

USER MANUAL OF ASC365 MINI LASER MACHINE



Preface

Thank you for your choice of our product. In order to guarantee a long and stable usage of the machine, please read the applications carefully.

If the machine can not work normally, please cut all power supplies immediately and check the related contents of the applications.

Chapter 1 A Brief Introduction

Chapter 2 Packing List

Chapter 3 Installment and Operation

Chapter 4 Maintenance

Chapter 5 Manual of NSDK1

Chapter 1 A Brief Introduction

Instructions

Laser engraving is the practice of using laser to engrave or cut an object. A computer system is used to drive the movements of the laser head. Very precise and clean engravings can be achieved at a high rate. The technique does not involve toolbits which contact the engraving surface and wear out. This is considered an advantage over alternative engraving technologies where bit heads have to be replaced regularly.

This machine is a mini desktop laser engraving machine, suitable to advertisement, arts and crafts, garment, leather, toy, upholster, embroidery, packing and printing, paper product, tailoring, , shoemaking, furniture , model industry, and other industries, can be used to handle wood, bamboo, double-color planks, organic glass, crystal, plastic, garments, paper, leather, rubber, glass and other nonmetal materials.

Main features

- **Adopt high quality mainboard, chip and stepping belt which can control the engraving more precise**
- **Cooling system with coolen circular water.**
- **Air fan: blow away the waste and coolen proceed material surface**
- **Alternative operating control "AUTO" and "MANUAL"**

- **The reinforced and thickened machine body make transportation safer**
- **Pre-installed laser tube**

Specification

- **Engraving area: 0-16"X16"(400 x400mm)**
- **Engraving thickness: 0-0.98"(25mm)**
- **Engraving speed: 0-16"(400mm)/s**
- **Cutting speed:0-1.6"(40mm)/s**
- **Reposition accuracy: 3.3foot(0.01mm)**
- **Minimum letter size: 0.06"(1.5mm)**
- **Supported image form: BMP,PLT,DXF,JPG**
- **Software: Xinlixinlong**
- **Support operating system: windows XP, VISTA32 and windows7(AT THIS MOMENT IT CAN NOT COMPAT WITH VISTA 64 AND WIN764 SYSTEM)**
- **Laser tube life: about 1000 hours**
- **Laser power: 40w**
- **Voltage: 110V**
- **Total power: 1000W**
- **Equipment dimension: 37"x27"x12"(950x680x300mm)**
- **Gross weight: 220LB(100KG)**

NOTICE

1. The ground wire of the power cable must be connected before switching on and the interference of the static electricity should be prevented.
2. The operator must be present at the work place when the machine works.
3. Check the location and the engraving electric current.
4. Cut off the power supply if anything abnormal happens.
5. The biggest engraving electric current can not be over 1.5A.
6. Connect water before work and keep water unimpeded(pure water is preferred to reduce the water dirt to sink and accumulate)Water temperature $\leq 25^{\circ}\text{C}$.
7. Add pure water properly in engraving process to prevent burning or damaging the pieces and strokes.
8. Turn off the machine for half an hour if it works for 3 hours continuously.

Connecting the ground wire

Because the machine is an integral unit with different electric currents, it is very important to connect the ground wire. Don't switch on the machine without connecting the ground wire. Our company will undertake any responsibility if the user disobeys the rule.

1. There must be two ground wires and ground connection poles. The wires should be no less than 2.5mm with copper wires. The ground connection poles should be at least 20mm of zinc-plated triangle iron.
2. The ground connection poles should be buried in damp soil. Each pole should be added

with salt water(with no less than 1 kg salt in it). The horizontal straight distance between the two holes should be over 2.5 meters.

3. The ground connection pole 1 should be connected to the setting bolt of the controlling board with the ground wire. The pole 2 to the outshell of the machine. Ensure the contact is good.

Chapter 2 Packing List

Product name: ASC365 4040 Laser Cutting & Engraving Machine

| Model | Name | Collocate | Quantity |
|--|----------------------|------------------------------|-----------------|
| ASC365 4040 Laser Cutting & Engraving Machine | Whole machine | | 1 Set |
| | Extra parts | Focal scale | 1 set |
| | | Softdog | 1 pcs |
| | | Water pump | 1 pcs |
| | | Exhaust fan | 1 pcs |
| | | Inner hexagon wrench | 1 pcs |
| | | Connector | 1 pcs |
| | | Clamp | 1 pcs |
| | | Software instructions | 1 pcs |
| | | Software | 1 pcs |

Chapter 3 Installment and Operation

Installment

1. The operation room must be in a dry and clean environment. The machine should be on a stable work terrence covered with rubber mat with a computer. Connect the ground wire properly.
2. Put the output electric cable firmly and link the power cable.
3. Put the water container behind the work table and pour in pure water, connect the pump with one end of the pile, the other end to the machine. One end of the output pipe is

connected to the output of the machine, the other end in the container. Do not distort the pipe.

4. The working voltage is 110V 60Hz.

Adjustment

1. Connect the pump to make the laser tube cooling water circulate normally. Switch on the coordinate, the indicator is bright. Turn on the laser, the indicator is bright.
2. The laser focal adjustment: Put the surface of the work piece beneath the focal mirror 1.1”(27mm).
3. The laser light adjustment: Place a slip of paper under the laser head to make the outline of inner hole of the head on the slip(the current is 0.1-0.5A). Click the button and observe whether the laser point is in the middle of the outline.
4. Place the laser switch to the engraving position. The laser current is 0.5-1A. (Adjust it if necessary)
5. Clip the work piece tightly to guarantee accuracy. Operate the software to measure and engrave.

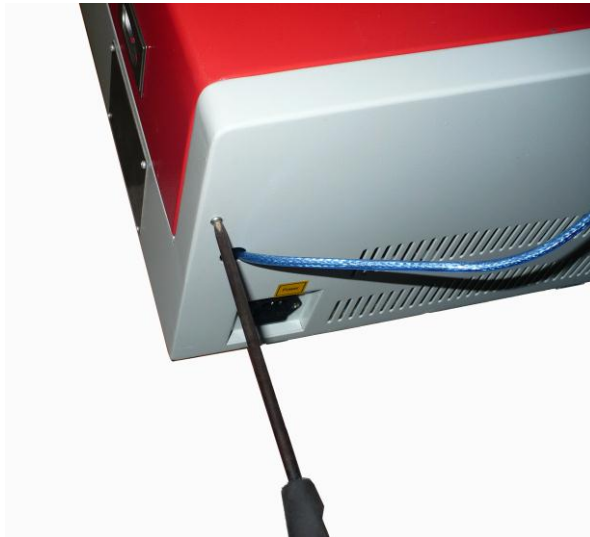
HOW TO INSTALL THE MACHINE

Considering the product safety, we use wooden cases and cartons with foam, please open the cases by yourself.

It mainly includes the process of Installation fans, Water pump, laser tube has been installed.



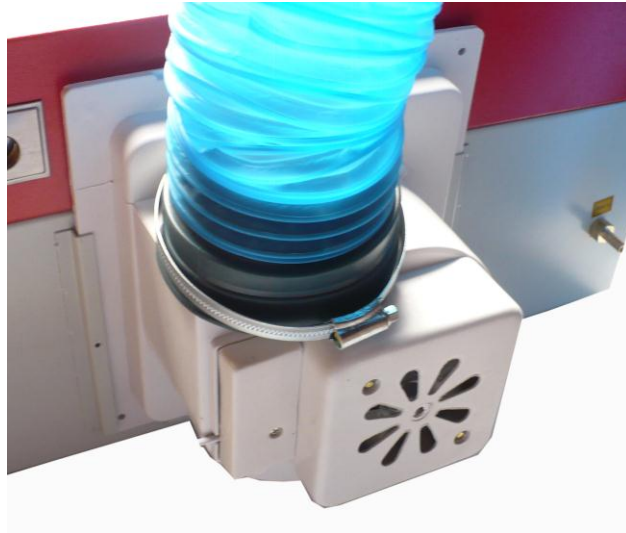
1. OPEN THE ELECTRICAL BOX:



2. INSTALL FLUE PIPE:



3. INSTALL FAN:



4. CONNECT HOSE AND WATER PUMP:

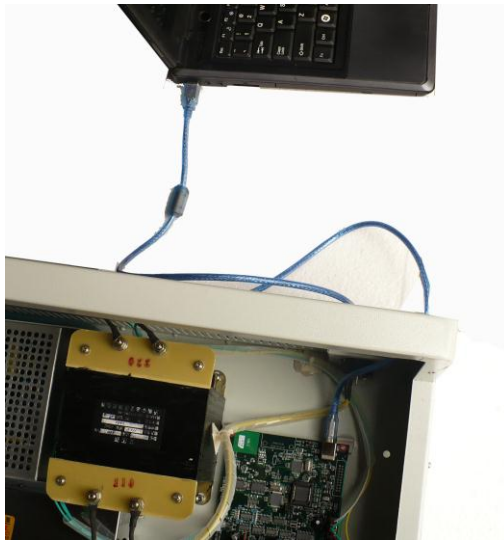


5. SET UP AN ELECTRIC CIRCUIT FOR THE FAN AND WATER PUMP:



ATTITION:THE POWER FOR FAN AND WATER PUMP MUST FROM HERE,IT IS AC220V.

6. CONNECT COMPUTER AND MACHINE:



7. INSERT THE SOFTDOG TO THE COMPUTER:



8. FINISH SETUP



HOW TO INSTALL SOFTWARE

DURING THIS PROCESS,PLEASE DO NOT CONTACT THE COMPUTER AND ENGRAVER WITH USB CABLE

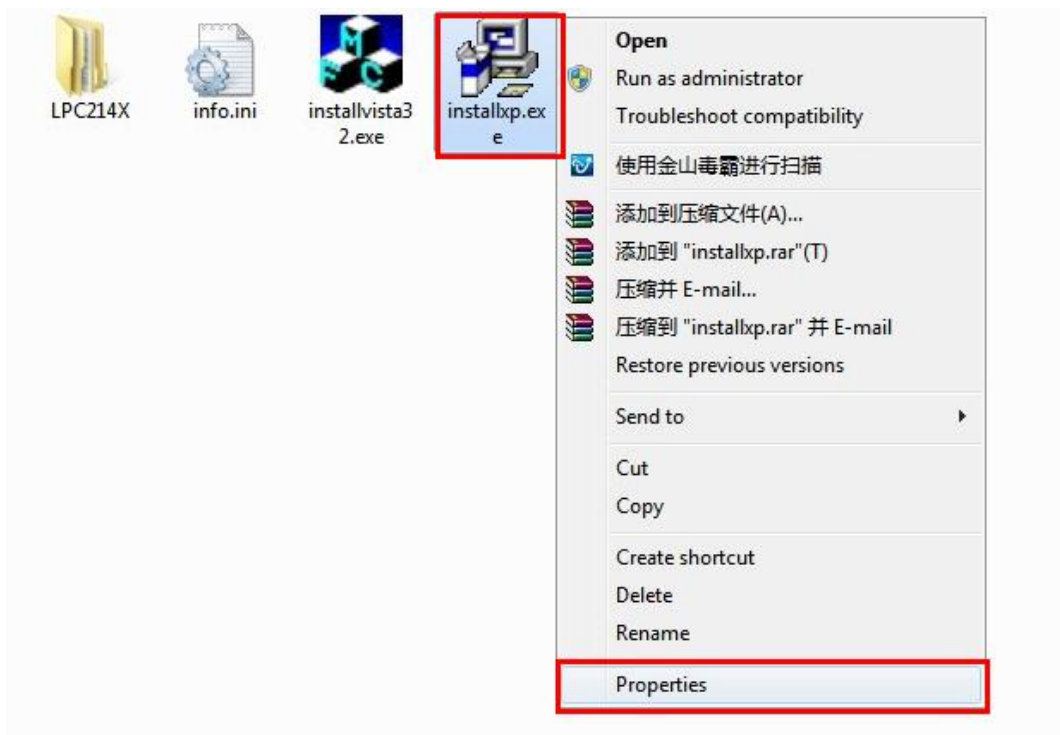
1. INSERT THE CD TO THE COMPUTER AND OPEN IT
2. OPEN THE FILE OF “XINLIXINLONG”
3. INSTALL THE DIVER “

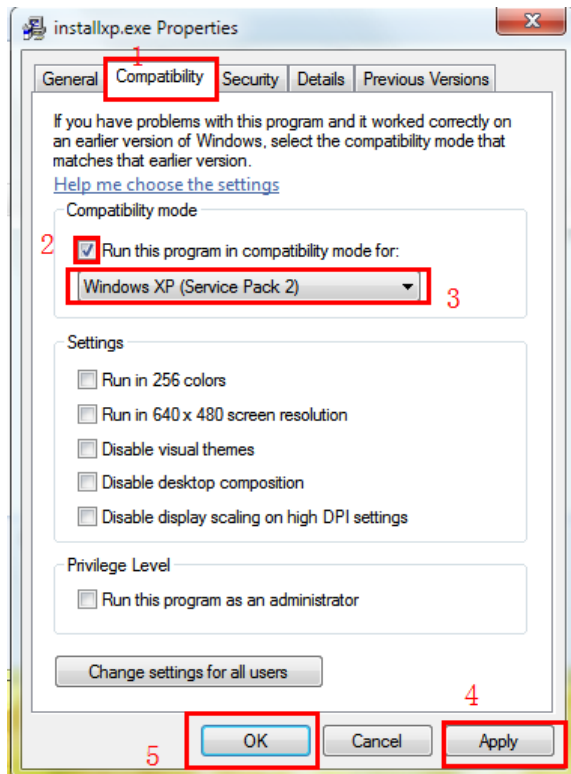


AND FINE THE FILE AS FELLOWS:

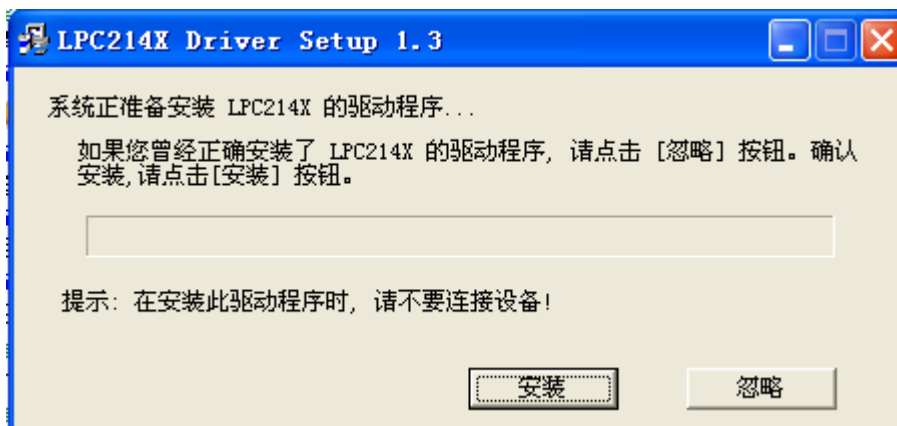


IF YOUR COMPUTER USES WINDOWS 7 32bit , **RIGHT** CLICK ‘installxp.exe’, CLICK Properties, THEN CHOOES Compatibility TABLE, SET AS FOLLOWING, THEN DOUBLE CLICK ‘installxp.exe’





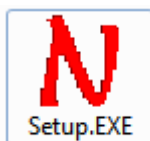
IF YOUR COMPUTER USES WINDOWS XP,PLEASE DOUBLE CLICK THE FILE “INSTALLXP”,AND THE WINDOWS VISTA,PLEASE OPEN THE “INSTALLVISTA32”, AT THIS MOMENT IT CAN NOT COMPAT WITH VISTA 64 AND WIN7 64 SYSTEM.IT WILL SHOW LIKE THIS:



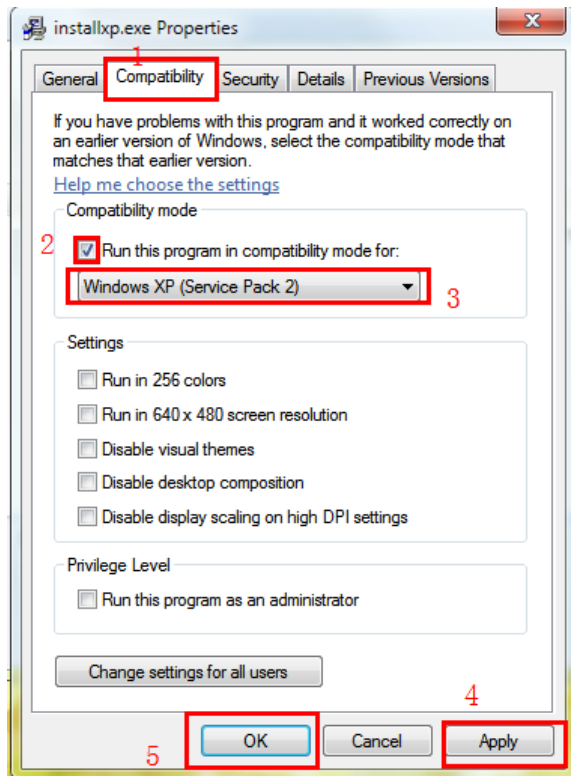
AND CLICK THE “安装”.IT WILL OK.

4. INSTALL THE SOFTWARE:

OPEN THE FILE “XINLIXINLONG”FIND THE FILE “SETUP”



IF YOUR COMPUTER USES WINDOWS7 32bit ,PLEASE CHANGE THE **Compatibility** AND SET AS FOLLOWING:

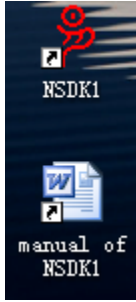


AND THEN DOUBLE CLICK SETUP .EXE

IF YOUR COMPUTER USES WINDOWS XP OR VISTA32bit , DOUBLE CLICK



CLICK THE “安装”,IT WILL OK,AND THE DESK WILL SHOW AS FELLOWS:



DOUBLE CLICK THE “NSDK1” WILL OPEN THE SOFTWARE (FOR PATENT,PLEASE INSERT THE SAFEDOG ,THEN YOU CAN OPEN THE NSDK1)AND FRIST KINDLY CHECK THE FILE “MANUAL OF NSDK1”, IT SHOW YOU HOW TO USE THE SOFTWARE.

Chapter 4 Maintenance

1 Maintenance

1. Turn off all power supplies before maintenance.
2. The focus lens: The focus lens is to control the diameter of the laser beam, which decides the quality of the engraving. It must be kept clean. Clean its inside with soft cloth regularly. Wipe the lens with the absolute alcohol cotton ball. Cleaning should not be done until ten minutes after the operation is stopped.
3. Air blower: The air blower is to exhaust the waste gas, reduce the pollution and extend the service life. Clean the blower regularly.
4. Add oil(of the sewing machine) to the track bearing everyday, clean the track with soft cloth and oil.
5. Replace the water in the laser tube regularly and use pure water to reduce the pollution.
6. The temperature of the operation room should be between **59-77°F (15-25°C)** and keep the room dry. Air-conditioner or heating system should be installed to keep the required temperature and humidity.
7. During working,if the engraved items are fummy and flammable,they can even burn the belt.When meet this condition,you can lower the power to make several copy engraving .

2 Breakdowns and Solutions

| Breakdowns | Possible Reason | Solutions |
|---|--|--|
| No indication of voltage after switching on. | The power supply doesn't work, the voltage meter or insurance tube breaks down. | Recheck the power cable, replace the voltage meter or insurance tube. |
| Failure of the operating system after the procedure order is sent. | The machine doesn't connect well with the computer, the controlling card is not put into place, the driver doesn't install. | Check the connecting plug and controlling card, install driver. |
| The electric current meter doesn't work when turning the engraving knob; the laser tube doesn't work when clicking the cursor button. | The break of welding in the electric potential machine, the burning of the insurance tube, the breakdown of the laser tube or laser power. | Reweld the machine, replace the insurance tube, the laser tube or the laser power. |
| The engraving words' stokes are too thin. | Wrong position of light road, loose belt, thin setting of the strokes. | Readjust the light road, check the focus and belt, thicken the strokes. |
| Appearing curvy lines and wrong positions. | The work piece is not fixed tightly, the belt is loose, the electric gears don't fit the stalk tightly, damage of the controlling board. | Readjust the belt, clean the track, tighten the gears and stalk with a little 502 glue, replace the controlling board. |
| Uneven bottom of the seal | Add water not evenly, loose belt, bad material, wrong focus, small electric current, unsteady voltage, abnormal laser. | Stick the seal surface with good painting paper, add water evenly, replace the material, lower the speed, adjust the focus, check the voltage, enlarge the electric current. |
| The laser position can not adjust. | Wrong formatting, computer problem. | Check the formatting, restart the computer. |
| The crash of computer. | The ground wire doesn't connect properly, loose connecting wires of the positive and negative poles of the laser tube, computer virus. | Check the ground wire, keep the machine off the nearby high frequency and pressure equipments, seal the positive and negative poles' connecting wires with 703 silicon glue, check the computer virus, |

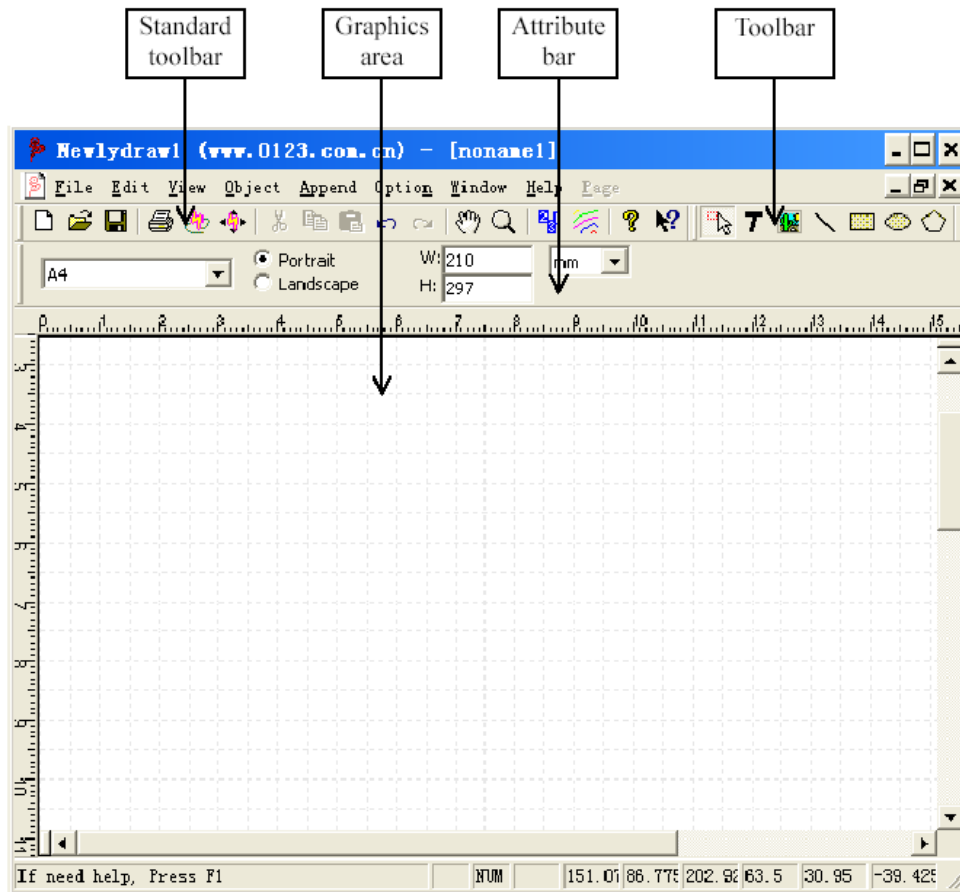
| | | |
|---|--|---|
| | | reinstall the seal system. |
| Laser becomes weak in the work. | The water pump supplies water badly, the aging of the laser tube. | Check or replace the pump or the laser tube. |
| The engraving depth is shallow, less than 0.008”(0.2mm), faint record of writing. | The false light road, wrong focus, polluted lens, adding laser tube, breakdown of laser power. | Adjust the light road or focus, check or replace the laser tube, clean the lens, check the laser power. |
| No laser light and find sparks in laser tube | There are air bubble in laser tube which is not filled with water. | Uplift one end of machine to make the bubble emerge. |

Chapter 5 Manual of NSDK1

1 Interface operation

Interface Components

The following picture is the initial screen of the program.



Most functions of the program can be found in the menu bar, tool bar and attribute bar. The functions only use the keyboard can be introduced in the following sections.

The tool icon name is displayed when the pointing device moves over the tool icon. Predefined layout is displayed when the pointing device moves over "A4" pull-down box.

The property bar can be changed to another mode according to your selection.

Predefined layout: You can select a predefined layout in the pull-down box and the width and height of the layout is changed to specified dimension. You can input the width and height directly if you select "user" in the pull-down box.

Orientation: This software offers portrait and landscape for changing the layout orientation.

Width, Height: The width and height of current layout.

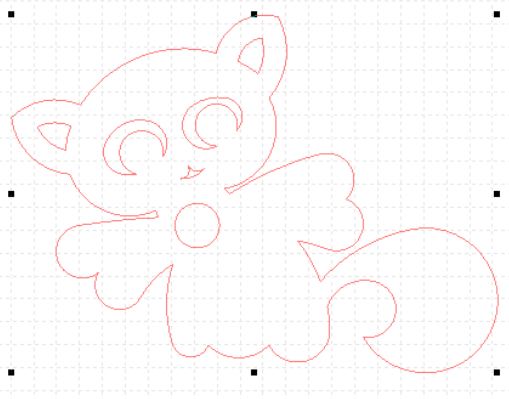
Length measurement units: Such as mm, point and inch. If you change the measurement units, the value of width and height will be changed at same time.

2 Import

This program can import DXF, PLT, BMP, JPG files.

Click the import button  from the toolbar or choose Import from File menu. The file selection dialog box displays.

Select a file to import.



Handles: There are eight handles on the object.

Modification: By holding down the pick button on the pointing device and drag the mouse, you can modify the size of this object. And you can press Ctrl if you do not change the scale between the width and height.

Combined objects attribute bar:




Center coordinates: The coordinates of the center of the combined object. They can be modified.

Dimension: The width and height of the combined object. They can be modified.

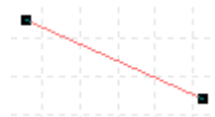
Engrave mode: cut.

3 Drawing

a. Line

Drawing: Click the line icon  on the toolbar and hold down the pick button on the pointing device at the first point of the line and drag to the second point of the line, then release the pick button.

As the following picture:



Handles: The black dot on the endpoint of the line. The objects you selected have handles and different objects have different handles.

Note: If you press “Ctrl” on the keyboard during drawing the line, you’ll get a horizontal or vertical or 45° line.

Modification: The pointing device moves on the handle and the cursor changes to another form. By holding down the pick button on the pointing device, you can modify the position of the endpoint.

Move the line by using mouse: The mouse moves on the object you want to move and the cursor changes to another form. By holding down the pick button on the pointing device, you can move the object to a new position.


Move the line by using keyboard: Select object you want to move then press the

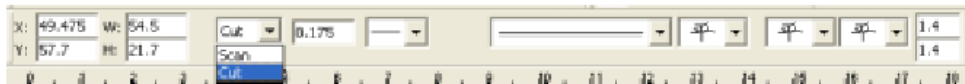
direction key on the keyboard, the object moves 1 millimeter each time. If you press “Ctrl” at same time, the object moves 0.1 millimeters each time.

Cancel selection: Move the mouse to a blank space in the graphic area and click; The handles disappear and the property bar changes to the form of the chapter 1.

Selection: The mouse move over the object you want to select and color of the object will be changed. When the color is changed click left button of the mouse and the handles of the selected object appear and the property bar changes to the line attribute bar.

Line attribute bar:

Choose  from the toolbar or just finished a line or choose a line on the graphics area, the attribute bar will be changed into line attribute bar. Refer to the following picture.




Center coordinates: The coordinates of line’s center. They can be modified.

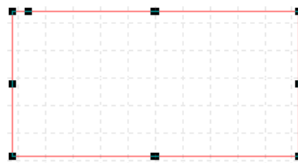
Length of line: The length of line on the horizontal direction and on the vertical direction. They can be modified.

Engrave mode: Scan or cut.

b. Rectangle (square)

Drawing: Click the line icon  on the toolbar and hold down the pick button on the pointing device at the first point of the rectangle and drag to finish the rectangle, then release the pick button.

As the following picture:

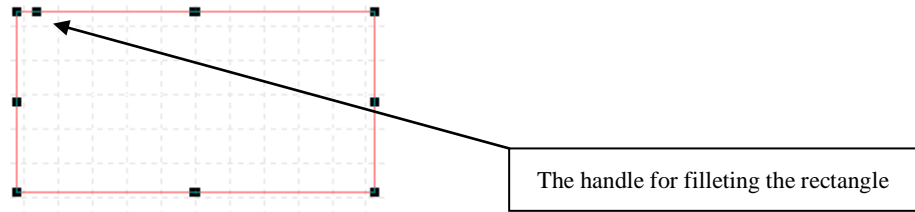


Handles: There are nine black dot on the rectangle. It means the rectangle has been selected.


Note: If you press trl on the keyboard during drawing the rectangle, you ‘ll get a square.

Modification 1: The mouse moves on the object you want to move and the cursor changes to another form. By holding down the pick button on the pointing device, you can move the object to a new position. If you want to modify the size of the rectangle, you can hold down the pick button on the pointing device when the mouse moves on the handles and the cursor changes to another form.

Modification 2: The mouse moves on the handle (as the following picture) and the cursor changes to another form. By holding down the pick button on the pointing device, you can fillet the rectangle. If you press “Ctrl” on the keyboard during modification, you ll get a fillet with the same size on horizontal and vertical direction.



Rectangle attribute bar:

Choose  from the toolbar or just finished a rectangle or choose a rectangle on the graphics area, the attribute bar will be changed into rectangle attribute bar. Refer to the following picture.



Center coordinates: The coordinates of rectangles center. They can be modified.

Dimension: The width and height of the rectangle. They can be modified.

Engrave mode: Scan or cut.


Corner shape: You can choose different corner shapes of the rectangle.

Corner size: If the corner is a fillet, X is the corner horizontal radius and Y is the corner vertical radius.

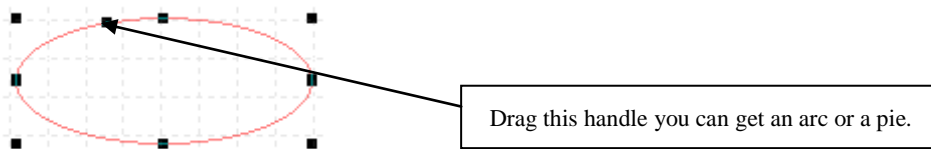
A rectangle and its corners are not right-angled.

1. Draw a rectangle at first.
2. Select a kind of shape listed in the corner shape on the attribute bar.
3. Set the corner radius or use the method of modification 2.

c. Ellipse (circle), arc

Drawing: Click the line icon  on the toolbar and hold down the pick button on the pointing device at the first point of a rectangle tangent to the ellipse and drag to finish the ellipse or circle, then release the pick button.

As the following picture:




Handles: There are nine black dot on the ellipse. It means the rectangle has been selected.

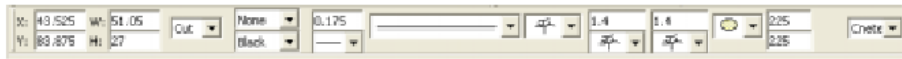
Note: If you press trl on the keyboard during drawing the ellipse, you'll get a circle.

Modification 1: The mouse moves on the rectangle tangent to the ellipse or circle you want to modify and the cursor changes to another form. By holding down the pick button on the pointing device, you can modify the size of ellipse. And you can press “Ctrl” if you want to get a circle.

Modification 2: The mouse moves on the handle (as the following picture) and the cursor changes to another form. By holding down the pick button on the pointing device, you can get an arc or a pie. If you drag the handle outside of ellipse, you will get an arc. If you drag the handle inside of ellipse, you will get a pie.

Ellipse attribute bar:

Choose  from the toolbar or just finished a ellipse or choose a ellipse on the graphics area, the attribute bar will be changed into ellipse attribute bar. Refer to the following picture.




Center coordinates: The coordinates of ellipses center. They can be modified.

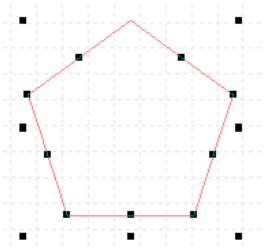
Dimension: The width and height of the ellipse. They can be modified.

Engrave mode: Scan or cut.

d. Polygon, star

Drawing: Click the icon  on the toolbar and hold down the pick button on the pointing device at the first point of a rectangle tangent to the polygon or star and drag to finish the polygon or star, then release the pick button.

As the following picture:



Handles: The handles are on the endpoints and midpoints of every edge of polygon and in addition the rectangle has eight handles. It means the polygon has been selected.


Note 1: If you press trl on the keyboard during drawing the polygon, you'll get a regular polygon.

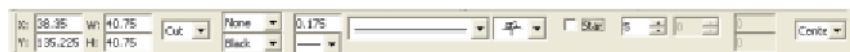
Modification 1: the mouse moves on the rectangle tangent to the polygon you want to modify and the cursor changes to another form. By holding down the pick button on the pointing device, you can modify the size of polygon. And you can press "Ctrl" if you want to get a regular polygon.

Modification 2: the mouse moves on the endpoint or midpoint of the edge of polygon and the cursor changes to another form. By holding down the pick button on the pointing device, you can modify the position of the endpoint or the shape of the edge.

Note 2: If you press trl on the keyboard when you move the endpoint of polygon, the azimuth angle of the endpoint will not be changed.

Polygon attribute bar:

Choose  from the toolbar or just finished a polygon or choose a polygon on the graphics area, the attribute bar will be changed into polygon attribute bar. Refer to the following picture.



Center coordinates: The coordinates of the center of the rectangle tangent to the polygon or star. They can be modified.

Dimension: The width and height of the rectangle tangent to the polygon or star. They can

be modified.

Engrave mode: Scan or cut.

Star: If you choose this option, you can get a star not a polygon.

Vertexes: The number of vertexes of the polygon.

4 Text

a. Flexible text

Flexible text means the size of text can be changed synchronous with the textbox. Choose the Text button **T** from the toolbar, and click in the graphics area, then appear a textbox (refer to the following picture), you can edit text and click the Enter key when you finish the edition.

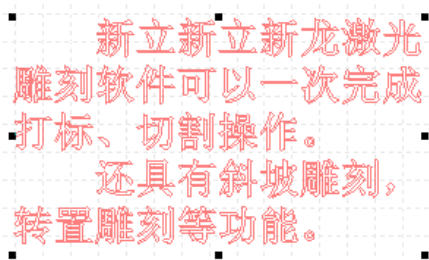


Note: Flexible Text can not wrap line automatically. If you want to edit several rows, you can use <Ctrl+Enter> to edit the next row.

b. Paragraph text

Paragraph text can wrap line automatically and you can use <Ctrl+Enter> to edit the next paragraph. The size of text and textbox can be modified independently.

Choose the Text button **T** from the toolbar, and hold down the pick button on the pointing device in the graphics area, then appear a textbox (refer to the following picture), you can edit text and click the Enter key when you finish the edition.



c. Text attribute bar

Choose **T** from the toolbar, the attribute bar will be changed into text attribute bar. Refer to the following picture.




Center coordinates: The coordinates of the center of the text. They can be modified.

Dimension: The width and height of the text. They can be modified.


Engrave mode: Scan or cut.

d. Finish the text operating

Click the icon  and the text operating will be terminated.

5 Edit object


a. Selection tool

Choose the selection button  from the toolbar to select the object. You can use this tool to select, move or modify the shape and size of the object.


If you want to edit an object, you must select the object at first.

Pick

Use the selection tool and click on the objects you want to select.

1. Click the icon  from toolbar.
2. The mouse move over the object you want to select and color of the object will be changed. When the color is changed click left button of the mouse
3. If you want to select several objects after pick one, press the Shift in the keyboard, repeat the second step in the same time. Select other objects in turn.
4. If you want to take out some object, press the Shift in the keyboard, select the object in the same time.

Window

1. Click the icon  from toolbar.
2. Hold down the pick button on the pointing device at the first point and release the pick button until all the objects you want to select are in this window.

Choose “Select All” from Edit menu. You can select all the objects in the graphics area.

b. Move

Move an object by using mouse:

1. Select the object you want to move.
2. The mouse moves on the object and the cursor changes to another form. By holding down the pick button on the pointing device and drag, you can move the object to a new position.

Move an object by using keyboard:

1. Select the object you want to move.
2. Press the direction key on the keyboard, the object moves 1 millimeter each time.
3. If you press ctrl at same time, the object moves 0.1 millimeters each time.

Move an object accurately

1. Select the object you want to move.
2. In attribute bar, “X” is X-coordinate of the center of the object, “Y” is Y-coordinate of the center of the object. You can modify the coordinates directly, then press “enter” button on the keyboard. The object will be moved to the specified position.

c. Modify the dimension and shape of an object

Modify an object by using mouse

1. Select the object you want to modify.
2. The mouse moves on the handle of the object and the cursor changes to another form. By holding down the pick button on the pointing device and drag, you can modify the dimension and shape of the object.

Setting the dimension and shape of an object.

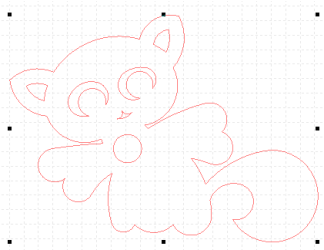
1. Select the object you want to modify.
2. You can modify the parameters directly in attribute bar, then press “enter” button on the keyboard.

d. Split, combine and translate

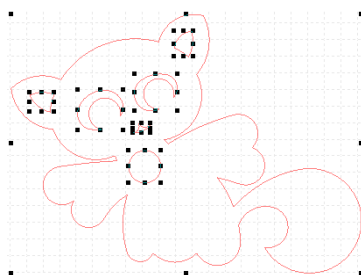
You can split an combined object to several single objects and you can also combine several single objects or translate text to a combined drawing.

Split

1. Select the combined object you want to split.



2. Click “Split” on attribute bar.



Combine



1. Select the objects you want to combine.
2. Click “Combine” on attribute bar.

Translate

1. Select a text block.
2. Click “To cur” on attribute bar and the text block is translated to a combined object.

Note: If the text block has been transformed to a combined object, the content of the text would not be modified.

e. Copy and paste

1. Select the objects to copy.
2. Click  on the standard toolbar to copy objects to the clipboard.
3. Click  on the standard toolbar to paste objects from the clipboard.

You can also use Copy in the Edit menu or <Ctrl+C> to copy objects.

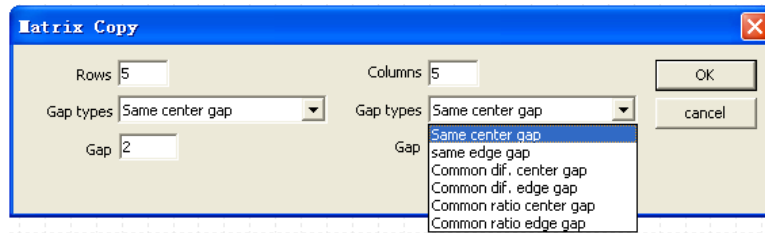
You can also use Paste in the Edit menu or <Ctrl+V> to paste objects.

Matrix copy

Creates an array defined by a number of rows and columns of the selected objects.

1. Select the object to copy.

2. Choose “Matrix copy” from Edit menu. The dialog box is as follows:



Rows: The rows of objects you can get after copied.

columns: The number of columns.

Gap: The distance between rows and the distance between columns.

Gap types: In the pull-down list:

Same center gap, Same edge gap: All distance between centers and gap between nearest sides are the same.

Common dif. center gap, Common dif. edge gap: The next distance is greater than last by a common difference.

Common dif. center gap, Common dif. edge gap: The next distance is greater(smaller) than the last by a common difference.

Common ratio center gap, Common ratio edge gap: The next distance is greater(smaller) than last by a common ratio.

3. Click “OK” after the parameters specified.

f. Cut and delete

Delete

You can cut objects to the clipboard.

1. Select the objects to cut.

2. Click  on the standard toolbar.

You can also use Cut in the Edit menu or <Ctrl+X> to cut objects.



Delete

Delete objects from graphics area.

1. Select the object to delete.

2. Click Delete on the keyboard or select Delete from Edit menu.


g. Undo and redo

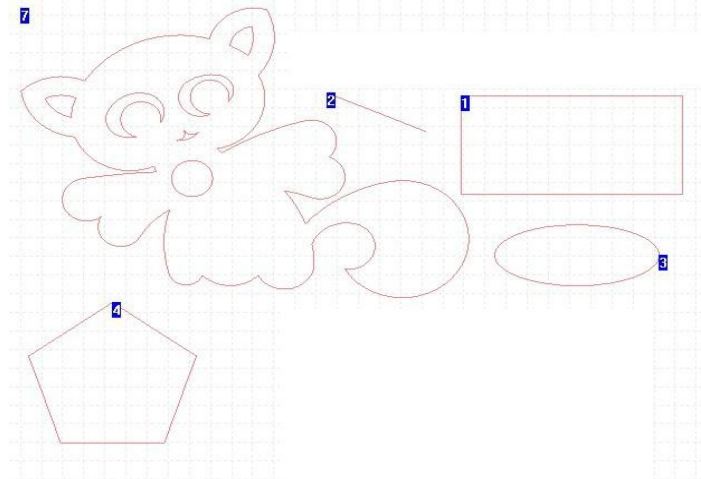
You can choose  from the standard toolbar to undo the most recent action and you can also choose  from the standard toolbar to redo an action.

6 Cutting management

a. Cut order

If you did not adjust the cut order, cut the drawings orderly according to the creating order.

Modify the cutting order: Choose  from toolbar or choose the Cut order from Object menu.



Modify the cut order from No. one: Click on the first object for cutting and this one will be cut firstly; click on the second object for cutting and this one will be cut secondly. The rest may be deduced by analogy.

Change the cut order from a number: If from one to three the order is right and you want to modify the cut order from No. 4, you can press Ctrl on the keyboard and at the same time click the last right number 3, then click the next number in order until the cut order is right.


Finish the modification: Click on the blank in the graphics area to finish the modification.

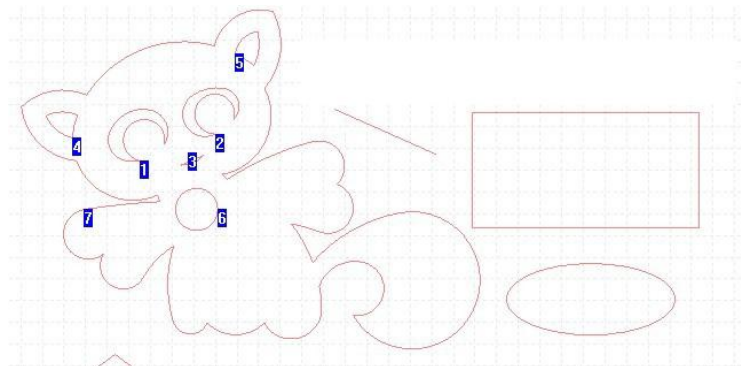
The cut order of the combined object.

Simple object: The object is composed of single linetype. Such as line, circle etc.

Combined object: The object is composed of several independent sub-path. Such as the DXF files.

The cut order of the combined object: the cut order of sub-path.

Modify the cut order of the combined object: Firstly select the combined object. Then choose  from the toolbar or choose cut order from the Object menu. The following steps are the same as the method above.

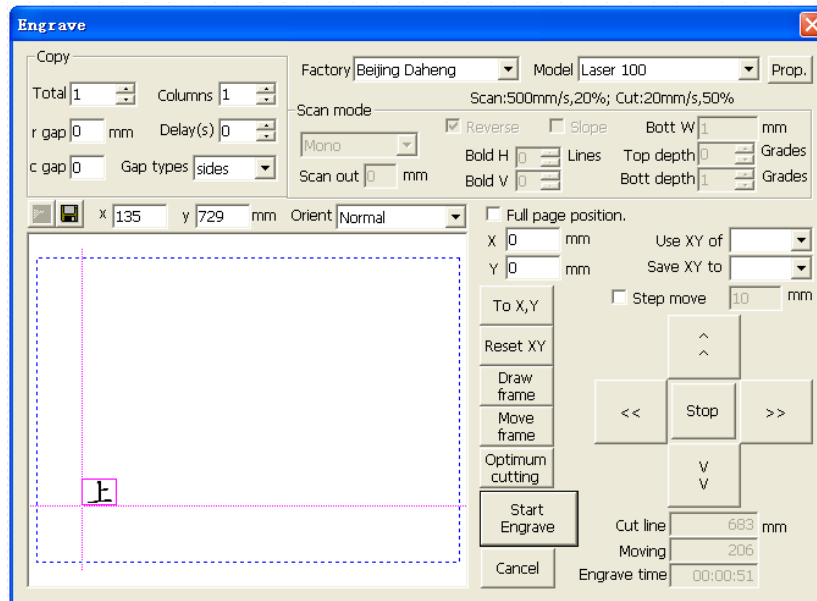


7 Engrave

Steps

1. Select the objects to engrave.

2. Click engrave button  on the toolbar.



3. Click Start engrave.

Position

Stop: Click this button the machine will stop.

Step move: You can select Step move and specify the distance to move; when you click the direction key, the machine will move the specified distance then stop. If you press the direction key when Step move is not selected, the machine will move until you release this button.

Repeat engrave(Copy)

Total: The amount of repeat engraving.

Columns: The number of columns.

r gap: The distance between rows. If the distance is a negative number, it means that the order of engraving is from the bottom up.

c gap: The distance between columns. If the distance is a positive number, it means that the order of engraving is from left to right.

Gap types: In the pull-down list, it contains distance between Centers and gap between nearest Sides.

Delay: The delay time between each engrave in repeat engraving.


Note: These parameters will be memorized in the program.

Start engrave

If the parameters and position of engraving have been specified, you can click Start engrave on the dialog box to cut the objects selected.


8 Save and open

Newlydraw files (*.ndr): All drawings on the current layout can be saved in hardware. This file is named as graphics file.

Save: Click the  on the toolbar or choose Save from the file menu. If the drawing is

named, the drawing can be saved without requesting a file name. If the drawing is unnamed, the Save As dialog box will flyout and the drawing can be saved under the file name you specify.

If the drawing is read-only, select the save as to save the changed file under a different name.

Open: From the File menu, choose Open, Or from the toolbar, choose . In the Open dialog box, double-click the file name in the list of files. You can also open the drawing by entering the drawing name and choosing OK.

New: From the file menu, choose New. Or choose  from the toolbar,

9 Appendixes

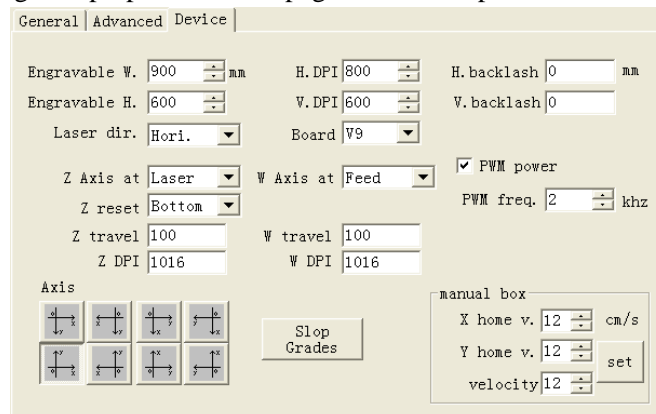
Engrave Machine Properties

This kind of machine is linked to the USB port of the computer. There is a manual box with which you can operate the machine. The machine can be operated in the software panel. It's property dialog includes “general”, “Advanced”, “device” pages.

Tip: The “device” page must be set already before out of machine factory.

1. “Device” property page

Properties of this page must be according with the installed machine hardware. The end user may not change the properties of this page, and can skip to read the next section.



Engravable W. or H.: The width and height of the engravable area of the machine, value unit: mm.

H. DPI: The resolution of horizontal axle, value unit: pulse/inch.

V. DPI: The resolution of vertical axle, value unit: pulse/inch.

H. backlash: The backlash of the rewind movement of the horizontal axle.

V. backlash: The backlash of the rewind movement of the vertical axle.

Laser dir.: The movement direction of the laser cartridge:

Hori.: The laser cartridge is installed at the horizontal bridge, and can be moved horizontally.

Vert.: The laser cartridge is installed at the vertical bridge, and can be moved vertically.

Board: The main board model of the machine. See the tag of the main board.

Axis: The coordinate system of the machine movement.

Tip1: All above properties must be the parameter of the machine design. If the moved distance is not the same as software, you can change the DPI value.

Example: There is a rectangle with 100x100 sizes in the software. The DPI of this page is 1016. You get a rectangle with 102x102 sizes. So, you must change the DPI from 1016 to 996($1016 \times 100 / 102 = 996$).

Tip2: If the horizontal DPI is different from vertical DPI, you can select “Normal; turn 180; mirror; mirror and turn 180” of the “orient” in engrave dialog (chapter 7).

Z axis at: Z axis is installed at:

None: Z axis is not installed in this machine.

Laser: Z axis is installed at laser cartridge.

Platform: Z axis is installed at platform.

Z reset: The original coordinate place of the Z axis. (The movement direction of the Z reset)

Top: The original coordinate place is at the top end. Bottom: The original coordinate place is at the bottom end.

Z travel: The control parameter of auto focus of the Z axis. It is the distance between the original position and the position when the laser focus is on the platform.

To know this value, see [panel operation](#).

Z DPI: The resolution of Z axle, value unit: pulse/inch.

W axis at: W axis is installed at:

None: No W axis is installed in the machine.

Feed: W axis is installed to feed material.

W DPI: The resolution of W axle, value unit: pulse/inch.

PWM power: If the power supply of the laser is PWM, the item must be selected. If the power supply of the laser is not PWM, the item must not be selected.

PWM freq.: The frequency of PWM.

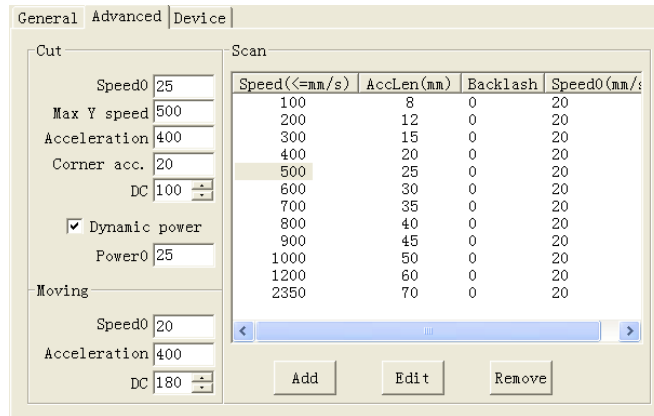
Slope grades: Click this button to open the dialog with which you can set the grades of “slope scan”.

Manual box: Set some kind of velocity of axis operated with manual box.

X/Y home v.: The velocity of the home movement of X or Y axis operated with manual box.

Velocity: The movement velocity of the laser cartridge operated with manual box.

2. “Advanced” property page



Cut

Speed0: The maximum limited speed at which the laser cartridge can cut through any corner. The value is depending on the machine hardware. The usage of this value: If the cut speed (in “General” page) is greater than this value, the laser cartridge cut through corner at variable lower speed. If the cut speed is lower than this value, the laser cartridge cut through any corner at the same cut speed.

Max “Y” speed: The maximum limited speed of the bridge on which the laser cartridge is installed.

Acceleration: The acceleration when the laser cartridge cut at variable speed.

Corner acc.: The Corner acceleration when the laser cartridge through corner at variable speed.

DC: The Driving force when the laser cartridge cut at lower uniform speed.

Dynamic power: The laser power is changed when the laser cartridge cut at variable speed, if this item is selected.

Power0: The laser power when the laser cartridge cut at “0” of speed, if the laser cartridge is cutting at variable speed and the “Dynamic power” is selected.

Moving

Speed0: The start and stop speed of the laser cartridge movement (when any movement button is clicked or between two cut paths).

Acceleration: The acceleration when the laser cartridge moves at variable speed.

DC: The Driving force when the laser cartridge moves at lower uniform speed.

Scan

This is a parameter list used when scan at different speed. The Means of these columns are:

Speed (<=mm/s): Scanning speed, if scan at speed between last row and this value, the right parameters of this row are used.

AccLen(mm): The acceleration before each scanned image line and deceleration distance after each scanned image line.

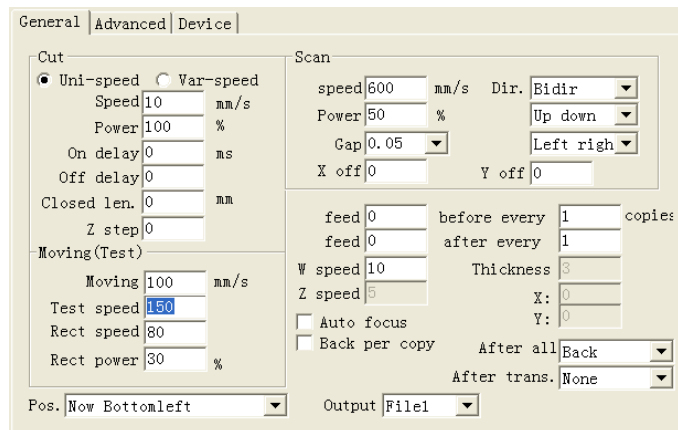
Backlash: The value of backlash to align adjacent scanned lines.

Speed0(mm/s): The start speed to scan at and the stop speed while stop scanning each image line.

Add, Edit, Remove: 用 Add a line, edit values of the selected line, or remove the selected

line.

3. “General” property page



Cut

Uni-speed: If this item is selected, cut all graph paths at uniform speed.

Var-speed: If this item is selected, cut at variable speed if “speed” at next line of this page is great than speed0 in “Advanced” property page, or cut at uniform speed if the next speed is lower than speed0 in “Advanced” property page.

Speed: The cutting speed.

Power: The Cutting laser power.

On delay: The duration time between laser on and start of laser cartridge.

Off delay: The duration time between stop of laser cartridge and laser off.

Closed len.: If the cut closed graph is not closed or crossed, set this value to close it.

Z Step: The distance Z axis moved before laser on and moved back after laser off when cut each graph path.

Moving (Test)

Moving speed: The speed at which laser cartridge moves from now position (the end of last cut line) to the start position of next line to be cut.

Test speed: If you click the buttons letting laser cartridge move in “Engrave” dialog, the cartridge moves at this speed.

Rect speed: If you click “draw frame” button in “Engrave” dialog, the cartridge moves at this speed.

Rect power: If you click “draw frame” button in “Engrave” dialog, the cartridge draw the rectangle with this laser power.

Scan

Speed: The scanning speed.

Power: The scanning laser power.

Gap: The distance between two adjacent scanned image lines. Generally, this value is 0.05 mm.

Dir.

SiDir: Scan the first line, move back with laser off, and scan the second line, and so on.

Bidir: Scan the first line, scan back the next line, and so on.

Up down, Down up: If the “laser dir” in “Device” property is “Hori”, this is the order of the scanning lines. If the “laser dir” in “Device” property is “Vert”, this is the scanning direction of the first scanning line.

Left right, Right left: If the “laser dir” in “Device” property is “Hori”, this is the scanning direction of the first scanning line. If the “laser dir” in “Device” property is “Vert”, this is the order of the scanning lines.

Others

| | | | | |
|------|---|--------------|---|--------|
| feed | 0 | before every | 1 | copies |
| feed | 0 | after every | 1 | |

Set the distance and moment to feed material.

W speed: The speed at which the material is feed by W axis.

Z speed: The speed of the movement of Z axis.

Thickness: The thickness of the engraved material. The Z axis makes laser cartridge is in focus by this value.

Tip1: This item is enabled only if “Z axis at” in “Device” page is not selected to “None” and ”Auto focus” in this page is checked.

Auto Focus: If this item is checked, Z axis makes laser cartridge is in focus before laser on and moves back after laser off.

Tip2: The focus is calculated by “Z travel” in “Device” property page and “Thickness” of this page. **To obtain Z travel, see [panel operation](#).**

Back per copy: The laser cartridge is moved back to the start position per each engrave copy, if “Total” (copies) in “Engrave” dialog is greater than 1.

After all: The position at which the laser cartridge stay after engrave.

None: Stay at the end position.

Back: Move to the start position.

To rel. XY: Move to the position of the “X, Y” in this page, and the original coordinate is “pos.” position of this page.

To abs. XY: Move to the position of the “X, Y” in this page, and the original coordinate is the top left corner of the engravable area.

X, Y: The above coordinate, X is rightward direction, Y is downward.

After trans.: The action after the data is transformed to the machine:

None: Keep the transform window open (no action).

Open panel: Close the transform window, open the panel window.

Engrave: Start to engrave.

Close trans.: Close the transform window, back to the engrave window.

Output: The file name the data is saved as in the engrave machine memory.

Pos.: The position to start engraves.

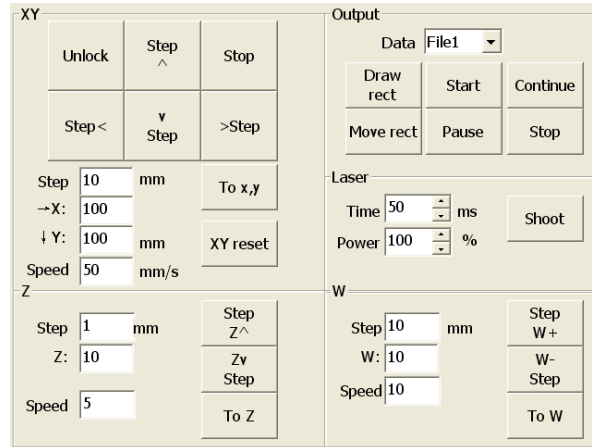
Now Topleft ~ Now Center: The cartridge position now is the Topleft ~ Center of the object to be engraved.

Page pos.: no use.

Pos. Topleft ~ Pos. Center: The XY coordinate of “Engrave” dialog is the Topleft ~ Center of the object to be engraved.

4. Software panel

If the button  is clicked, the following software panel is showed.



XY

Unlock: If this button is be clicked, the laser cartridge can be moved by hands while the power supply is turned on.

Step<, ^, v, >: Click these buttons to move the laser cartridge a step.

Step: The distance of step the cartridge moved by above buttons in this panel.

Stop: To stop all now movements and turn off the laser, can not be continued by the “Continue” button.

To X, Y: To move the laser cartridge to the position at “X, Y” coordination.

X, Y: The coordination the cartridge be moved to when the “To X, Y” button in this panel is clicked. X is rightward, Y is downward.

Speed: The speed at which the cartridge is moved when any one of above movement buttons in this panel is clicked.

XY reset: To move the cartridge to the original position of the engravable.

Output

Data: The File name of the engrave data saved in the machine.

Draw rect: To draw a bounding rectangle of the object at the placed to be engraved.

Move rect: To move at the bounding rectangle of the object at the place to be engraved.

Start: To start engraving.

Pause: To pause engraving, turn off the laser. It can be continued from the paused point by “Continue” button.

Continue: To continue engrave from the paused point. This button is enable only if the “pause” button is clicked.

Stop: To stop all now movements and turn off the laser, can not be continued by the “Continue” button.

Laser

Shoot: Turn on the laser, and turn off it after “Time” time.

Time: The duration time while the laser is on by “Shoot” button.

Power: The laser power while the laser is on by “Shoot” button.

Z (W)

If Z or W axis is installed, they can be moved by the bottom buttons in this panel.

StepZ (W) ^, v: Click these buttons to move Z or W axis cartridge a step.

Step: The distance of step the Z or W moved by StepZ(W) buttons in this panel.

To Z(W): To move Z or W to the position at “Z(W)” coordination.

Z(W): The coordination the Z or W be moved to when the “To Z(W)” button in this panel is clicked.

Speed: The speed at which the Z or W is moved when any one of Z or W movement buttons in this panel is clicked.

How to calculate the Z travel: The “Z travel” in the “Device” property page must be set exactly if the “Auto focus” in “General” property page is checked. The “Z travel” is calculated by following steps:

1. Put the material with 0 thicknesses on the platform.
2. If the laser cartridge is controlled by Z axis and “Z reset” in “Device” property page is “Top” (this is suggested), input a positive value in “Z:” in this panel. Other cases, negative value need to be inputted here.
3. Click “To Z” button.
4. Click “Shoot” to turn on the laser. Check if the focus is ok. If the focus is not ok, repeat step 2~4.
5. Write the absolute value of the “Z:” item, Close this panel, Open the “Device” property page of the property dialog, Set the wrote value to “Z travel” item, click “Ok” button.