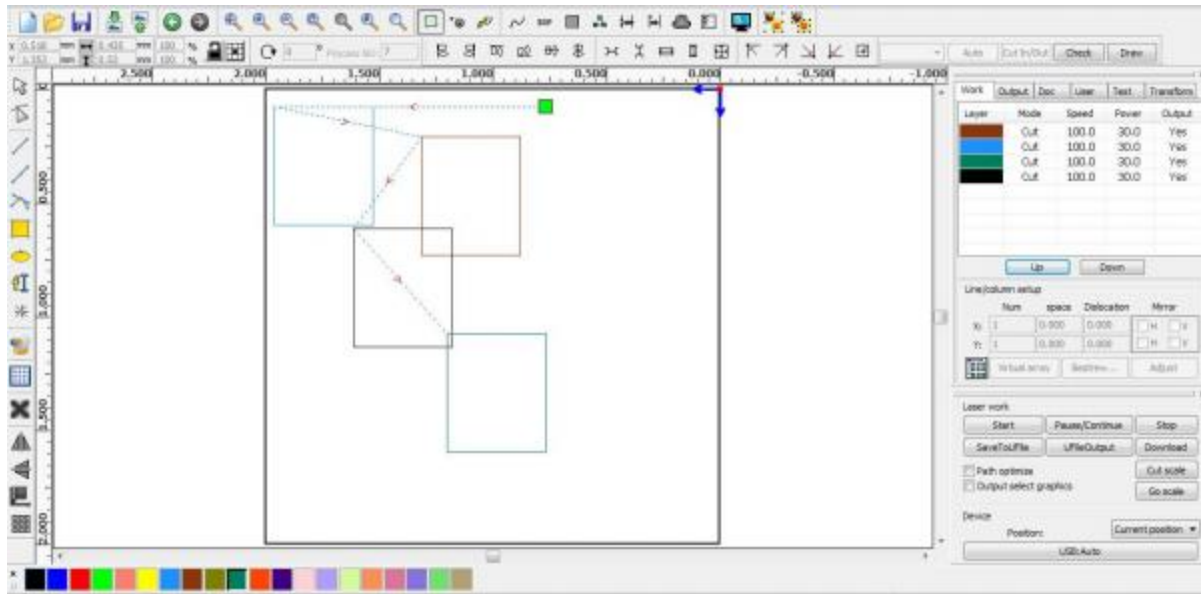
确定

, the result of the changes can be saved.

In addition to cutting property features, the software also offers some tools to change the cutting order, cutting direction and cutting point.

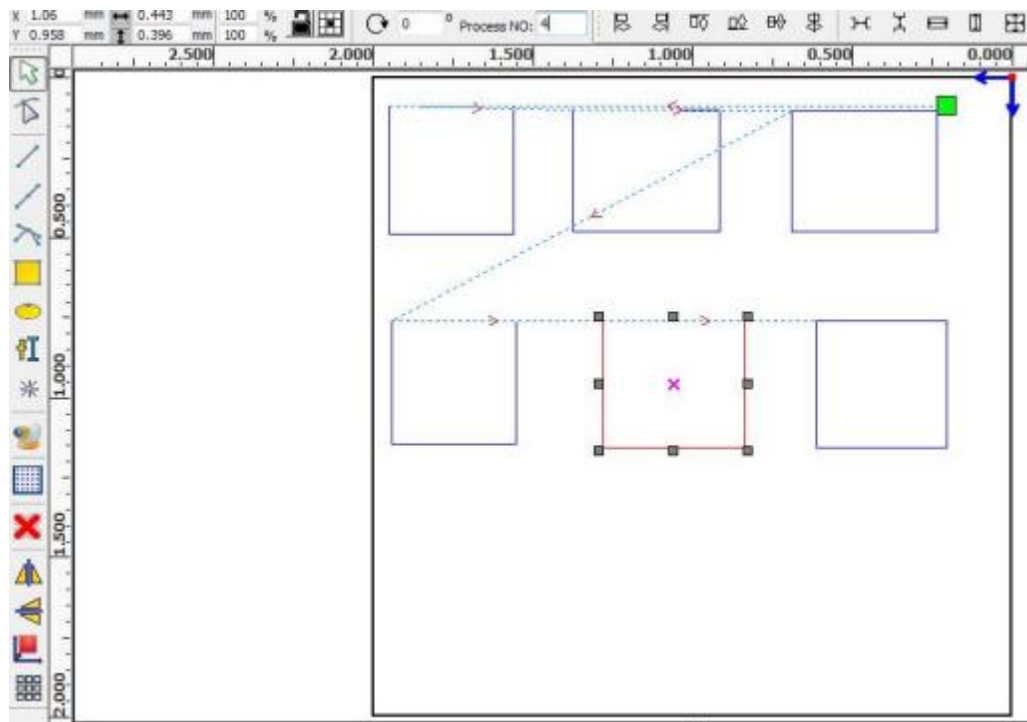
Select  in the toolbar, or click the menu command 【Edit】 -> 【ShowPath】.





### Manual sort

Choose the primitive that should be changed the cutting order, then the cutting serial number of the current primitive will display in the object properties bar.



Enter the serial number directly in the processing number, then press the keyboard "Enter" key, or click the plot area, the cutting order will be changed.

### Change the processing direction

Click 【Edit】 -> 【Set cut direction】, to enter the edit mode of the cutting direction. Then you can double-click on any position on the selected graphic.

### Change the cutting point

Click 【 Edit 】 -> 【 Setcutpoint 】 , to enter the edit mode of the cutting point. Then select the curve that should be edited, you can double-click on the node that you want to set the cutting point to complete the change of the cutting point.

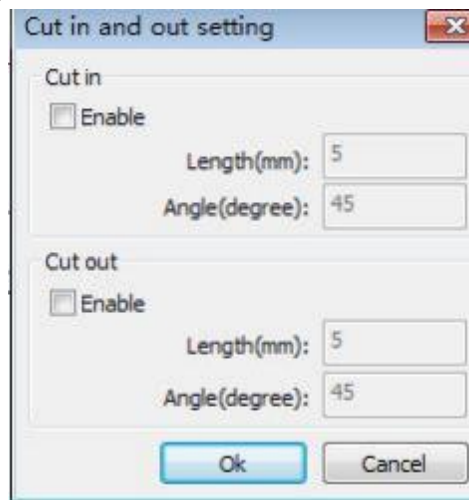
## 2.13.2 Setting And Editing The Cut In/Cut Out Lines

Drawing or importing curves, the curve is default no have any cut in/cut out lines.

If want to add cut in/cut out lines, select the objects, then click 【 Edit 】 -> 【 Edit cut in property 】 , or click



. The following dialog box is appear.



To make cut in/cut out lines, first of all need to enable the cut-in/cut out function.

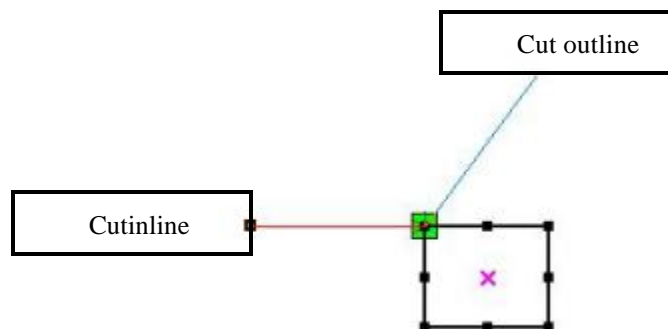
There are two types of the cut in/cut out lines: straight line and arc

Straight line cut in achieve through three ways:

Cut in with angle: cut in line and starting segment into a certain angle , counter clockwise angle is positive

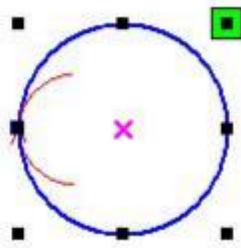
Cut in at center, the starting point of the cut in line is at center.

Cut in from center , the direction of the cut in line is from center to starting point, and length is as setting.

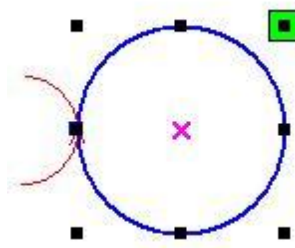


The arclength of cutinarcisassetting.

There are two types of cut in/cut out arc, as shown in the following figure



Fe




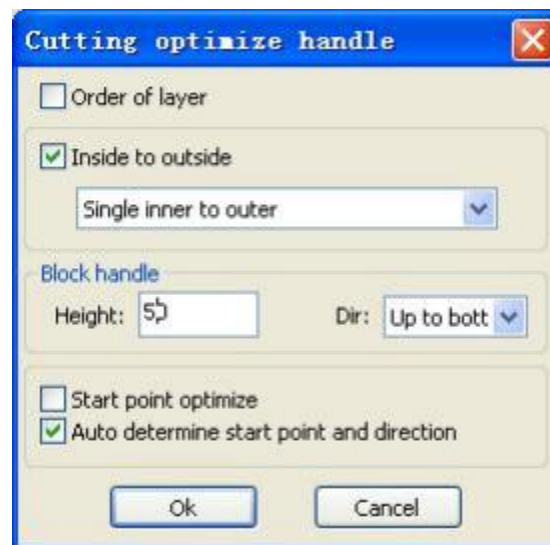
Male



The processing of setting cut outlines is same as cut in lines.

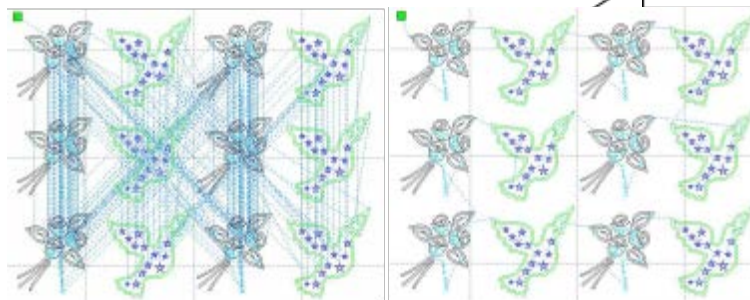
## 2.13.3 Path Optimization

Path optimization is primarily to re-order the vector graphics.

Click menu 【Handle】 -> 【Cut optimize】, or click , the following dialog box appears.



Click menu 【Edit】 -> 【ShowPath】, or click , can see the cutting path.  Laser processing.



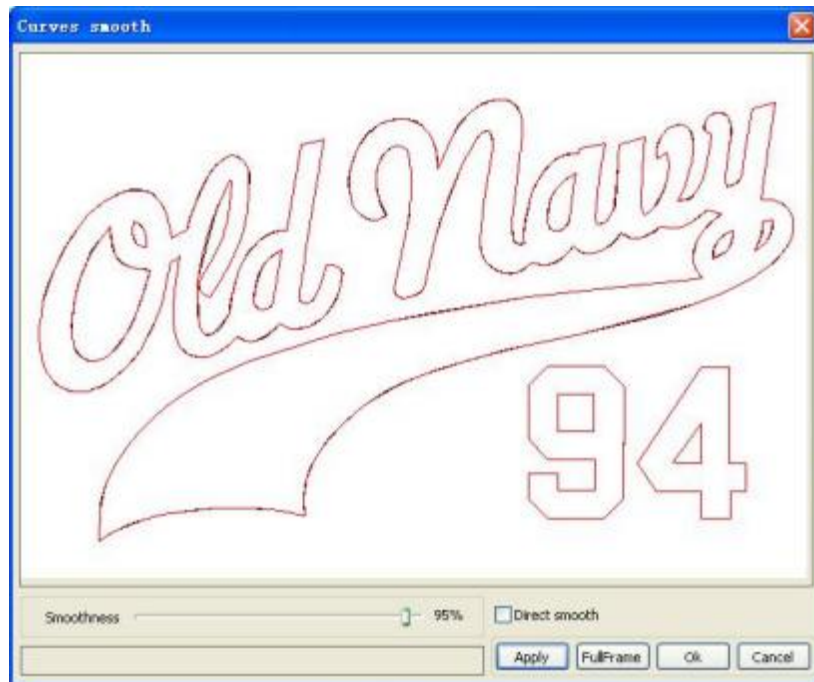
Before processing After processing

Graphics cutting path is always starting from the laser head.

## 2.13.4 CurveSmooth

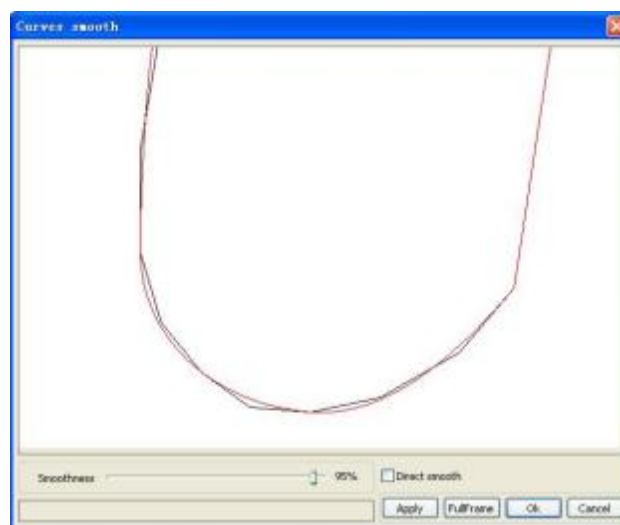
For some less accuracy curves, this function can make curves more smoothness, and processing smoother.

Click menu **【Handle】** -> **【CurveSmooth】**, or click **N**, the following dialog box appears.



Drag the smooth slider, and click button **【Apply】**, before smooth and after smooth curves will all show in the dialog.

The black curves represent the original curves, and the red curves represent after smooth curves.



You can view the graphics with drag mouse.

You can zoom in/zoom out the graphics with scroll wheel.

Click button **【FullFrame】**, graphics will show in the dialog box for largest.

After getting satisfied smoothing effect, click button **【Apply】**, curves will process smooth according to smoothness settings.

Select "Direct smooth", you can use another smoothing method.

The choice of smoothing method should be changed with the needs of the actual graphic.

## 2.13.5 Check Closure

Click menu **【Handle】** -> **【Curve autoclose】**, or click SystemBar , the following dialog box appears.

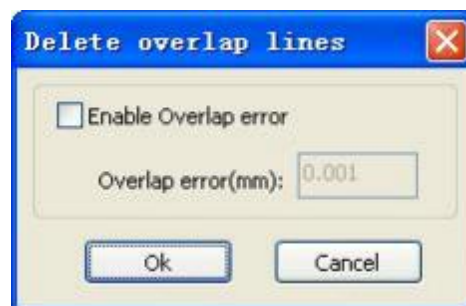


Close error: When distance from the starting point to ending point is less than close tolerance, automatic closing of the curve.

Force to close: Mandatory closure of all selected curves.


## 2.13.6 Remove The Overlap

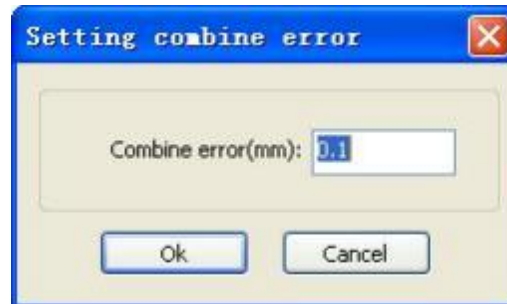
Click menu **【Handle】** -> **【Delete overlap】**, or click , the dialog box appears.



Under normal circumstances, do not select the "Enable Overlap error". Removing the overlapping lines when two lines are compared to a good degree of coincidence. If you need to delete overlapping lines, you should select "Enable Overlap error", and set overlap error. Generally, do not set overlap error too large, so as to avoid accidental deletion.



## 2.13.7 CombineCurve

Click menu **【Handle】** / **【CombineCurve】**, or click , the following dialog box appears.



The software automatically merge curves in the selected curves, when these curves merge tolerance is less than the setting of combine error.

## 2.13.8 BitmapHandle

Click , and select a bitmap, then click menu **【Handle】** -> **【Bitmaphandle】**, or click System Bar .



In the top right of the dialog box displays the information of the current image.

Be noted that, the horizontal resolution and vertical resolution is changing with drag scaling.

**【Apply to view】**: Current settings is only used for preview, without affecting to the original bitmap,



pressbutton **【Cancel】** , bitmapwillreturnedtothestateoforiginalimage. Therefore,onlyuseforadjust effect.However, thisapproachrequiresmore timeandmemory Space.

**【Applytosource】** : Currentsettingsisusefororiginalbitmapdirectly, soevenfinallyclickbutton **【Cancel】** , imagewillalsounabletoreturntotheoriginalimage. Therefore,itmainlyusedinmulti-step operation , andthecurrentoperationofthisstepisnecessarytodo,suchasgeneralpicturesmustbe transformedinto gray scale. This can save thecomputing timeof thefollow-upoperation.

**【Saveas】** : Retain theresultsof thepreviousoperation,Inaddition tousing **【Apply to view】** canalso beexported。 Onthisbasic, tofacilitatesubsequentprocessing.

**【Grayscale】** Generally, otherimageprocessingisbasedonthe grayscale, sobeforehandling,you candoagray scaleprocessing, thenclickbutton **【 Apply tosource 】** 。 For thegrayscalethanthe colorimageoccupiedsmallermemory , forlargeimagestepbystephandle,toacertainextenttoavoidthelackof memory.

Forcolorimage, adjustcontrastandbrightness, havesomeauxiliaryeffecttofollowingdither processing.

Adjust contrast:



BeforeprocessingAfterprocessing

Invert:





BeforeprocessingAfterprocessing

Sharp:



BeforeprocessingAfterprocessing

Therearethreemethodforditherprocessing: Netgraphic、Dotgraphic、Blackandwhite.

### Net graphic

Netgraphicneedadjustnetsize, bettersuitedtomaterialwhichisnothighresolution, orthelaseris relatively slow torespond.

To get the appropriatenet size, youcanadjustresolutionandnet frequencyof theimage.

Thehigherresolution, themore delicate.

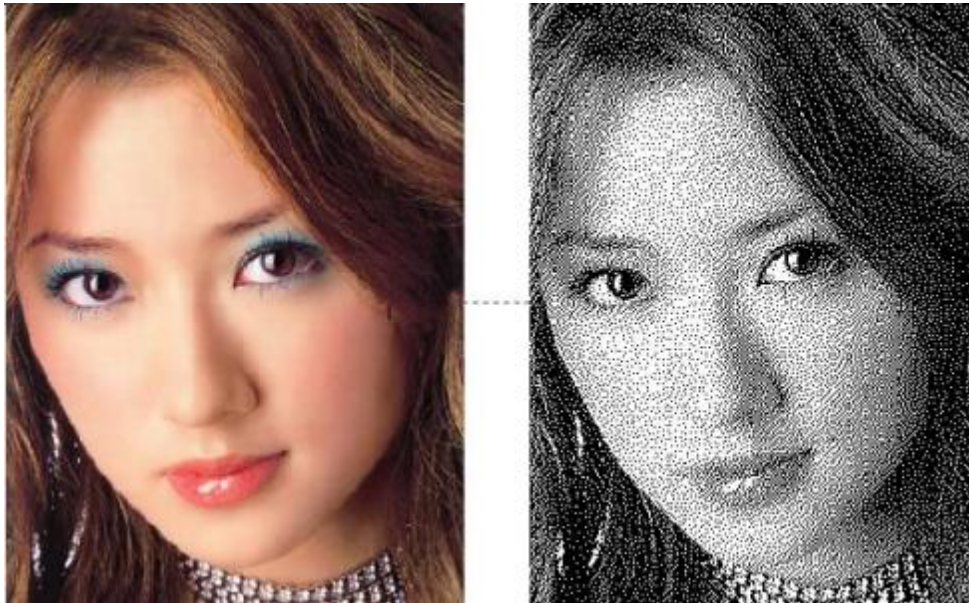
Thehighernet frequency,the smallernet size.Thelowernet frequency, thebiggernet size.

Generally,resolutionofimageis500 -1000,andnetfrequencyis30-40lines.



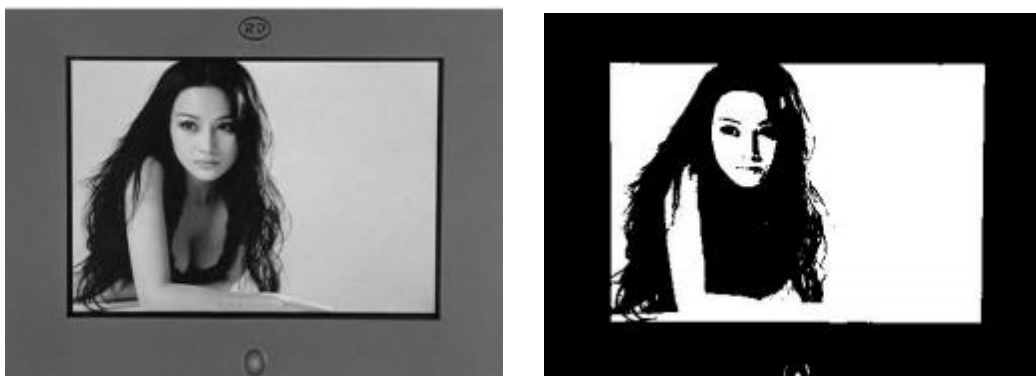
### Dot graphic

Dotgraphicperformanceofgoodgrayscale, bettersuitedtomaterialwhichishighresolution,and thelaserresponds fast.

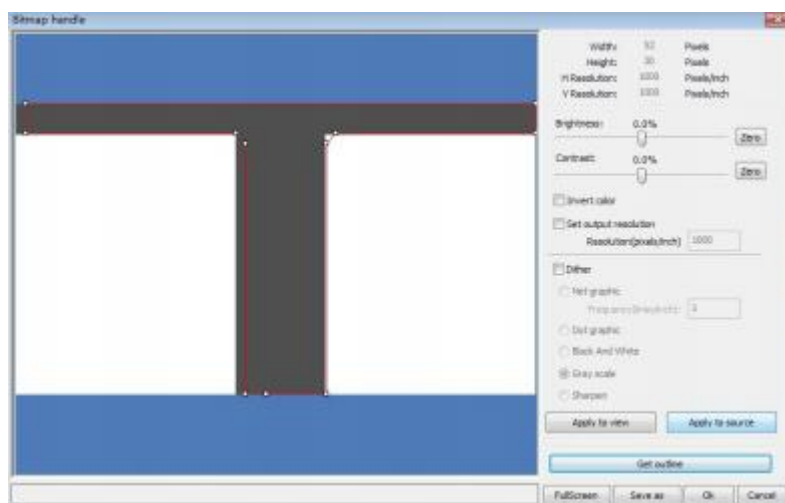


### Black andwhite

In most cases, the effect of color image into black and white image is poor, however, for some clear outline image, it is very easy to use.



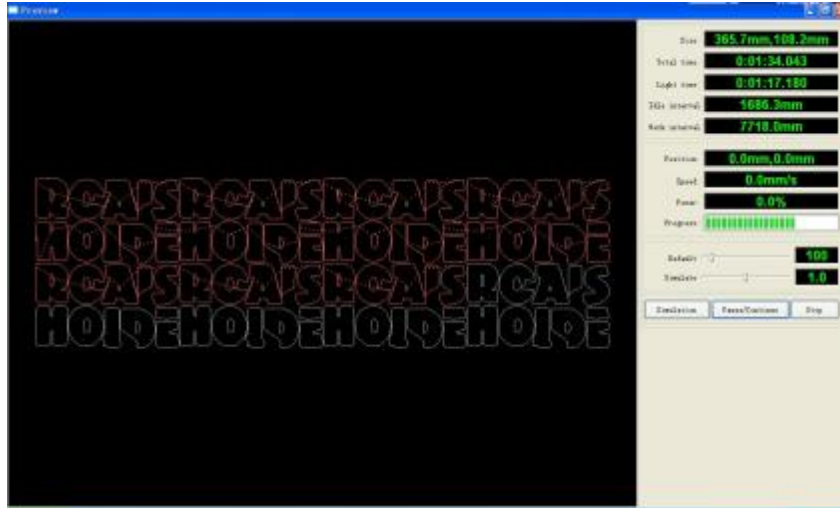
Get outline:



Click "Get outline" button to extract the contour graph. As following picture.

## 2.13.9 Processingpreview

Clickmenu 【Edit】 -> 【Preview】 , orclickSystemBar  .

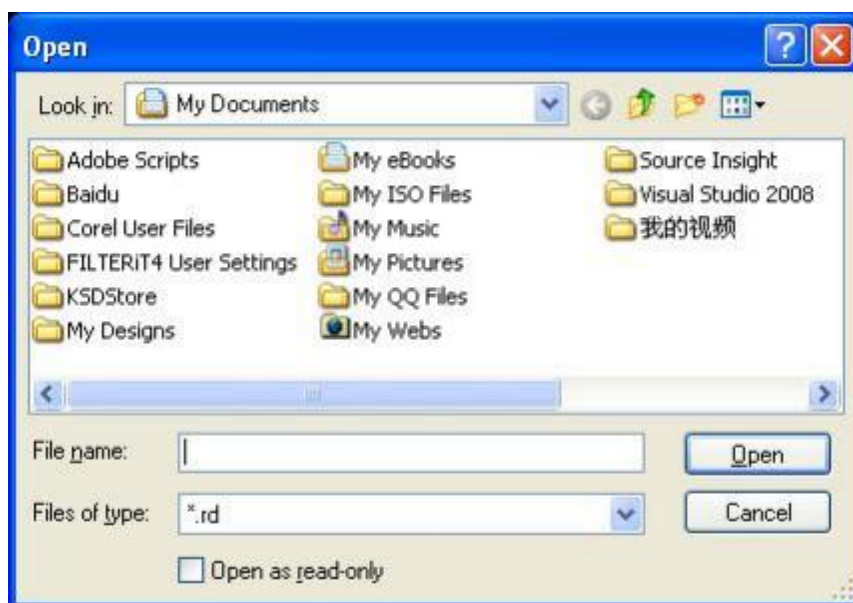


Software supportsthepreviewofthedocumentstobeprocessed,andyoucangetsomebasicinformationthrough thepreview.Forexample,thepathoftheactualoutputoftheprocessing,general processing time,processing the distance. Themachiningprocesscanbe simulated.

In addition to thecurrent edited filepreview, youcanalsopreviewthefileshavebeensavedasrd.

Previewrdfile:

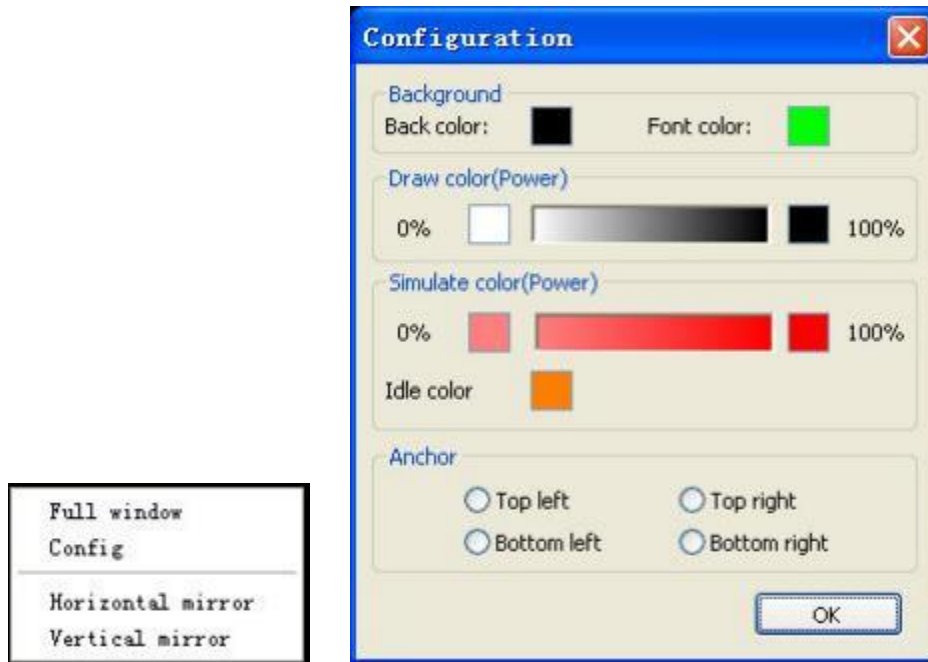
Double-clickinthegraphicsdisplayarea. Choosethegraphicyouwanttopreviewinthe pop-up dialogbox. And thenopen



Software also supports to set theparametersofpreview


Right-click Anywhere in the graphics display area, the configuration menu will appear.

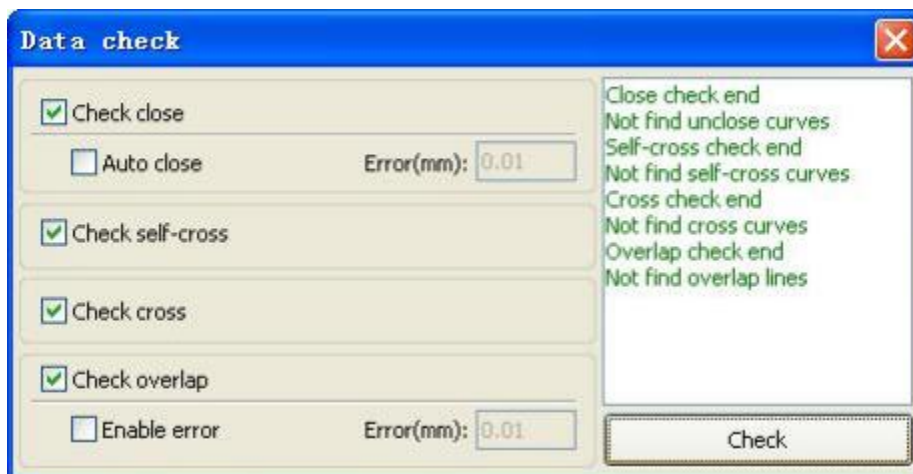
Select "Config", pop-up following dialog box



You can preview the color of graphics to match the actual output of energy. Users can easily view whether the layer energy is true.

## 2.13.10 Data check


Selected to check after the graphics, click on the menu commands 【Handle】 / 【data check】, or click system toolbar .



Data check, integration of the closed inspection, the inspection, the intersection of the fellowship data overlap check. The user can select a check, inspection to the problem after data, will be in the dialog box right tip have been found and, at the same time, the problem in selected state graphics. Check-> ruled out repeatedly error-> inspection process until all the data are conform to the

requirements of the processing.

## 2.13.11 Generation parallel lines

Selected to create parallel lines after the data, click on the menu command the 【 Handle 】 / 【 Offset poly 】 , or click system toolbar .



Red line in the figure for the original graphics, green line is inside shrink graphics.

## 2.13.12 LGP design

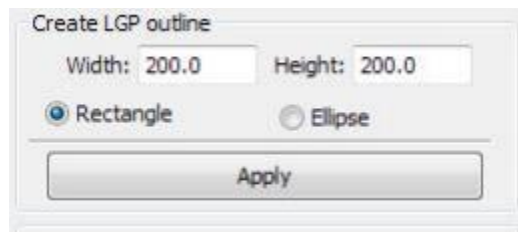
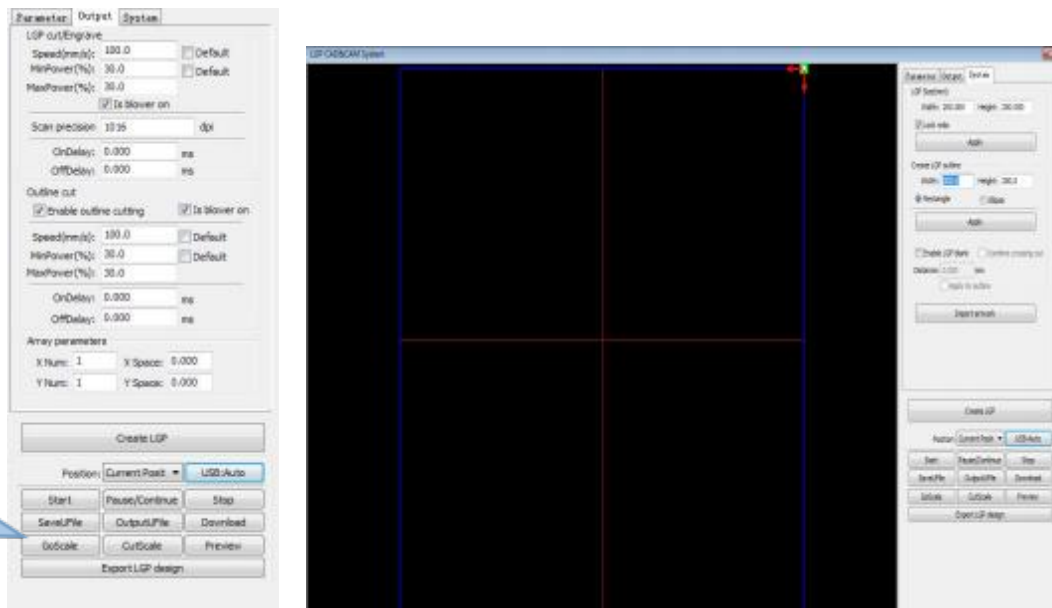
Click the menu command the 【 edit 】 / 【 LGP design 】 , or click drawing toolbar, already can start reflex block design tools, the tools are specific to block the sun processing, is an independent functions, such as the user is not involved in the sun block can be ignored this section processing content.

Play channel tabular as a design tools, we first need to design a reflex guide the outline. Play channel tabular as a design tools, we first need to design a reflex guide the outline. Play channel tabular as a design tools, we first need to design a reflex guide the outline.

In the tool, the default created a 200X200 rectangular guide tabular as a outline. The user can in the tools of "system" page manually create a standard to the shape of the guide tabular as a outline.



Software also supports the  
no flight guide plate  
export to RDWorks  
program for processing



Create standard setting the outline can use rectangular or oval. The user can also import a good graphic design, as the outline of the sun. Click on the "introduction to guide tabular as a contour" button, can choose to have the outline of the document as the sun. Need to point out that outline file must be closed graphics, otherwise, the system will automatically delete.



If the outline of import size requirements, users can also change size outline, and can set up if stay white edge.

Outline graphics ready, they can start on the tabular as increase network.



Network is divided into six ways: horizontal, vertical line, elliptical, rectangle, reticle and the grid.

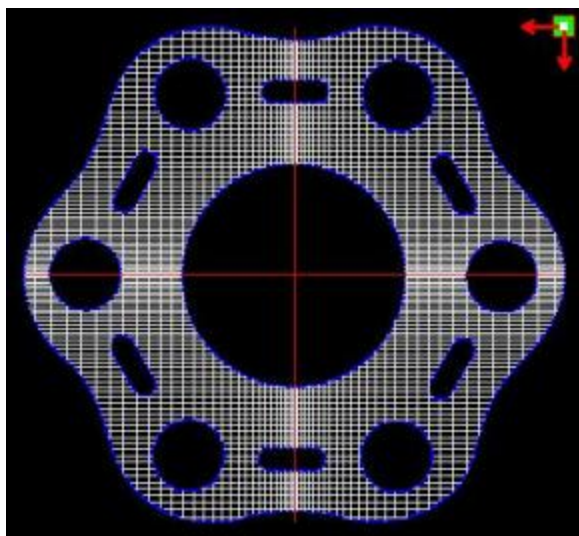
Baseline related with light source, the user can adjust the baseline position according to the light source. In the figure above, the reticle marker is the baseline, users can move the mouse to baseline, press the mouse, and then drag the baseline to the wanted position.

The entire guide baseline reflex is divided into four regions, level above baseline definition for uplink and downlink below defined as; Vertical baseline definition for the left column on the left, the right to define right column.

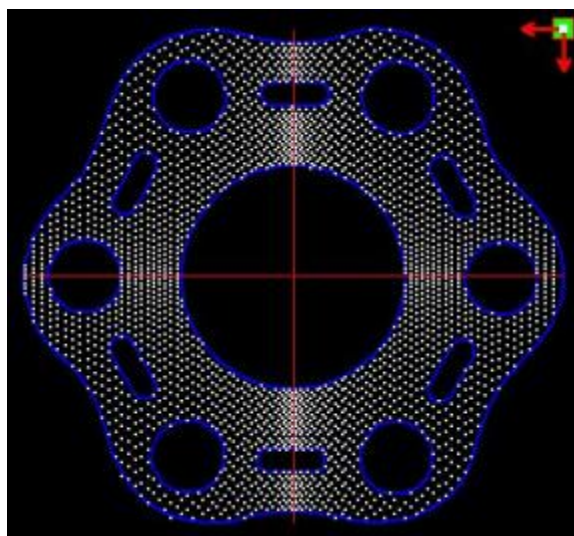
Set respectively size and spacing network respectively in up, down, left column, the right column initial value and the gradient of the change, can form users want to conducting tabula rase effect.

For grid way, must set exercise can/column that can, can appear the grid.

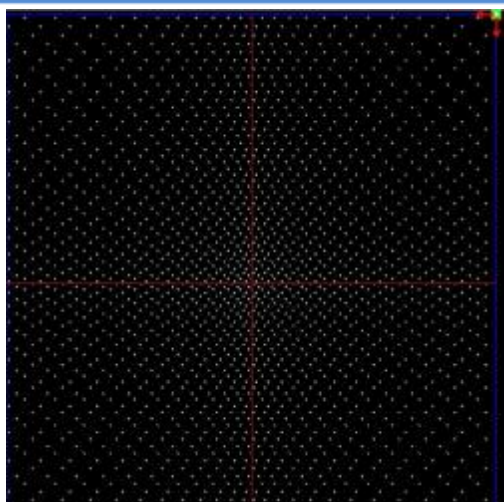
For the convenience of application, the system top provides the light setup, if the light source is a standard, can choose the light source, then set the network parameters can be, do not need to adjust the baseline. At this time, baseline shows shades also.



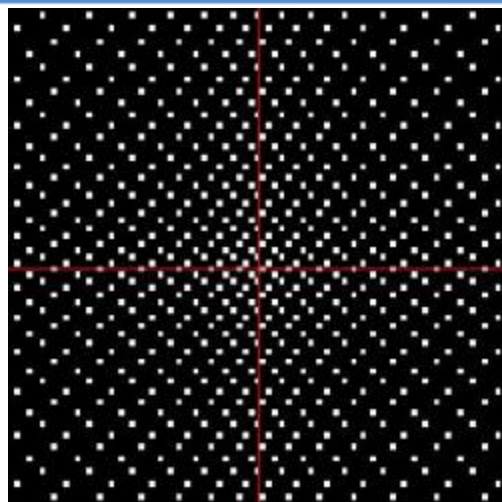
Gridway



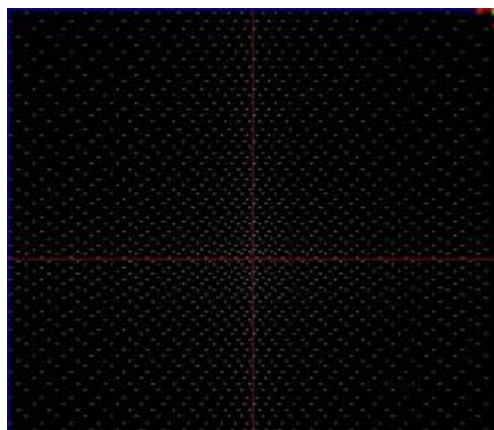
Ellipticway



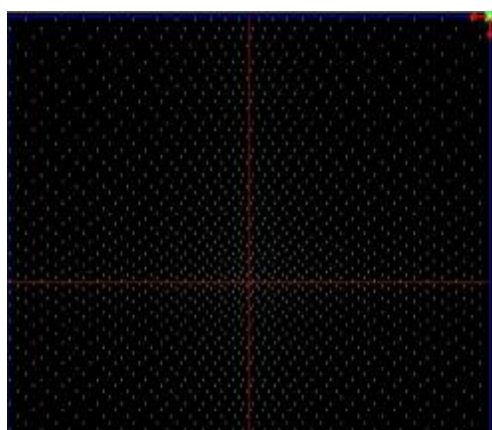
Reticleway



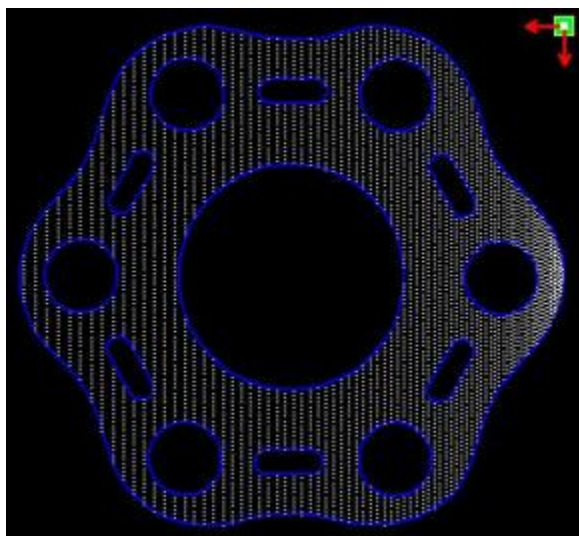
Rectangleway



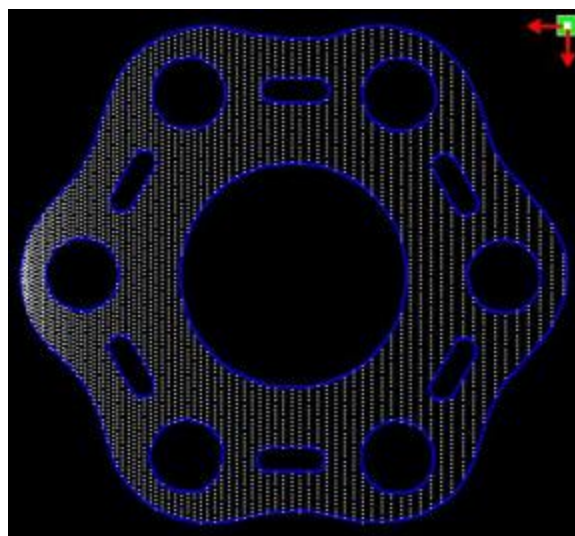
Horizontal line



Vertical line

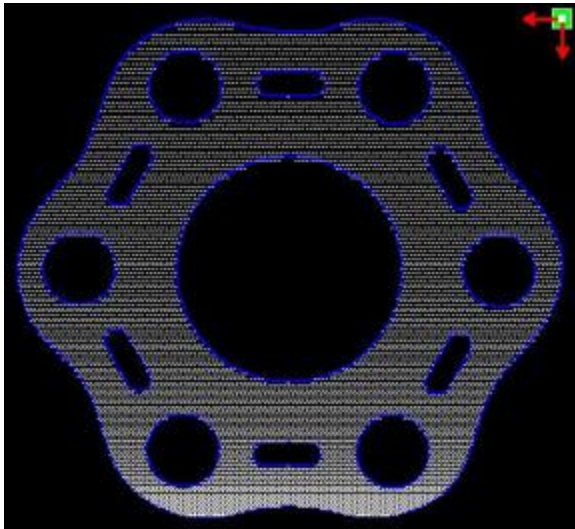


Left light source

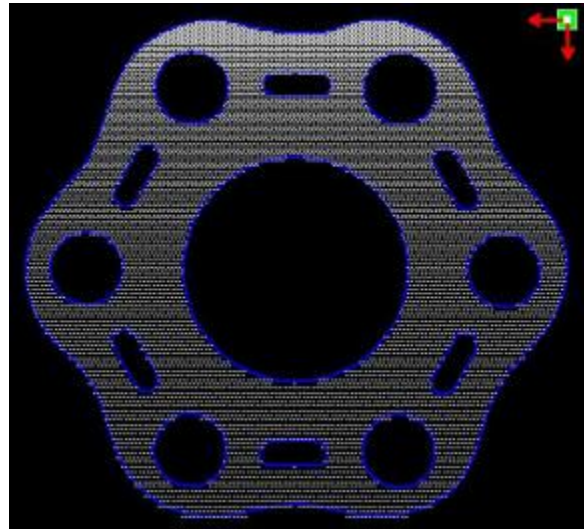


Right light source





TopLight source



Bottomlight source

horizontal,verticalLine,reticle,elliptical,rectangular ways thenetwork scanningmode ofoutput.

Scanningmode, theminimumenergy,maximum energy generalissame,and dedicationof thedelayis 0. By adjusting the scaningsystemprecision, toadjust the scanning of thedensity, themore accuratelythe scanning scanline secret, scanning theloweraccuracy the scanlinessparse.

The gridprocessingmethodsis cutting,and scanningnotprecision,and canbe adjusted according to theactual effect, themaximum andminimum energy energylight switchdelay, generally speaking, theleast energy slightlylower than themaximum energy.

Ifneed to cut thereflex theoutline,makecan contour cutting. Aboutcuttingparameters and common cutting Settingsidentical,inherebyhere.

Ifneed topress arrayin the wayprocessingmore panels,canbe set to arrayparameters; Arraydirection along themachineis always theoriginin theopposite direction.

LGP cut/Engrave	
Speed(mm/s):	100.0 <input type="checkbox"/> Default
MinPower(%):	30.0 <input type="checkbox"/> Default
MaxPower(%):	30.0
<input checked="" type="checkbox"/> Is blower on	
Scan precision	1016 dpi
OnDelay:	0.000 ms
OffDelay:	0.000 ms
Outline cut	
<input checked="" type="checkbox"/> Enable outline cutting	<input checked="" type="checkbox"/> Is blower on
Speed(mm/s):	100.0 <input type="checkbox"/> Default
MinPower(%):	30.0 <input type="checkbox"/> Default
MaxPower(%):	30.0
OnDelay:	0.000 ms
OffDelay:	0.000 ms
Array parameters	
X Num:	1 X Space: 0.000
Y Num:	1 Y Space: 0.000
Create LGP	
Position: Current Posit <input type="button" value="USB:Auto"/>	
<input type="button" value="Start"/>	<input type="button" value="Pause/Continue"/>
<input type="button" value="Stop"/>	
<input type="button" value="SaveUFile"/>	<input type="button" value="OutputUFile"/>
<input type="button" value="Download"/>	
<input type="button" value="GoScale"/>	<input type="button" value="CutScale"/>
<input type="button" value="Preview"/>	
<input type="button" value="Export LGP design"/>	

# Section 3System Settings

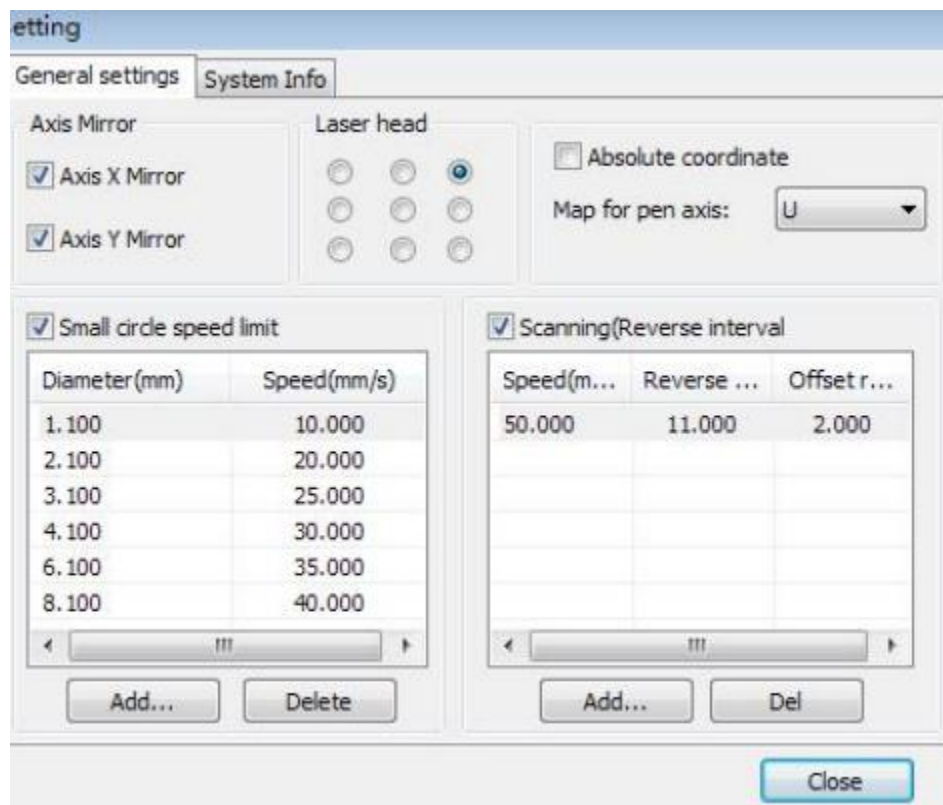
## CONTENTS:

- General settings
- Systeminfo
- User parameters
- DocumentManagement

## 3.1 General settings

Before output graphics, required to determine whether the system settings are correct. Click menu

【Config】->【System Setting】



### AxisMirror

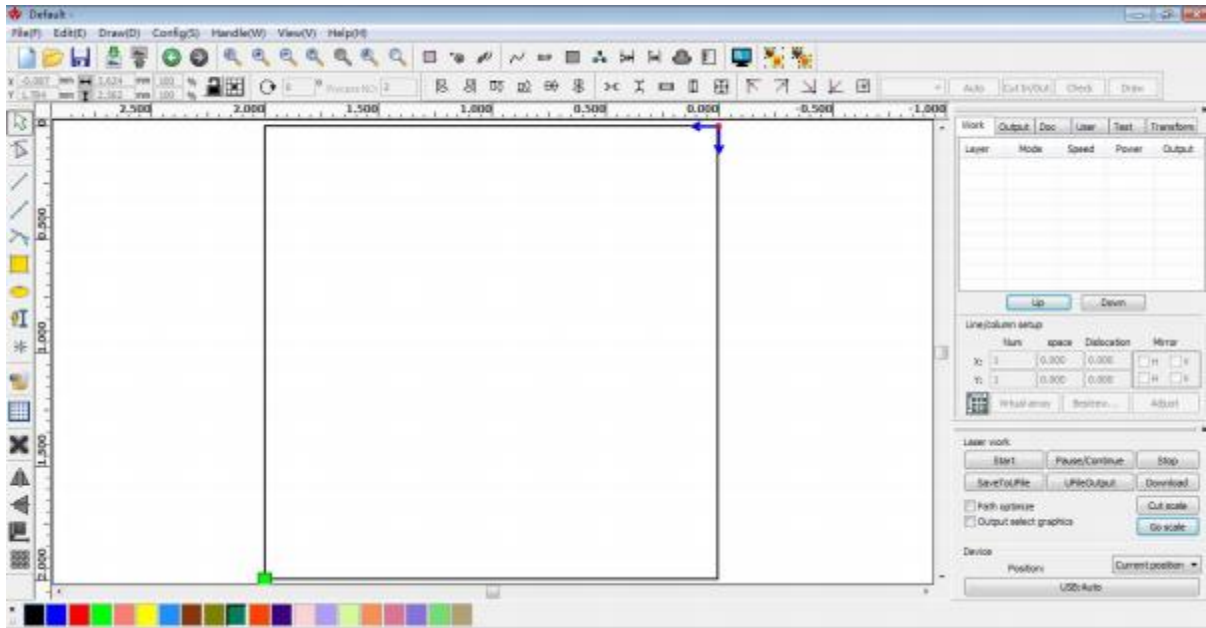
Generally, Axis direction of mirror is based on the actual location of the limit or home of machine.

The default coordinate system is Descartes coordinate system, and zero in the bottom left.

If the zero point of the machine is top left, then X-Axis does not need to mirror, but Y-Axis needs to mirror.

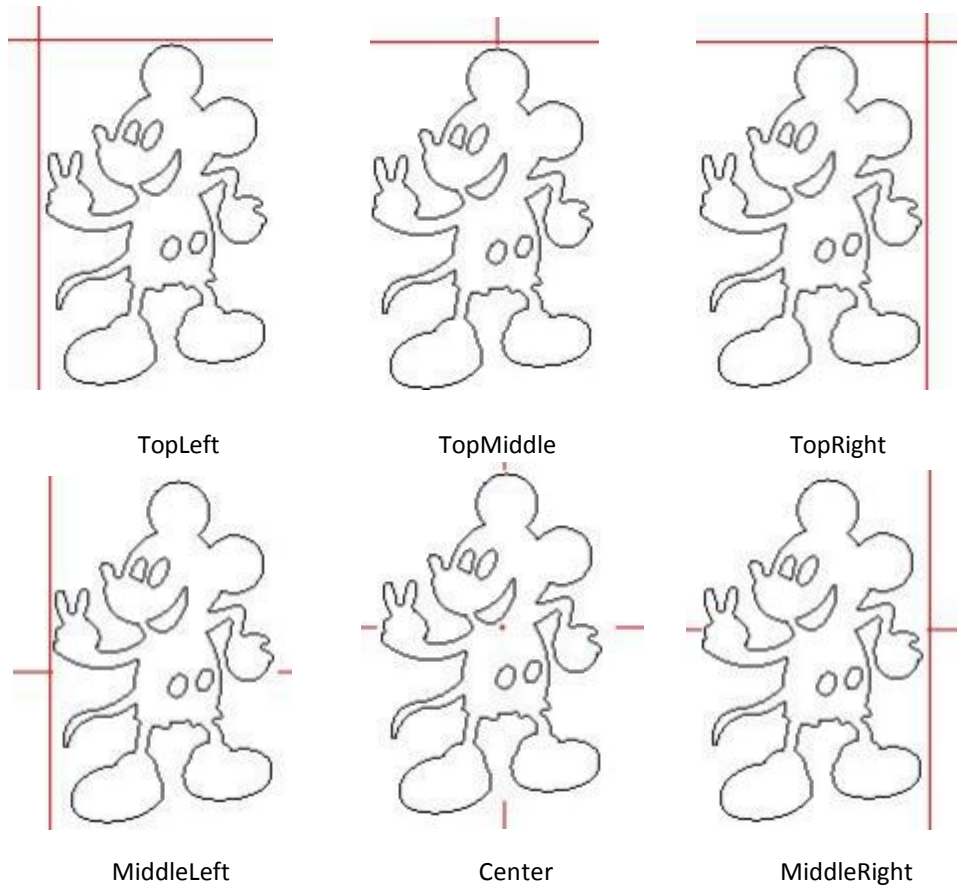
If the zero point of the machine is top right, then both X-Axis and Y-Axis are all need to mirror.

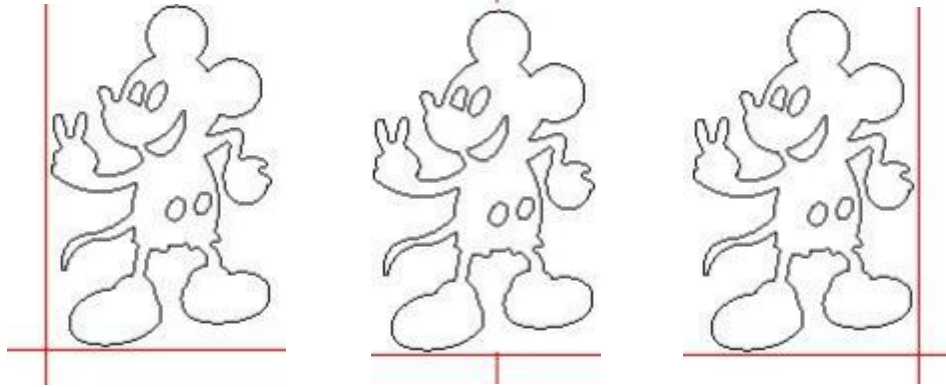
In addition, this function can also be used to the application for mirror.



### Laserhead

Position of Laserhead means the location of laserhead relative to the graphic.



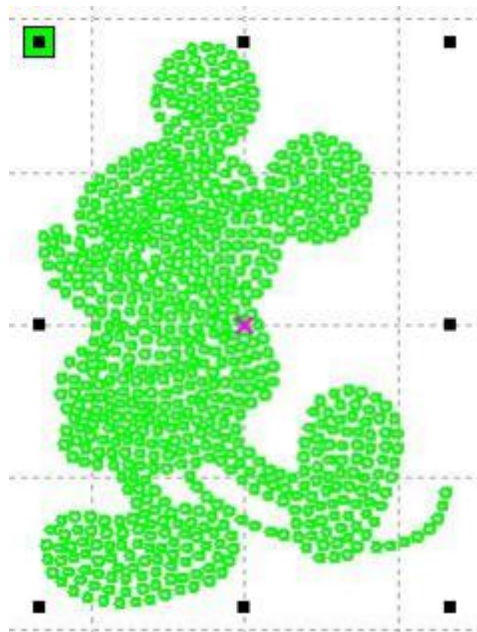


BottomLeft

Bottom

BottomRight

when you intuitive view, just look at the zone where the green point appears.



#### Absolute Coordinate

You can directly check this option when you want the graphics location in the graphics display area correspond to the actual work location of processing. Then the graph position will no longer relate with the actual output position of the laser head and orientation point, but always regard mechanical origin as the anchor point.

#### Put pen to paper axis mappings

If machines have been installed the life platform, and need for processing on different platform height

#### Small Circle Speed Limit

On processing work, the software automatically determine whether the current round need to limit speed, then according to the diameter size of the circle to determine the speed. If parameter



configuration appropriate, will greatly enhance the quality of small round. Click button **【Add】**, **【Delete】**, **【Modify】** to configuration.

Small circle is less than speed of the rules limiting the list of small round circle of minimum radius, minimum radius circle at the speed of the output of the corresponding.

If the speed greater than maximum speed limit list the speed round, the speed only associated with the speed of the layer.

If the speed is in the list, set the output speed by list.

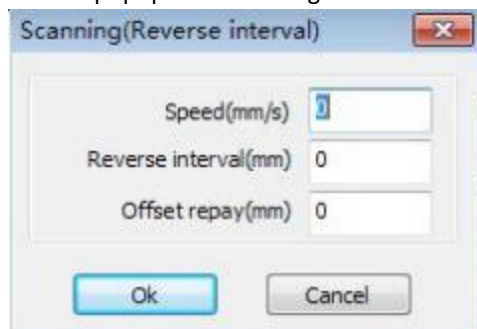
If the request received by limiting layer parameters faster than the speed set in the layer, press the speed of the output layer.

### Scan backlash

Laser scanning graphic way, because the relationship between the machine belt tension may cause the edge of the scanned graphics uneven. Therefore, increasing backlash to fix. It has the specific backlash for the certain speed. General, the greater the speed, the greater the backlash.

#### ① Add backlash

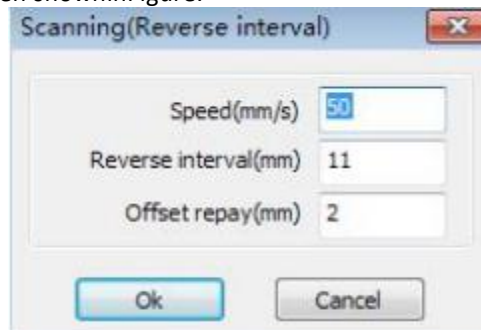
Click the Add button, the screen will popup as shown in Figure



Set speed and backlash, click OK, the value to be inserted into the list of backlash.

#### ② Modify backlash

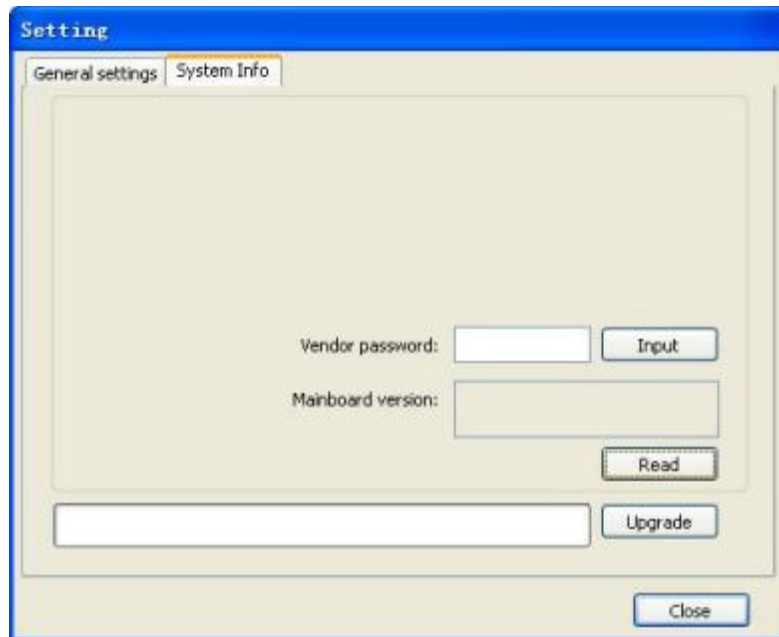
Double-click the left mouse button scanning (reverse gap) need to modify the reverse block entry clearance, then the pop-up screen shown in Figure.



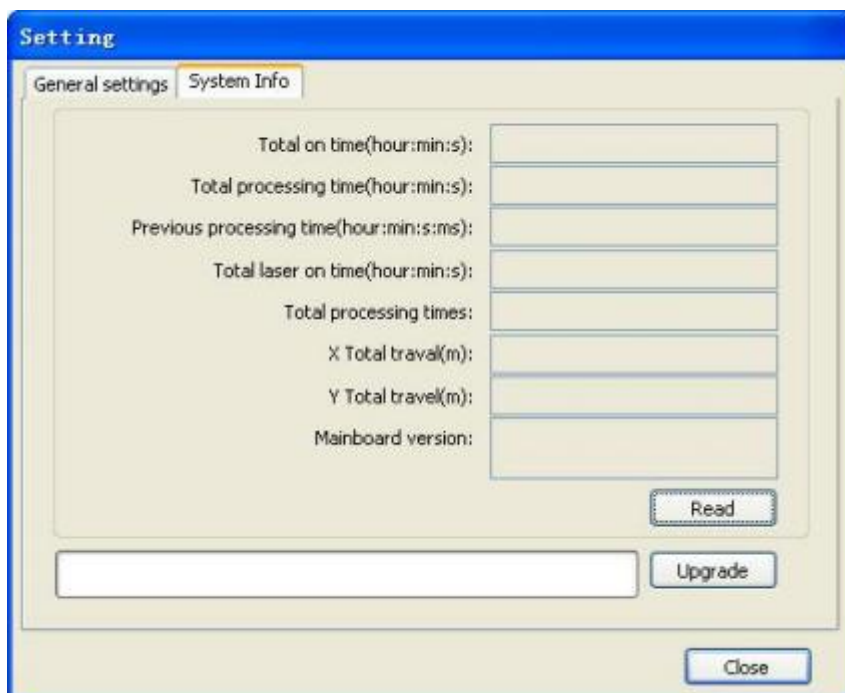
In the interface can modify the current speed of the corresponding backlash.

#### ③ Remove backlash

## 3.2 System info



Information on the operation of the motherboard manufacturers need to enter password to view parameters.



Total on time: The total time of motherboard working

Total processing time: The total time of processing, including the time of jump moving.

Previous processing time: The time of the last processing

Total laser on time: The time of the laser processing

Total processing times: The number of completed processing, not including the processing forcing to end.

X total travel: The total travel of motor X.

Y total travel: The total travel of motor Y.

Motherboard version: The version of the current controller.

The function of upgrades:

If the board has additional features, the manufacturer will provide the update file (\*.bin format), the user can load the upgrade file to upgrade the motherboard. After the upgrade, you need to click on the control panel "Reset" button to reset the motherboard before normal use.

### 3.3 User parameters

Work	Output	Doc	User	Test	Transform
<input type="checkbox"/> Cut parameters					
Idle speed(mm/s)				300.000	
Idle Acc(mm/s <sup>2</sup> )				2000.000	
Idle Delay(ms)				0.000	
Start speed(mm/s)				20.000	
Min Acc(mm/s <sup>2</sup> )				500.000	
Max Acc(mm/s <sup>2</sup> )				2000.000	
Acc factor(0%-200%)				80	
G0 Acc factor(0%-200%)				120	
Speed factor(0%-200%)				80	
Key setting					
<input type="checkbox"/> Sweep parameters					
x Start Speed(mm/s)				20.000	
y Start Speed(mm/s)				20.000	
<input type="button" value="Open"/> <input type="button" value="Save"/> <input type="button" value="Read"/> <input type="button" value="Write"/>					

Reading the board parameters must be before operating the user parameters.



### 3.3.1 Cutparameters

Cut parameters	
Idle speed(mm/s)	300.000
Idle Acc(mm/s <sup>2</sup> )	2000.000
Idle Delay(ms)	0.000
Start speed(mm/s)	20.000
Min Acc(mm/s <sup>2</sup> )	500.000
Max Acc(mm/s <sup>2</sup> )	2000.000
Acc factor(0%-200%)	80
G0 Acc factor(0%-200%)	120
Speed factor(0%-200%)	80
Key setting	

Idlespeed: thisparameterdecidesthemax. speedofalllinesnotemittingbeamsduringthe operationofthemachine.Thisparametershouldnotbelowerthanthelowerofthejump-offspeedoftheX-axisand thatof the Y-axisandnotexceedthehigherof themax.speedoftheX-axisandthatoftheY-axis;if thesettingisillegal, thecontroller willautomaticallyset thisparameterwithin therangeabove;acomparativelyhighidlingspeedcanshortentheoperationtimeoftheentirefigurewhileexcessivel yhighidlingspeedmaycauseditheringofthetracks,therefore,youshouldtakeallrelevantfactorsinto consideration whensetting.

Idle Acc:Corresponds to theaccelerationof thespeedofair travel time,airandair-way- wayspeedofaccelerationtomatch,ifyousettooslowtheactualspeedmaynotreachtheair- waysetvalue;ifsettoofast,theymaynotwithstandthemechanicalstructure,resultingjitter.Slightlyhigherthanthe g eneral acceleration of air-way cutacceleration.

CuttingAcc:Correspondingtotheaccelerationof thespeedofcutting(cuttingspeedisthespeedof thelayerparameters of thelayers).

Accfactor:thecorrespondingcoefficientofemptywalkingspeed,the greatertheratio,the greater the idlespeed.

GoAccfactor:Correspondingcoefficientofcuttingspeed,thebiggertheratiothegreaterthecutting speed speed faction:Round thecorner turning speed,the greaterthecoefficientislarger.

Turningspeed: Turning thecorrespondingdecelerationinthecuttingprocess, theminimumspeedofthedrop,whenprocessingalotofteethwhenthegraphicsmaybeappropriatetoreducethetur ning speed.

Turning Acc: Shouldmatch with the turningvelocity.

Cutting mode: Split precision cutting, fast cutting, ultra-fast cutting, the user can choose according to the actual applications. Such as the emphasis on accuracy, select the precision cutting, such as emphasizing speed, select the fast cutting.

### 3.3.2 Sweep parameters

<input type="checkbox"/> Sweep parameters	
x Start Speed(mm/s)	20.000
y Start Speed(mm/s)	20.000
x Acc(mm/s <sup>2</sup> )	3000.000
y Acc(mm/s <sup>2</sup> )	2000.000
Line Shift Speed (mm/s)	150.000
Scan Mode	Common Mode
Facula Size(50~99%)	98.000

xStartSpeed,yStartSpeed:Offscanningspeedintheuseofsteppermotordrag,donotbegantoaccelerate from0,butcanstartworkdirectlyfromaspeedtoshortentheoverallprocessingtime,butthespeedisnot toohigh,andbecause the X, Yaxialloadisdifferentfromtherate,generaltheinitialspeedof X-axis slightlyhigher than theinitial speedof Y-axis

xAcc,yAcc:Withthescanningspeed(thespeedoflayersinthelayerparameters)tomatch,ifsettoosmall,thescan speedtoalongerdistance,thescanningefficiency.Themachinecanbesetaccordingtotheactualstructure,loadcondi tionsvary.SinceX,Yaxisload,generallymuchhigherthantheX-axis Y-axisaccelerometer.

Line shift speed of scanning:thisparameterisspeciallyusedtocontrolthemax.speedof the scanningtoshiftverticallyfromonelinetothenextlinebelowit.Ifduringthescanning,thelinespaceistoolargeorthel blockspaceistoolargewhenscanningblockfigureswhileprecise positioningforeachlineorblockisrequired,youcansett helineshirtspeedofscanningtoacomparativelylowvalue.Thisparametercannot be lessthanthejump-offspeed ofthe correspondingaxisduringthe line shiftand cannotbehiger than themax. speedof thecorrespondingaxis duringthelineshift,if thesettingisillegal, the controller willautomatically set thisparameter withintherangeabove.

Scanmode:Therearetwomodesforyourselection:thegeneralmodeandthespecialmode,inthegeneralmode, there'snoany treatmentduring thescan,in thespecialmode,lightspotswillbetreated.If thespecialmodeisactivated, thepowerof thelasersshouldbeincreasedandcorrespondingly, thelightspotpercentagewillbelowerandthelaserpowerattenuationwillbehiger,toachievethesamedepthofscan ning, thelaserpowershouldbehiger. Thepurposetoselect thespecialmodeis tomake thelasertoemitbeamsathighpowerandinsortperiod, duringdeepscanning, theeffectofflatbottomcanbeachieved,however, ifthelightspotsareimproperlyadjusted,thiseffectmaynotbe achievedand theworkingmodeofhighpowerandshortperiodmayinfluence theservicelifeof thelaser. The defaultmodeis the generalmode.

FaculaSize:Whenscanning thegeneralpatternofselection,theargumentisinvalid,whenyouselect aspecialmode,theonsetoftheparameters.Controltheparametersofcontrolin50%to99%,

respectively.

### 3.3.3 Home parameters

Home para	
Home speed(mm/s)	150.000
Auto home X	No
Auto home Y	No
Auto home z	No
Auto home U	No

Homespeed: This parameter determines the machine is turned back to the origin when the speed of a larger format if the machine can be set to reset the speed is too large, but not too much.

X, Y, Z, U Auto home: The axis can be set whether should reset at boot time.

### 3.3.4 Feeding parameters

Feeding para	
Delay before feed(s)	0.000
Dealy after feed(ms)	0
Progressive feeding	No
Progressive feeding repa	0.000

Delay before feed: when using the feeding device, as a single delay before feeding, the user can arrange such as sorting material at this time.

Delay after feed: refers to material feeding device to reach the designated position, need stability for a period of time before processing.

Progressive feed: feed unit will material sent to in place of one line is away off feeding.

### 3.3.5 Go Scale parameters

Go Scale para	
Go scale mode	Close laser
Go scale blank(mm)	0.000

Go scale mode: Point of light to go off the border, the opening cut borders, corners three modes.

Goscale blank: Walking frame can be based on the actual image size up and down again about the direction of some of the white left side of the border in order to ensure complete contains the actual graphics.

This setting is on the control panel to go with the border-related functions, while walking on the

border with the independent software.

### 3.3.6 Other parameters

Other	
Array processing	Bi-dir Array
Return position	Origin
Focus depth(mm)	0.000
Backlash X(mm)	0.000
Backlash Y(mm)	0.000

Array mode: you can choose the swing mode and the one-way mode. The Swing mode: cutting the array back and forth in order; the One-way mode: always cutting the array from one direction to another. If One-way mode is selected, all array units have the same movement modes and the same liquidity of movement, however, the is mode will take more time than the swing mode. The default mode is the Swing mode.

Return position: You can select the locating point and the machine origin. This parameter decides the position, the locating point or the machine origin, where the laser head stops upon completion of each operation.

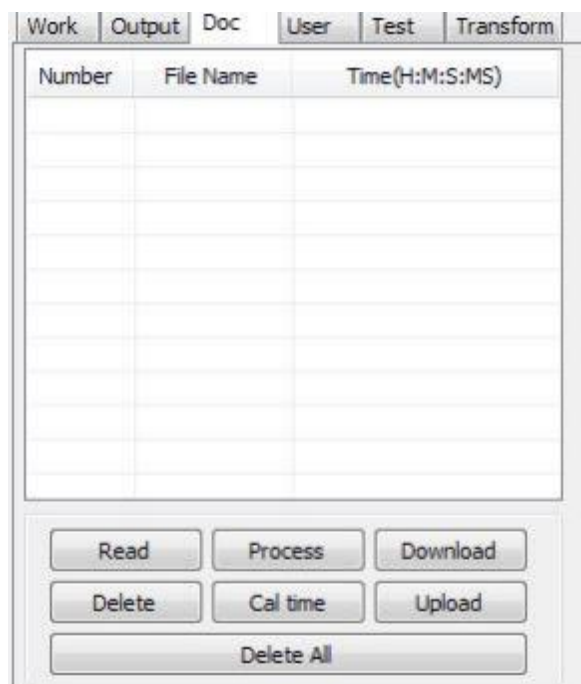
Delay before feed: Using the feeding device, the delay before a single feed, users can arrange the time and the like, such as a picking process.

Delay after feed: Refer to the material sent to the feed device in place, then the need for stability after a period of time for processing.

Focus depth: Auto focus operation to find the corresponding panel.

Backlash X, Y: Used to compensate the backlash caused by the machine drive problems.

### 3.4 Document Management



## Read

ClickbuttonRead, the software will communicate with the controller, read the list of files on the controller.

After read controllers successful, file information will be displayed in the document list.

## Download

ClickbuttonDownload, willpopupthefiledialog,select\*.rddownloadedfile,thenthefilewillbe downloaded to the controller.

If the download is successful, the document list will update.

## Process

Select the file to be processed from the document list, and click buttonProcess.

The controller will start the specified document.

## Delete

Select the file you want to delete from the document list, and click button Delete.

The controller will deletethespecifieddocument.

If the deletion is successful, the document list will be updated.

**Delete All**

Automatically remove all files in the controller, and update the document list.

**Cal time**

Motherboards support processing files towards hours worked. Select the file to calculate the work hours worked and click the button. Calculation to be completed, the control panel will be prompted to complete the calculation. And then point to read button shown in the list, calculated from the working hours.

In addition, when the document processing operation is performed, the hours information will also be covered by the actual processing work.

**uploading**

On the main board of these selected from read offline files, and saved to the computer.

# Section 4Processing Output

## CONTENTS:

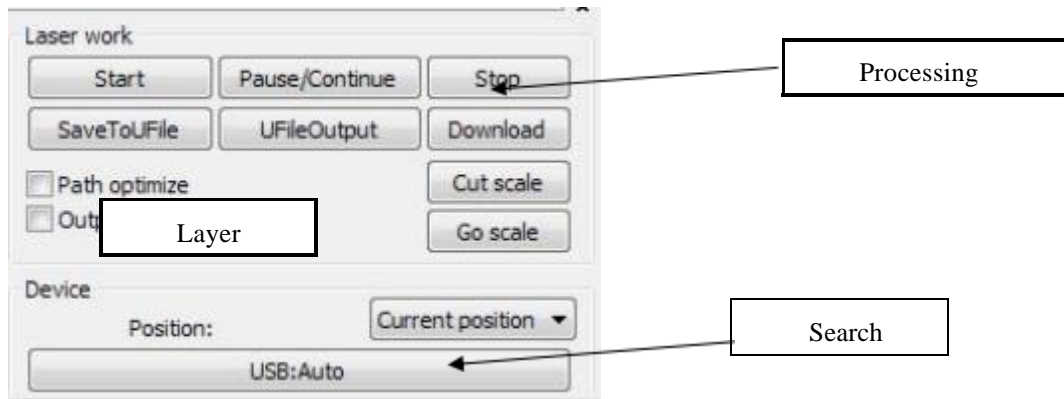
- SearchDevice
- Layer processing
- Position
- Go Scale、Cut Scale
- Start、Pause、Stop、Save To

Un File、Un File Output、Download

- Output select graphics
- Path optimize
- Test
- Output Setting
- Layer Settings
- Vendor settings



## 4.1 SearchDevice

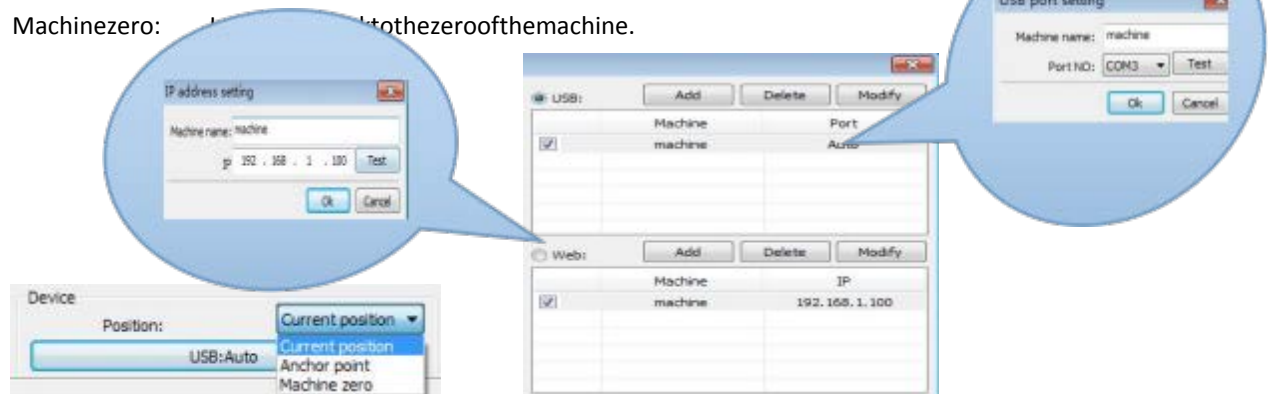


Linkdeviceintwodifferentways: USBandnetwork. ButthroughUSBportbuttononthepopup dialogbox, set connectionmodeand chooseconnectionport.

CurrentPosition:Laserheadback to thepositionbeforeprocessing.

Originalanchor:Laserheadback to thelast anchor ,the anchor maysetatpanel.

Machinezero: Laserheadback to thezeroof the machine.



If the computer connected to a laser device, option can be set to automatically, the software will automatically determine the connection with the device interface

When computer connection has many sets of laser equipment, click add, new can, need to use which device, click the checkbox

Click on **【add】** or **【modify】**, can him out of the dialog box as shown above to **【add】** or **【modify】** can click on the **【test】**, after testing whether the connection is successful with the device

Network: If the computer is connected to a laser device, click on the add, enter to connect machine name and IP address of the equipment

When a computer is connected with many sets of laser equipment, click add, which can use new device, click the checkbox

Click on the **【add】** or **【modify】** will head dialog box as shown above to **【add】** or **【modify】** after clickable **【test】** detect and equipment connection is successful

Search at present already connected device, and choose from the drop-down list corresponding IP address machine.

## 4.2 Layer processing

First, in the menu **【Handle】** -> **【Path optimize】** check “according to layer order”, then click “OK” to exit.

Layer reorder: Click button Up, Down can change the order of layers, or direct the mouse to drag the layer to the specified location.

Here, you must check the “Path optimize” option.

## 4.3 Position

Setting the laser head back location after processing completed. (Current position、Original anchor、Machine Zero.

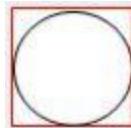
Current Position: Laser head back to the position before processing.

Original anchor: Laser head back to the last anchor, the anchor may set at panel.

Machine zero: Laser head back to the zero of the machine.

## 4.4 Go Scale、Cut Scale

For Example Go Scale, As the following figure shown, the actual graphic is round, and the red rectangle outside the circle is the smallest rectangle, click button Go Scale, laser head will run once along the rectangular path.



For Example Cut Scale, As the following figure shown, the actual graphic is round, and the red rectangle outside the circle is the smallest rectangle, click button Cut Scale, laser head will be cut along the rectangle.

## 4.5 Start、Pause、Stop、Save ToUnFile、Un File Output、Download

Start: Output the current graphic to the machine for processing.

Pause\Continue: Click Pause, will stop the processing work, click the button again to Continue

Stop: Stop the current processing work

Save ToUnFile:

Save current file as RD format, using for offline processing (Can be copied to other memory board for full offline operation) .

UnFileOutput:

Output the offline file(RD format)

After save offline file, click Un file Output to select RD file to processing.

Download:

Download the file to the memory of the controller, then user can start the file through the machine panel.

## 4.6 Output select graphics

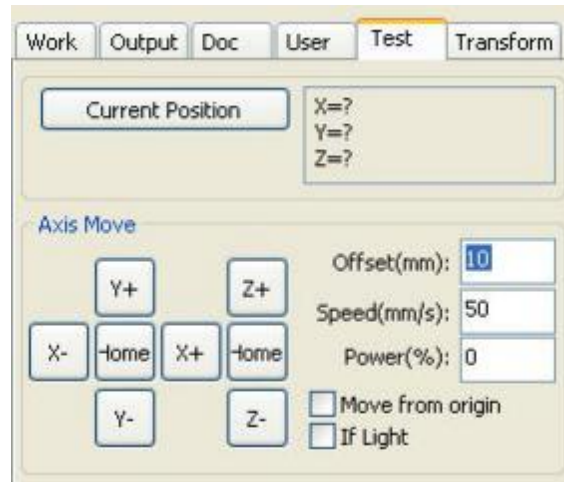
After check Output select graphics, then only output the selected part, rather than not output the part not selected.

## 4.7 Path optimize

After check Path Optimize, then automatically perform the path optimize before the output.

If has done the Path optimize or not need optimize, then not check Path Optimize can reduce waiting time.

## 4.8 Test



Axis control, can only control one axis each time. You can set the information for axis move, including move length、speed、laser on-off and laser power.

If you check “Move from origin”, then the offset you set means the offset to machine zero.

If you not check move from origin, then the offset means the offset to the current position.

The X-axis, for example, assuming the current position is 100mm, such as the step distance is set to 10mm, then the exercise once, the new location will be 110mm, such as the check moves from the origin, movement time, the new location will be 10mm, and repeated Movement, location will no longer change.

Note: According to the provision of the controller, the absolute position is non-negative in the whole breadth. If you check the Move From Origin, and set the offset value negative, then the machine will hit limiter.

## 4.9 OutputSetting

Work Output Doc User Test Transform

☐ Enable rotate engrave

Circle pulse: 1000 Help

Diameter(mm): 20

Speed(mm/s): 50 Test

☐ Enable feeding

Feeding Count: 0

Distance(mm): 500

☐ Backlash reapy optimize

☐ Enable offset of Laser2

X: 0 Y: 0

### 4.9.1 Rotatingsculpture

【Enable rotate engrave】: After enable engraving, the actual precision of Y-axis will be based on diameter and stepper rotate to automatically match the setting of pulse precision of Y-axis. In addition, the work area in the main interface will also change.

【Diameter】: The diameter size of the parts.

【Stepper rotate】: The number of pulses corresponds to the workpiece rotate one week.

【Test】: The speed of testing work.

【speed】: test the speed of work.

The function is to facilitate the user to replace parts, and different sizes of the workpiece when the workpiece is not very different before use. When the relatively large difference in size of the workpiece, it is recommended to use directly modify the motor step approach to implementation.

Rotary engraving is only when using the rotation axis to replace the Y-axis use.

### 4.9.2 FeedSetting

To use the feed, must first enable the feed.

After setting feeding parameters, the shaft will be feeding a feeding length, and repeat the process, until the times of processing reach to number of feeding.

If the machine is not equipped with feeding devices, in general, enable the feed bar.

### 4.9.3 Optimization of Backlash Compensation

When the machine there is space (such as dislocation of theseal cutting graphics), can be checked.




### 4.9.4 Optical 2 migration

In need laser collaborative work, complete the same graphics processing occasions, usually, to use the optical 1 to define the graphics location, then if the optical 2 can accurately with the optical 1, will need to specify the optical 2 relative to the optical 1 offset.

This is generally used in two power different laser tubes of machine, because two laser tubes power different, cause different functions.

If some machines equipped with two different power of laser tube, a responsible for cutting, a responsible for sculpture.


## 4.10 Layer Settings

Work	Output	Doc	User	Test	Transform
Layer	Mode	Speed	Power	Output	
	Cut	100.0	30.0	Yes	
	Cut	100.0	30.0	Yes	
	Cut	100.0	30.0	Yes	

Up Down

Line/column setup

	Num	space	Dislocation	Mirror
X:	1	0.000	0.000	<input type="checkbox"/> H <input type="checkbox"/> V
Y:	1	0.000	0.000	<input type="checkbox"/> H <input type="checkbox"/> V

 Virtual array Bestrew... Adjust

## 4.10.1 Ranksse

For convenient to set in machining graphics processing on the array.

X numbers and Y numbers, which was the array of columns and rows.

X interval and Y interval, respectively is array of the column spacing and lines spacing.

Interval and the adjustment of the dislocation is the arrangement of array.

Adjust the X, Y interval between enable graphic layout more closely,, can be adjusted directly below the interval and dislocation, make graphics in the selected state, and then through the keyboard of the up and down or so key to adjust, and rolling the mouse can be displayed scaling, make the spacing of the adjustment process more precise.

### 【Bestrewing breadth】

: According to the size of the wide and the current user settings rank spacing, to determine how much can output the most listed (i.e. X number) how many lines (i.e., Y number). Click on the Bestrewing breadth up interface as shown in

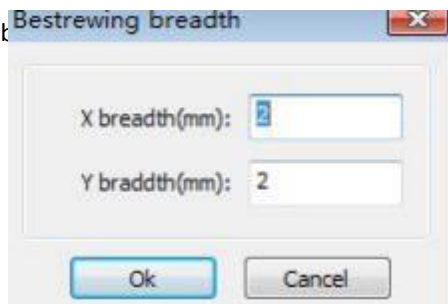
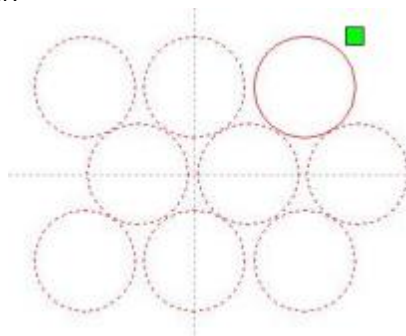


figure:

According to determine the button, the software can automatically calculate the entire width of the ranks of the arrangement number.



【dislocation】: for some graphics, in arrangement, the dislocation arrangement, can make the arrangement more compact.

【mirror】: objects in a horizontal or vertical direction to reverse it

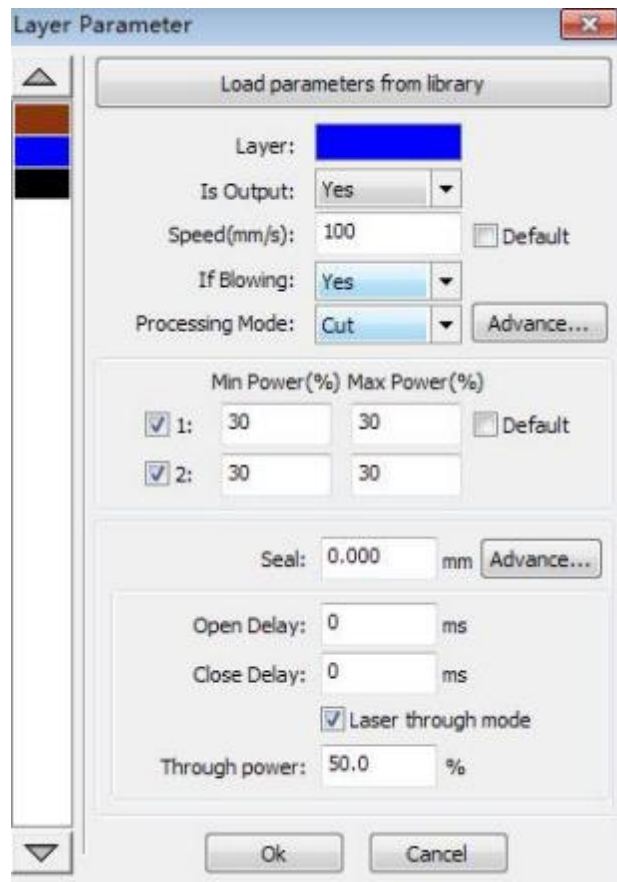
【adjust】: When arranged some of the smaller mobile can click on the adjustment to carry on the row spacing and dislocation distance

---

【virtualarray】：Aftergoodarray,selectedtocopythegraphics,pointtocopy,cancopythepatten



array.



【Theapplicationtocopy】 ingoodarray,chosentocopygraphics,someapplicationtocopy, already can duplicatearray graphics.

In thelayerlist toedit thedouble clickinsidelayer,namely willpopuplayerparameterdialogbox.

Theleftarticlecolor,representativesofthecurrentgraphicslayer,choosedifferentcolor,canbein already switchbetweendifferentlayer, one-timemodifiedmultiplelayers ofparameters.

Thelayerparametersisdividedintotwoparts:  
publiclayerparametersandturnalayerparameters.Publiclayerparametersistopointtonomatterhowthelayerproce ssingtype,alleffective  
layerparameters;

Proprietarylayerparametersistopointtothelayerofprocessingtypechangeofthecorresponding parameters willalsobe changing.

## 4.10.2 LaserScanParametersSetting



Laser: Software to distinguish between different layers of the graphics processing technology parameters. For scanning processing methods, more are in the same layer bitmaps, and whole as a picture output, if hope each bitmap single output, it can be a graph respectively placed in different layer can.

Is Output: Have two options: yes and no. Choice is, the corresponding layer will output processing; Choose no, won't output processing.

Speed: The corresponding processing method of processing speed.

For cutting processing is concerned, the slower, processing the better, the more smooth track; The faster the processing results, the worse the trajectory smooth;

To scan for processing, the slower, under the same energy scanning depth, deep and scanning trace the thick, scanning the resolution also reduced.

The faster the same energy the shallow depth of the scanning, details distortion increase.

To fix for processing, the main change is empty the speed of the move.

If, check the "default", the actual speed by panel set up to speed.

If Blowing: If the machine external fan, and fan has enabled, then if choose "is", then this layer data processing, will open the fan, otherwise, will not open the fan. If you do not make a fan, no matter choose "yes" or "no", are meaningless.

Processing methods: says the method of processing corresponding layer;

If the currently selected is vector layer (i.e. color layer), it includes three choices: laser scanning, laser cutting, laser etching;

If the currently selected is a text layer (namely BMPlayer), then only include a choice: laser scanning.

Laser1, laser2: corresponding to the main board laser signals 1 and 2 of the wayway laser output. If it is only head machine, the second road laser is meaningless.

The minimum power, the maximum power: the power of the values of the range of 0 to 100, said that in the process of the strength of the laser processing; Big value, the laser is strong, is small, the laser weak. Minimum power loss to the most power is less than or equal to.

For different processing type has a different meaning.

For cutting processing, the actual power is cutting speed and phase follow, speed, low energy is also low, high speed is also high, so that we can guarantee the whole process of cutting energy even. So the minimum power the speed of the corresponding minimum energy, the minimum speed general is 0, but if set the speed is the minimum speed for take off take-off speed; The maximum power corresponds to the layer speed.

Set minimum power, and the most high power flow:

1> The minimum power and the maximum power set to the same value, synchronous adjustment.

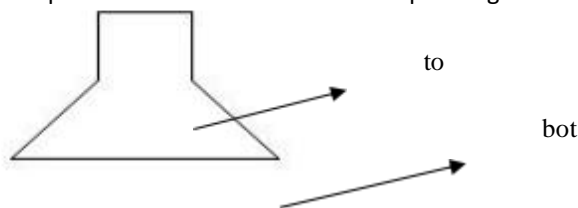
Until all the cutting curve are already appear.

2> The maximum power unchanged, and gradually reduce the minimum power until the energy of the heavy cutting curve at the lowest level, and all of the cohesion parts can be processed to come out.

3> If not yet to best effect, can be the most appropriate fine-tuning high power, and repeat step 2.

If cut through, the minimum power loss and the maximum power no significant difference, can be set to give the same.

To scan processing, ordinary scanning, the minimum power and the maximum power must be consistent. Slope sculpture, minimum power loss is the power of the corresponding factors, the most power is the power of the bottom of the corresponding.



Minimum power loss is the top for the small slant wide, detail placed distinguish clearly.

Minimum power loss is too large slope not obvious.

To fix processing, the minimum power and the maximum power can be set to agree.

If checked "default", the actual power panel set by the power to determine.

Click the button "advanced", but also can be set to other layer parameters.

Seal: Closed cutting graphics seal is not closed condition, can be closed with these sealing compensation, but if these sealing is misplaced, there is no compensation, clearance compensation optimization can be used to compensate, or use the backlash compensation in the user preferences

Open Delay: Medallion for a time / medallion latency

Close Delay: light off through wear / light off delay time

Laser through mode: If checked, the light switch delays said is on time, otherwise, the time delay switch is light delays said laser movement

Through power: Refers to crush objects in unit time of the work done fast.

**【Pen up and down】** If machines have installed the lift platform, and need to be in a different platform height on the processing, can make can write up function.

Here the corresponding

is platform write position in which high on the processing, carried the corresponding is empty pen position before go, platform should be moved to which level in the optical translation will not again to interfere with the process workpiece. If confirmed the optical not and the

translation of the process workpiece to interfere, don't need to set up the pen position.

Use way is:

1> Can write pen to carry.

2> Make can write position, manual control panel key mobile platform, to stay processing graphics graphics processing plane, adjust the focal length. Then click button "read", and then write all setup position.

3> That can carry a position, manual control panel key mobile platform, move to the optical will not interfere with the work of the height, and through the panel key move the optical, confirmed that won't interfere, some button "read", and then set up a position.

#### 【 point 】

Here the bi, and is suitable for drawing tool creates some primitive, or from DXF file into the some primitive. And the current layer processing method has nothing to do, namely whether the current layer is cutting or a scan, graphics in the some primitive has always been to the bi way output.

The bi movement speed for layers speed, beating the energy for the maximum energy layer laser.

#### 【 The laser Enable 】

When the machine is equipped with two road laser, usually, are two road and output.

But the user may through the set that laser, that it is not output all the way.

#### 【 The joint IO output 】

All the way and the layer associated IO output, obligate function.

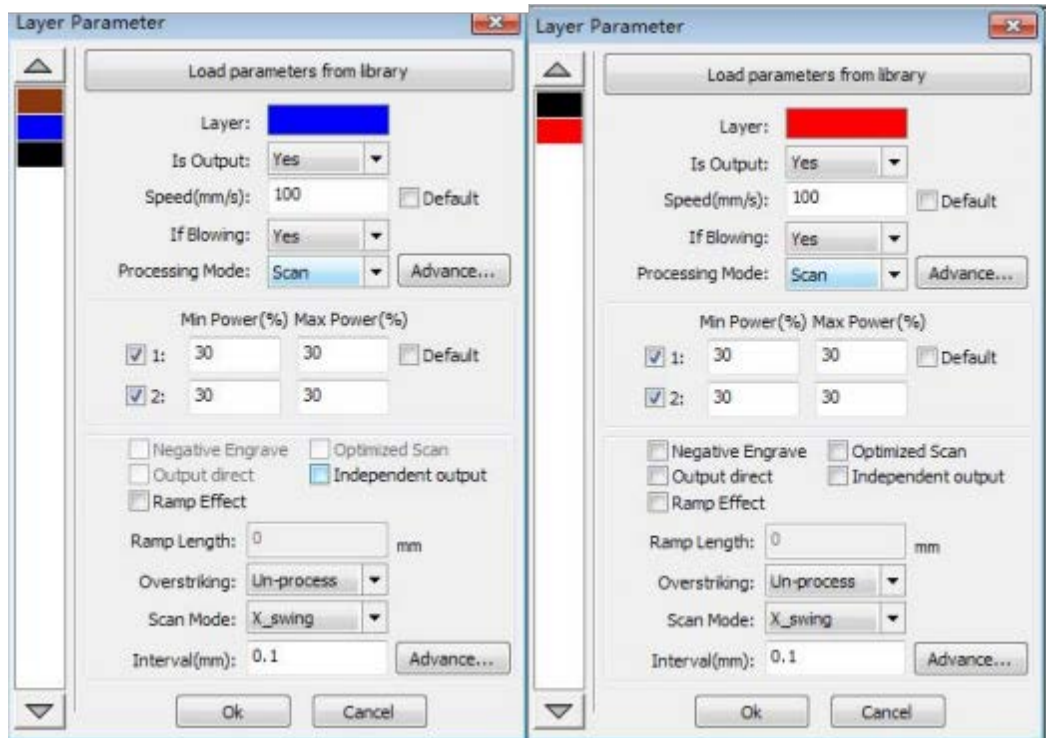


【 Enable sew compensation 】 : Use seam width compensation can compensation caused by laser cutting seams size of the graphics and graphic deviation of actual cutting out, Seam width compensation applies only to closed graph

【 Sew Direction 】 : According to the actual need to setup, such as cut around, if you want to keep the circle is cut off, you should set the direction of compensation to outward, if want to keep the hole, should set the direction of compensation to inward.

【 Sew width 】 : Laser cutting seam width

### 4.10.3 LaserscanningparametersSettings



On the left of the dialog box for vector scanning parameters Settings, on the right side of the dialog box for bitmap scanning parameters Settings.

The vector data does not support the scanning the color carving, optimization scanning, direct output.

The color carving: normally scanning, bitmap in the black spots laser, the laser in white.

Choose the color carving, the bitmap in the white of the laser, black spots in laser.

Optimal scanning: choose optimization will automatically adjust the user's scan the scanning interval to set up the best value, the scan be the best effect.

Otherwise, according to user Settings of the scanning interval scan pattern. Generally choose "optimal scanning"

Direct output: grayscale bitmap, according to the actual graphics gray. in output, already color deep place laser energy big, color shallow place laser

Energy is small.

Figure yuan respectively output: for vector graphics for, figure yuan respectively according to vector diagram output is the position of the yuan relationship, which in turn will get together the vector map carving output of yuan respectively.

If not checked figure yuan respectively output, it will be the whole vector graphics as a whole to sculpture.

For a bitmap for, if not checked figure yuan respectively output, the system will automatically will

work with a layer of the bitmap as a whole output.

If checked the figure yuan respectively output, the system will be in a single output bitmap.

Slope effect: the scan the edges of the figure appears slope, submit stereo effect.

Be bold font: including don't handle, scanning the font, scanning the bottom. Generally choose not processing.

Scanning is part of the font scanning is the font, also is the Yin carving.

Note that the slope effect choice, please will be bold font choose not to deal with, or slope affected the effects.

Font Yin carved: not to add text outside the box, scanning are text itself, as below:

welcome

Font Yang carved: text and the outer frame, scanning is the bottom of the graphics, as below:

welcome

Scanning mode: including level one, level two-way, vertical one-way, vertical two-way.

Level one way: the optical scan pattern back and forth in a horizontal direction, but only to a direction when laser scanning comes out, such as: when the optical scan from right to left a laser, and from left to right the laser scan.

Level two-way: the optical horizontal direction in the back and forth laser scanning graphics.

The vertical one way: the optical scan pattern in vertical direction back and forth, but only to a direction will be laser scanning, such as: when the optical scan from up to down a laser, and from the bottom to scan a laser.

The vertical two-way: in vertical direction the optical back and forth laser scanning graphics.

Note: general use level two-way scanning mode.

Scanning interval: namely the optical scan every much long distance under a line. The smaller the interval, scanning the deeper to graphics; Conversely, the more shallow.

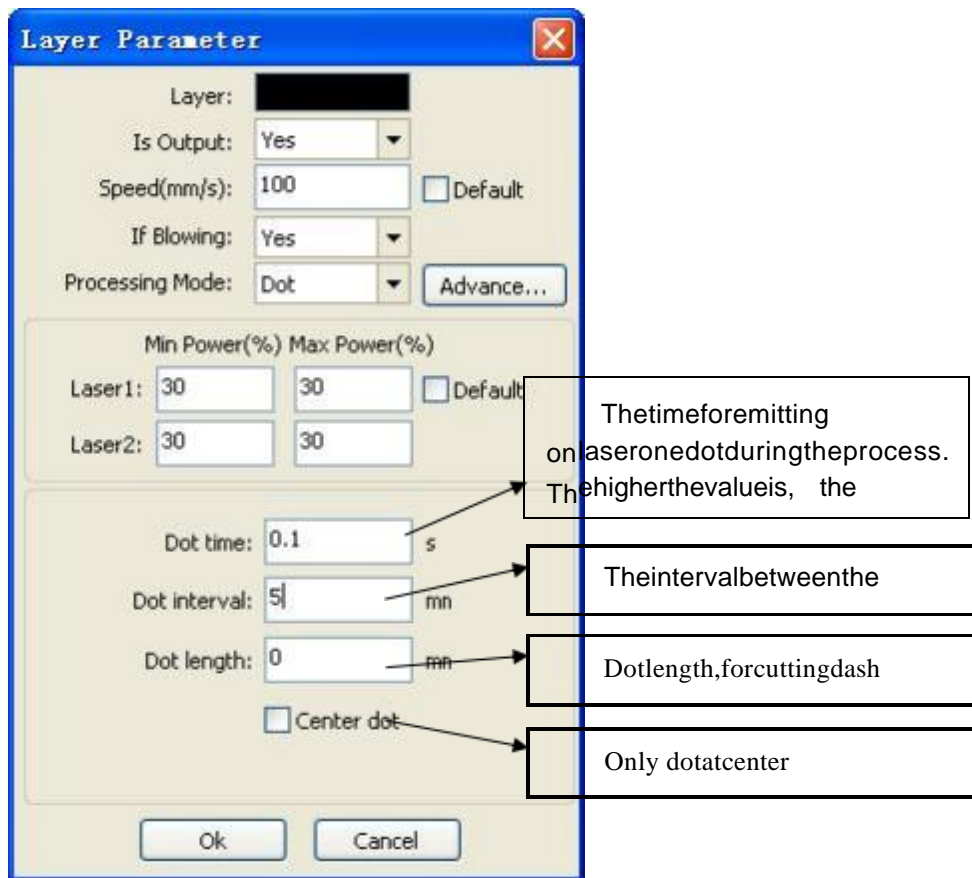
Suggestions: (1) for vector layer (i.e. color layer), scanning interval in 0.1 mm general set below.

(2) for a bit map layer (namely BMP layer), scanning interval in 0.1 mm general set above,

Then through the change and the most high power to make the minimum power after scanning the graphics depth to achieve the ideal effect.



## 4.10.4 LaserDotParametersSetting



## 4.11 Vendor settings

### 4.11.1 The motor parameters

XYZU axis parameters

**Dirpolarity:** Change the direction of polarity can make the motor to the reversed direction. Modify the goal is to make the shaft to the origin when reset, if reset when the axial direction away from the origin, explain the polar axis direction set wrong, should be modified.

**Limiterpolarity:** Used to set the limit of high and low level signal model, if moving axis reaches the limit position, enter a low level signal to the mainboard, the limit should be set to a negative polarity.

**Breadth:** The longest distance between the axes can walk, according to the actual situation of the machine.

**Homeoffset:** If the shaft can make the hard limit protection, often should set the value of 2~5 mm, if

---

setto0,thentheaxescoordinatezero runto minimum,effective,has the potentialto limitsuchtrigger

error limit protection function, emergency stop the machine, if cannot make the hard limit protection, can set value is 0~5mm.

**Contrl mode:** Double pulse and pulse+direction mode optional, depending on the motor drive machine actual configuration decision, general model for pulse+direction.

**Step length:** Namely motor pulse equivalent, send a pulse to the motor, the corresponding motion axis through the absolute distance value. Before this value is set up correctly, can let the machine cutting a large rectangular (graphics is bigger, can make the errors smaller), automatic calculation by graphic length and measuring the length of the step motor.

**Enable limit trigger:** Whether used for enabling the axis of the hard limit protection function.

**PWM rising edge valid:** Used to set the motor drive the pulse signal is rising falling edge along the efficient or effective, when not enabled the falling edge controller using effective; When this is enabled, use the rising along the effective controller.

**Enable Home:** If machine configuration with the shaft, the shaft "reset enabled" options should be open, if not configured the shaft, then the shaft "reset enabled" options should be banned. The meaning of this parameter is to control the "reset" boot options in the user preferences and function keys in the "reset" the axis function, prevent users mistakenly to reset the shaft moving that doesn't exist.

**Jump-off speed:** Movement speed of shaft directly start from stationary state, if the value is too big, can lead to motor lose step, jitter, and even produce the noise and set is too small, can reduce the running speed of the graphics. The heavier if the large inertia of moving axis (axis), can install a small take off speed, if the movement axis of inertia smaller lighter (shaft), can be appropriately increase the rotate speed. Typical value such as 5~30mm/s.

**Max speed:** The shaft can withstand maximum speed. The parameters and inertia motor drive power, motor shaft, and gear ratio. Typical value such as 200~500mm/s.

**Max Acc:** Motor shaft in the maximum acceleration and deceleration motion, acceleration set is too large, also can lead to motor lose step, jitter, and even produce the noise and set is too small, can lead to speed up slow and reduce the running speed of the graphics. Corresponding to the large inertia axis, such as beam of the Y axis, at typical setting for the range of 800~3000mm/s<sup>2</sup>, corresponding to the axis of inertia small, such as the car of the X axis, at typical setting range is 8000~20000mm/s<sup>2</sup>.

**EStop acc:** Can make the hard limit protection, if the shaft, when the axial movement to the limit position, to the shaft to stop operation for emergency stop acceleration deceleration. This value may take

themaximumaccelerationof 2~3 times.

Keying

**Jump-offspeed:** Keys on the keyboard to move the axis movement starting speed, not above the shaft rotate speed.

**Acc:** Buttons move the axis motion acceleration value, cannot be higher than the maximum acceleration.

**Invert direction:** Used to control the movement of the manual button when the mobile movement axis direction. When set the right direction of polarity parameters, if press the direction key on the operation panel, the axial direction, which buttons can reverse.

## 4.11.2 Laser parameters

**Laser config:** Single tube/pipe is optional, according to the number of laser tube manufacturers actual configuration Settings.

**Laser mode:** Glasstube, radio frequency laser (don't need precombustion pulse) and radio frequency laser (need precombustion pulse) optional.

**Laser attenuation、Min power、Max power、Laser freq、Preginition freq:**

**Preginition pulse:** For radio frequency (%) laser and precombustion pulse, frequency and precombustion by precombustion pulse width configuration precombustion characteristics of the pulse.

**Signal level:**

**Water protect:**

When can make water protection, the controller must be connected to water protection circuit, the machine won't out of the light, if we don't make water to protect, don't pick up the water protection circuit, the controller will not detect.

Laser frequency used by the control signal is used to set the laser pulse frequency, the glasstube, generally set to about 20 KHZ, Radio frequency tube usually about 5 KHZ; Maximum/minimum power(%) is used to set the limit of the laser power value, namely at runtime, users to set maximum power cannot be higher than the set value of maximum power, user Settings cannot under minimum power value for the setting of the minimum power value; Use after a period of time, if the laser power attenuation, is by setting the attenuation coefficient to fine-tuning of laser power, laser without attenuation, attenuation coefficient of 0.

**Prompt:** If single laser tube is configured, it only shows laser parameters.

## 4.11.3 Other vendor parameters

**Machinetype:** For the most part should choose general engraving machine, other models for a particular model

**Transmissionmode:** Under normal circumstances should choose "stepped belt", choose other type, control algorithm will have small change

**Feedmode:** A one-way/two-way optional. When for one-way feeding, do not check the coordinate,

but has been unilaterally upward; When selecting a two-way feeding, the system will check the maximum minimum coordinates, an odd number of times to one direction, even times to another direction, first initial direction by setting the direction of polarity to change or modify feeding the length of the positive and negative value

**Break delay:** Can be set to 0~3000 ms. After power grid, the system power supply does not immediately reduced to 0V, during a time delay, the power set delay values should be the actual delay values are basically identical. If the value is set, the deflection is in power to continue carving work, a second processing of graphics and graphics or not closed before power, or too much overlap

**Enable protect:** If I can make this, the controller must be open protection circuit is connected, otherwise the machine will not work

**Enable blower:** If I want to use the outlet Wind signal layer and control the fan switch, you must make to the parameters, otherwise, the Wind signal output to other signals

**Prompt:** Manufacturers in the parameter configuration parameters, such as the direction of polarity, control mode, the types of laser and laser frequency modified four parameters, it is necessary to reset the system, reset after the completion of the change to take effect.

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