

Chapter 1 BASIC KNOWLEDGE OF SOFTWARE SYSTEM

1.1 Introduction of software:

The software is made for large-area laser machine, particularly for high-speed engraving and cutting.

The following is the main features and functions of this software.

A、 It can support AI, BMP, PLT, DST (embroidery software) and DXF etc.

B、 After graphics input, you can do some simple editing (change the size, circumrotate and copy etc.).

C、 Data of different layers can be output respectively. Power, speed and mode (engrave and cut etc.) of each layer can be set respectively. All the parameters will be saved automatically.

D、 Graphics can be engraved; Vector graph can be drawn, cut and engraved; precise level can be set up freely.

E、 Support array output and the software can calculate the number of data to cover the material. Whole processing procedure can be simulated on screen. The original point can be set anywhere to make processing conveniently.

F 、 When process is going on, it can be controlled by “Pause” and “Continue”. All output process can be controlled on the interface of machine.

G、 When output, “process along dialog box” can make feeding and location easier.

H、 Engraving speed can reach to 1500mm/s, cutting speed can reach to 500mm/s, engraving precision can reach to 0.1mm.

I、 360 degree grade engraving. The grade can be set freely.

J、 Mass graphics(>15M) can be calculated rapidly.

K、 When the speed changes, the power intensity will change automatically. It can insure the process depth is constant.

L、 Excellent optimized-path and path definition.

M、 When cutting, you can add assistant lines. This can make the juncture smooth and output quality is increased.

N、The particular “part process” function can process from broken point. If the power is cut off, the machine will not produce waster.

1.2 Control system formulation

Control system is made up of hardware (control card) and software. Hardware includes one MPC03-LV control card, one FV100 module, one connecting cable and one P68 patch panel; and software includes drivers for the MPC03-LV control card and control software. The whole control system is contained in a packing carton and software in a CD.

Descriptions on software directories:

subdirectory	Files	Explanations
Bin	File of main system procedure	Copy it to the hard disk and run LaserCut.exe
Drivers	Drivers for control card and soft dog	
Doc	File for customer manual	Word format
Demo Data	PLT, BMP etc. demo data	
Read me	Explanations of the software edition	Drivers directory

Hardware equipment formulation:

Item	Amount	Description
MPC03-LV control card	1	PCI control card, inserted into PCI slot of the computer directly
68-pin data wire	1	Connect PCI control card and terminal board
Terminal board	1	Connect signals to control device through data wire
FV100 module	1	Provide 0-5V signal to control the laser power supply

Chapter 2 System Configuration & Installation

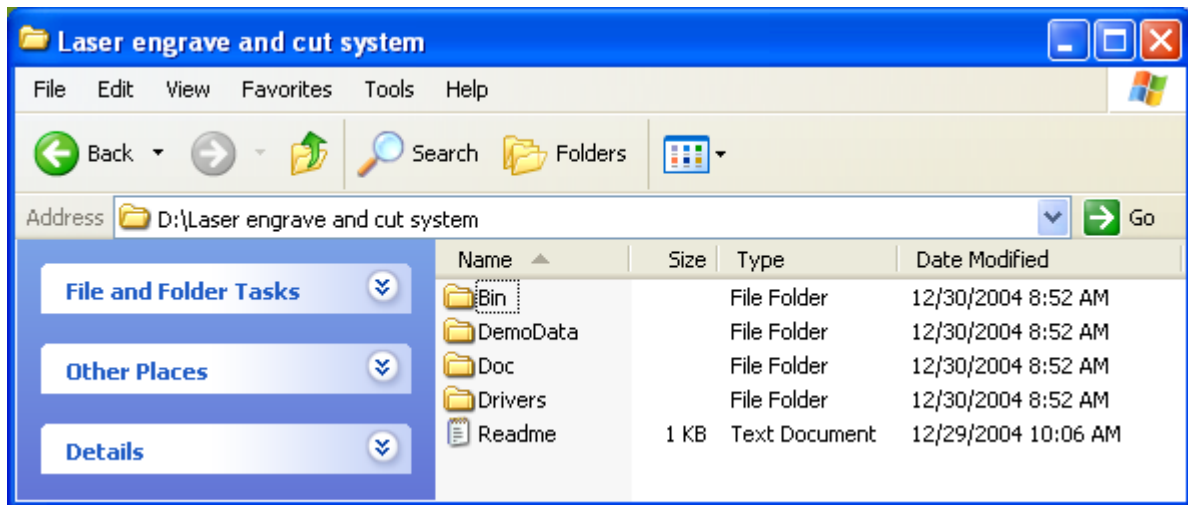
2.1 The condition for installing software system

- A、 Operation system: Windows 2000 or Windows XP of Chinese or English version
- B、 Hardware requirement: IBM compatible computer
- C、 Basal running collocation:
 - CPU: Above Pentium 2;
 - Storage: 128 Meg;
 - Hardware: Above 10 G and CD-ROM;
 - PCI extending slot;
 - Above one USB interface;

2.2 hardware installation

2.2.1 Copy files

Copy content of CD to the computer hard disk, software contains generally the following:



2.2.2 Install USB DOG

There is a USB DOG in machine package that should be inserted in any USB slot of the computer. After this, there is an instruction to find new hardware. At first, please choose "cancel" and then run the file Drivers\ MicroDogInstdrv.exe in CD. You will see the dialog box as following:



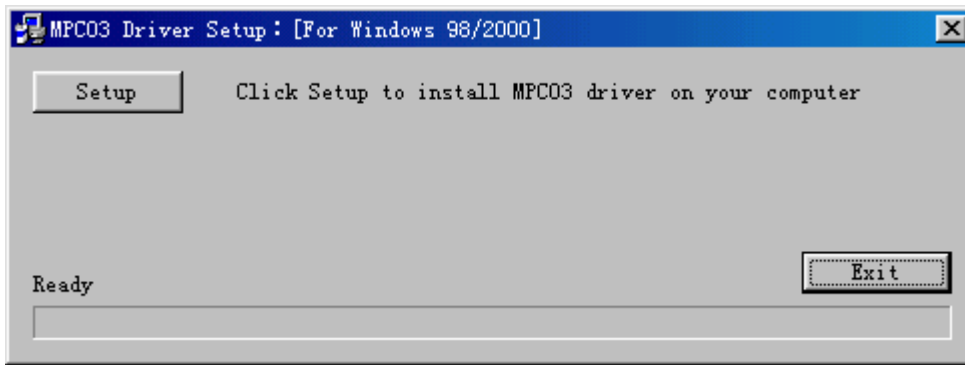
Please press “install Driver” button to install the driver of DOG.

2.2.3 Install movement-control card

There is a PCI movement-control card in machine package. This card is based on PCI bus and should be inserted to PCI slot of the computer. To ensure your safety, the following procedure should be abided by:

- A、 Close PC, and cut off power.
- B、 Open PC's cover, choose the PCI slot that is not in use and insert movement-control card.
- C、 Fix movement-control card, and put cover on computer as it is.
- D、 Connect movement-control card with laser machine by data wire that is attached with machine.
- E、 Connect with power and start to run PC.

When operating system is started, the PCI card can be checked automatically. There is an instruction to find new hardware. At first, please choose “cancel” and then run the file Drivers\ Win98-2000 (Win XP)\SetupMpc03Drv.exe in CD. You will see the dialog box as following:



Click "Setup", the driver will be installed automatically. There are some notes for this operation, please read the file "readme.TXT" at first.

Then restart the computer please.

2.2.4 Install software

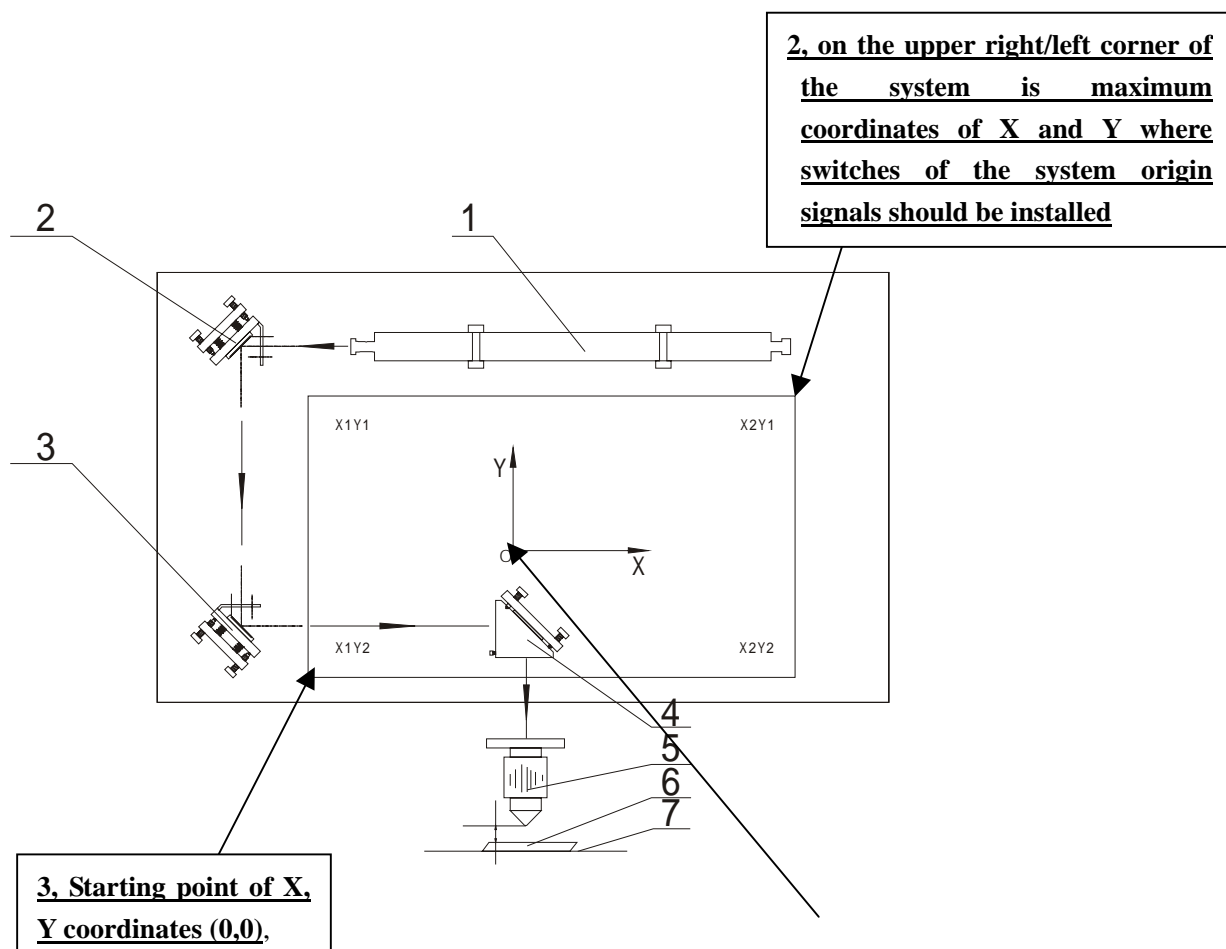
It is easy to install software, and you just copy all files in CD to hardware.

2.2.5 Update software

The software will be updated according to customer's requirement. When you update software, just replace the subdirectory "Bin". All driving procedure and basic system file are not necessary to updated.

2.3 Installation of carving and cutting machine

2.3.1 Conventions on coordinate system and moving direction of the carving machine



1, The lateral is axis X and the longitudinal is axis Y; axis X to the right is positive and axis Y upward is positive

- 1、Laser tube
- 2、The first reflect mirror
- 3、The second reflect mirror
- 4、The third reflect mirror
- 5、Focus lens
- 6、Material
- 7、Working table

2.3.2 Connect step motor driver, switching power supply, step motor and on/off signals of the origin according to requirements shown below.

Description of pins on the connection:

No.	Name	Definition	No.	Name	Definition
1			2		
3			4		
5			6		
7	EA2+	5Vpower +	8	EA2-	Pause
9	EB2+	5Vpower +	10	EB2-	Back to the origin
11	EZ2+	5Vpower +	12	EZ2-	Sudden stop
13			14	GND5	5V power grounding
15	LASER	Laser output	16		
17			18	FRQ	Laser regulation
19	PUL2-	Pulse 2-	20	PUL2+	Pulse 2+
21	DIR2-	Direction 2-	22	DIR2+	Direction 2+
23			24	DCV5	5V power positive
25			26	ORG2	Origin 2
27			28	EL2+	Positive limit 2
29			30	EL2-	Negative limit 2
31			32	SD2+	Positive deceleration 2
33			34	SD2-	Negative deceleration 2
35	EA3+	5Vpower+	36	EA3-	Downward shift
37	EB3+	5Vpower+	38	EB3-	Right shift
39	EZ3+	5Vpower+	40	EZ3-	Upward shift
41	EA4+	5Vpower+	42	EA4-	Along border
43	EB4+	5Vpower+	44	EB4-	Start / Continue
45	EZ4+	5Vpower+	46	EZ4-	Left shift
47			48		

49	PUL3-	Pulse 3-	50	PUL3+	Pulse 3+
51	DIR3-	Direction 3-	52	DIR3+	Direction 3+
53	PUL4-	Pulse 4-	54	PUL4+	Pulse 4+
55	DIR4-	Direction 4-	56	DIR4+	Direction 4+
57	DCV24	+24V power positive	58	ALM	External alarm input
59	ORG3	Origin 3	60	ORG4	Origin 4
61	EL3+	Positive limit 3	62	EL4+	Positive limit 4
63	EL3-	Negative limit 3	64	EL4-	Negative limit 4
65	SD3+	Positive deceleration 3	66	SD4+	Positive deceleration 4
67	SD3-	Negative deceleration 3	68	SD4-	Negative deceleration 4

Note:

- A. Excepting universal input/output signals, 2, 3, 4 of the signal name correspond to shaft 2, 3 and 4 of MPC03-LV card respectively.
- B. This control system needs only shaft 2, 3 and 4. Shaft 3 refers to axis Y (pushing shaft), shaft 4 to axis X (scanning shaft), and shaft 2 used for automatic feeding.
- C. Grounding wire of laser signal should be connected with that of 5V power.
- D. 24V power doesn't have to be grounded. As long as it has enough driving power towards the origin switch, 5V power can be used.
- E. Switching power determines whether control card can work normally, so please choose power with reliable quality that voltage regulator and filter circuit is necessary.
- F. Red mark indicates that the system should be connected.
- G. Origin switch requires low electric level to be effective.

Input signals of MPC03-LV card (travel limit, deceleration, origin and external alarm) could be output by contact switch or proximity sensor of NPN output etc. Its connecting method is as shown in diagram.

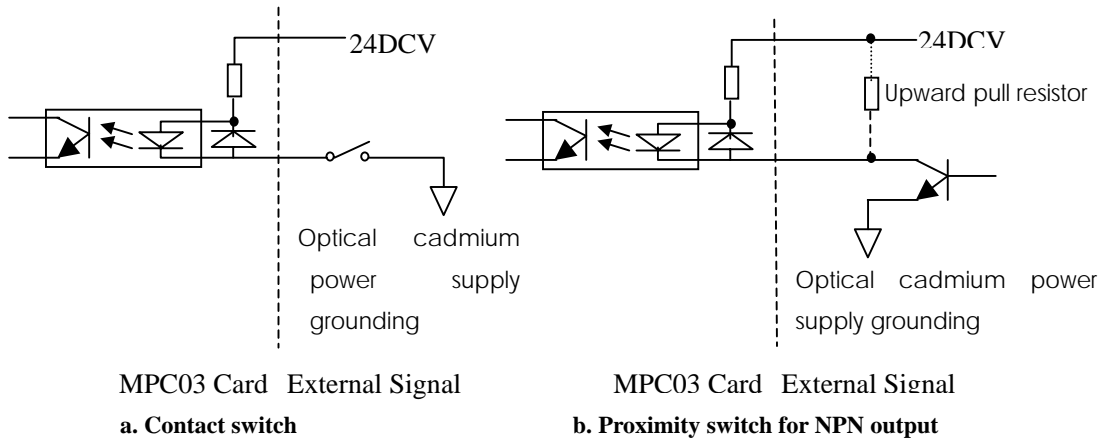


Fig. 2.1 Connecting methods for on-off input signal

Pulse/direction output signal of MPC03-LV card, as control signal of stepping motor or digital AC servo motor, its frequency determines rate of rotation of the motor and its number determines angle of rotation. Connecting method for pulse/direction signal is as shown in diagram:

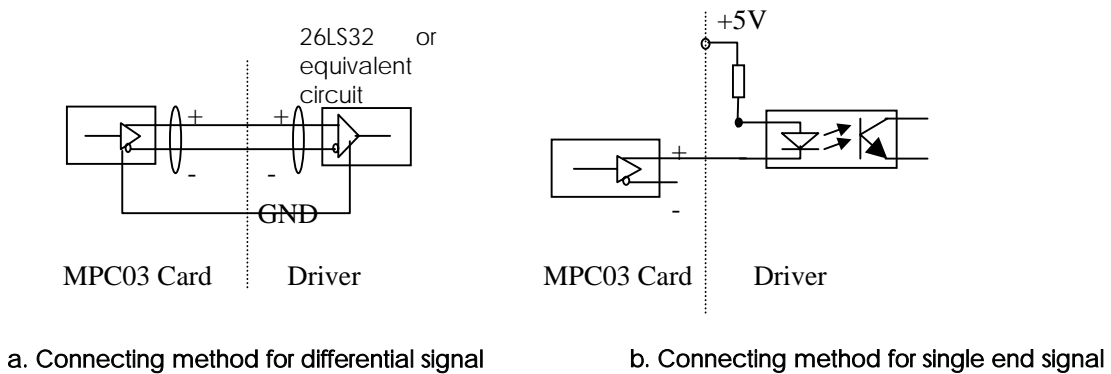


Fig. 2.2 Connecting method for pulse/direction output signal

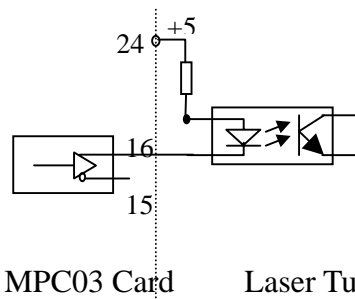


Fig. 2.3 diagram Connecting method 2 for laser output signal

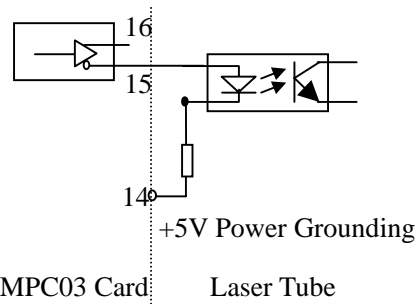


Fig. 2.4 Connecting method 2 for laser output signal

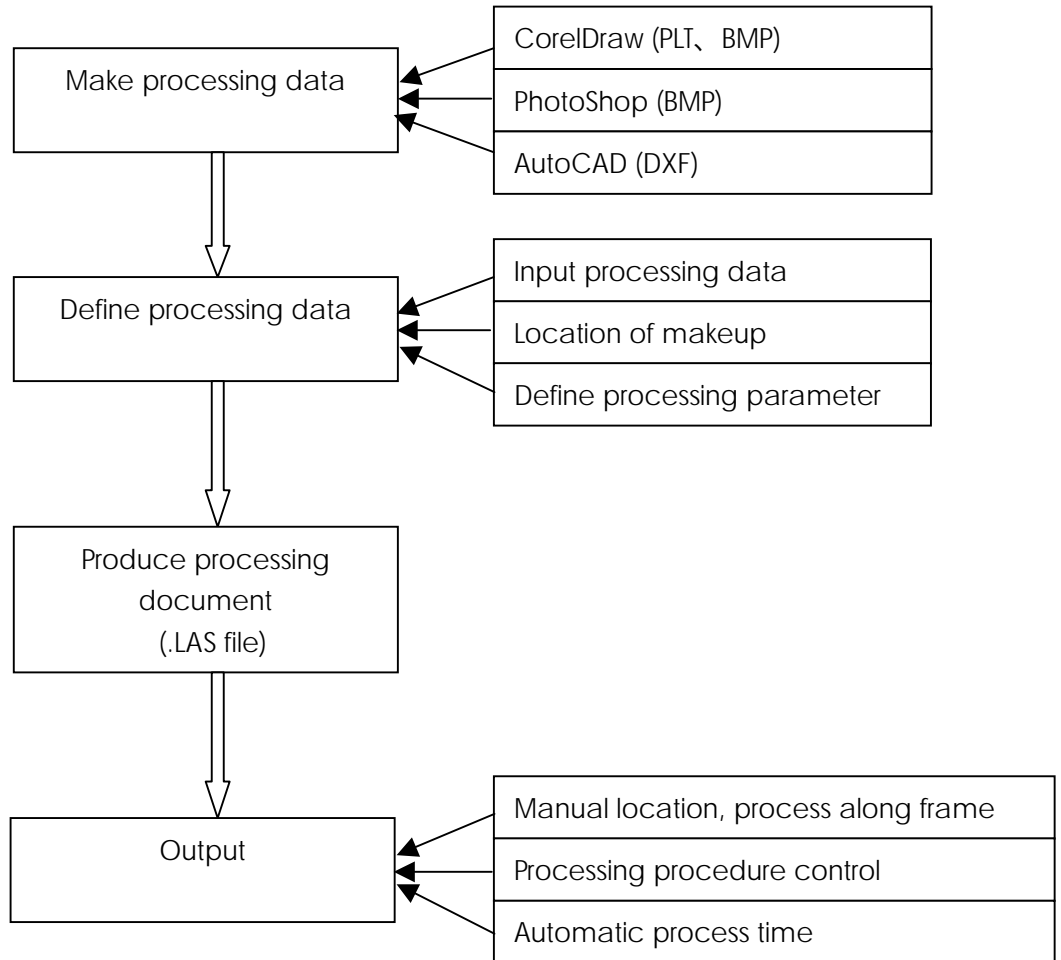
Chapter 3 Software operation

3.1 Procedure of operation

3.1.1 Main procedure of operation

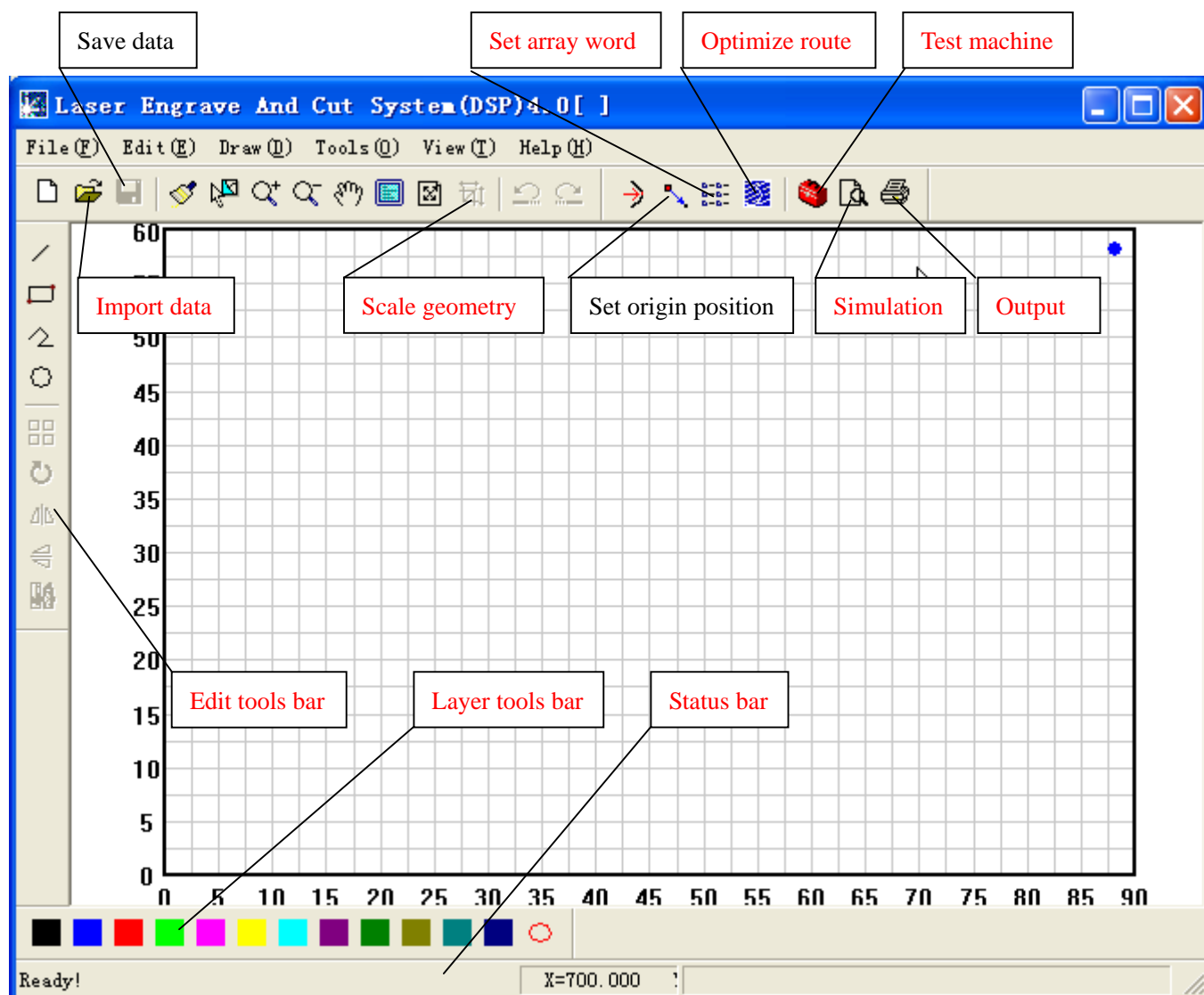
Procedure: make graphics in CorelDraw (version 9.0, 11.0 and 12.0 are supported by this system), Photoshop, AutoCAD2000 or DST. Start software system, load data that is needed to process. Then please collocating parameters of processing data and creating processing file and output data for processing.

3.1.2 Flow chart of processing procedure



3.2 Explanation for system function

When you start software, you will see the interface as follows. All system function can be found on tool columns.



Let mouse stay on an icon for a moment, and you can see the explanation of basic function of tools bar. The following is the explanation of all tool columns.

3.2.1 File

3.2.1.1 New

The corresponding icon is .

Create a new file.

3.2.1.2 Open

The corresponding icon is .

Load data that the software supports. The software can support * .LAS,

* .PLT、 * .BMP、 * .DXF、 * .DST、 * .AI、 * .Dwg2 etc. files.

3.2.1.3 Save

The corresponding icon is .

Save the graph data that is defined processing parameters as laser machining file (* .LAS).

3.2.1.4 Save As

Save a laser machining file (* .LAS) as another laser machining file (* .LAS).

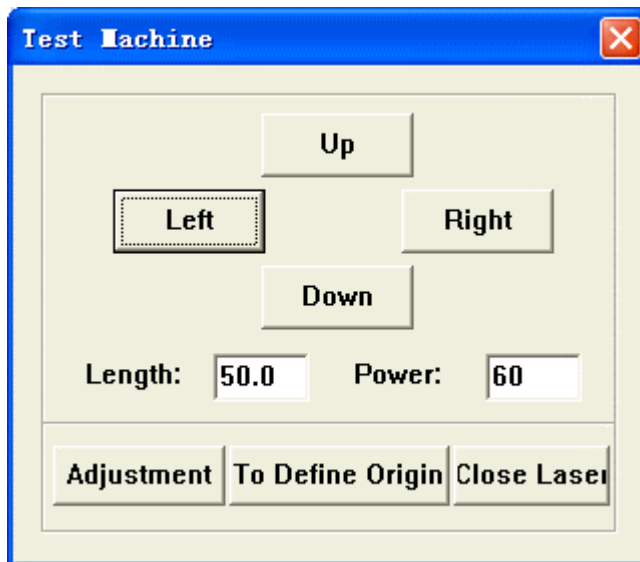
3.2.1.5 Export

Save the vector graph data that is in current window as a standard PLT file (*.PLT).

3.2.1.6 Test machine

The corresponding icon is .

Click this button, and then you can see the following dialog box:



Up, Down, Left, Right: Move the laser head. Click once and the laser head will move a distance.

Length: It determines the distance that the laser head moves.

Power: It determines the intensity of the laser. The minimum value is 0 and the maximum value is 100.

Adjustment: Click this button and the laser head will move to the home point of the machine slowly (the speed is determined by "Slow Speed" that you can change in the "Machine Parameters Setting" diagram). Then the laser head will move to the origin point quickly (the speed is determined by "Fast Speed" that you can change in the "Machine Parameters Setting" diagram). This can eliminate the cumulate error. Generally, the machine should be adjusted before processing. When you run the software, it will be adjusted automatically (this function can be cancelled as you prefer).

To Define Origin: Click this button and the laser head will move to the origin point of the machine quickly.

Close laser: Open/Close laser.

3.2.1.7 Simulation

The corresponding icon is .

When parameters set is finished, please click this button. It can simulate the procedure of output for checking the result of output.

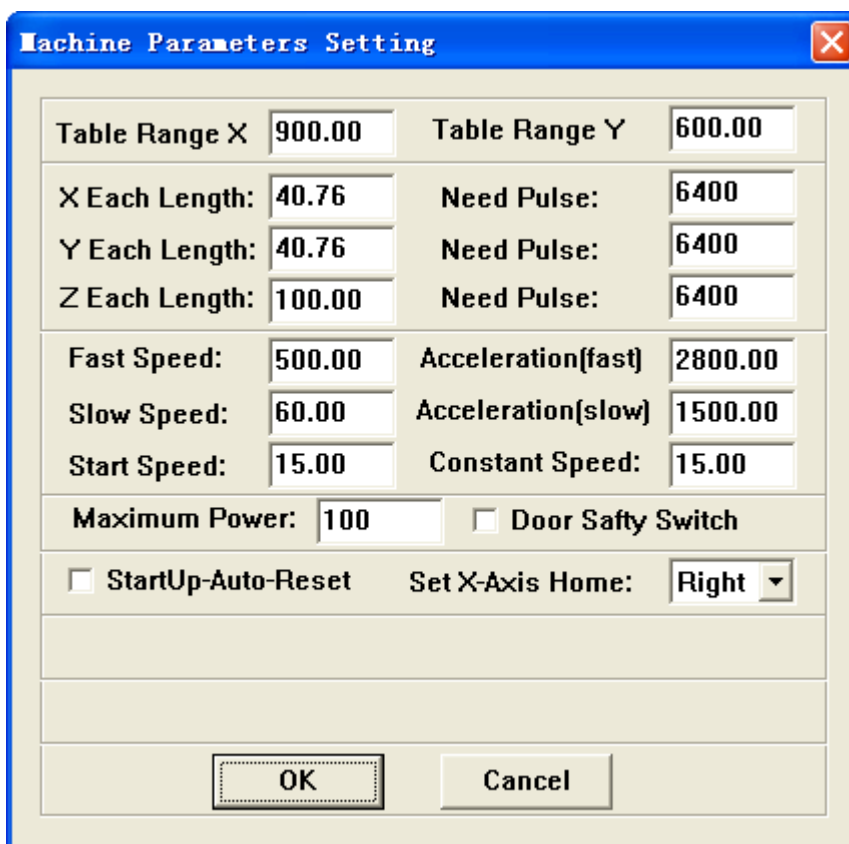
3.2.1.8 Output

The corresponding icon is .

After confirming the result of simulating output, please click this button to output the data to laser machine.

3.2.1.9 Machine parameters set

Click this button, and then you can see the following dialog box:



The dialog box titled "Machine Parameters Setting" contains the following parameters:

Table Range X	900.00	Table Range Y	600.00
X Each Length:	40.76	Need Pulse:	6400
Y Each Length:	40.76	Need Pulse:	6400
Z Each Length:	100.00	Need Pulse:	6400
Fast Speed:	500.00	Acceleration[fast]	2800.00
Slow Speed:	60.00	Acceleration[slow]	1500.00
Start Speed:	15.00	Constant Speed:	15.00
Maximum Power:	100	<input type="checkbox"/> Door Safty Switch	
<input type="checkbox"/> StartUp-Auto-Reset		Set X-Axis Home:	Right
<input type="button" value="OK"/> <input type="button" value="Cancel"/>			

Explanation for the function of each parameter in above dialog box:

1、 Table range X(Y)

It is the available processing area of the machine. If you change the number, the reference frame of the main interface will be changed accordingly. The moving range of X and Y axis will be restricted by this parameter.

2、 X (Y, Z) Each Length

When the stepping motor moves a circuit, the laser head will move a relative length. You need to input the number in it.

3、 Need Pulse

The number is "driver's subdivision number" ×200.

4、 Fast speed

This is the maximum speed of laser head moving without lasers emitting. When you move the laser head up, down, left and right, this parameter will work. If the number is too high, machine will shake intensively.

5、 Slow speed

6、 Acceleration (fast)

7、 Acceleration (slow)

8、 Start speed

X, Y -Axis start speed means starting speed. When cutting, the number is the starting speed of acceleration on X, Y-axis. Normally, the number should be chosen from 5-20mm/s according to different graphics. If the number set up is too high, machine will shake intensively.

9、 even speed

10、 Cancel Time Limit

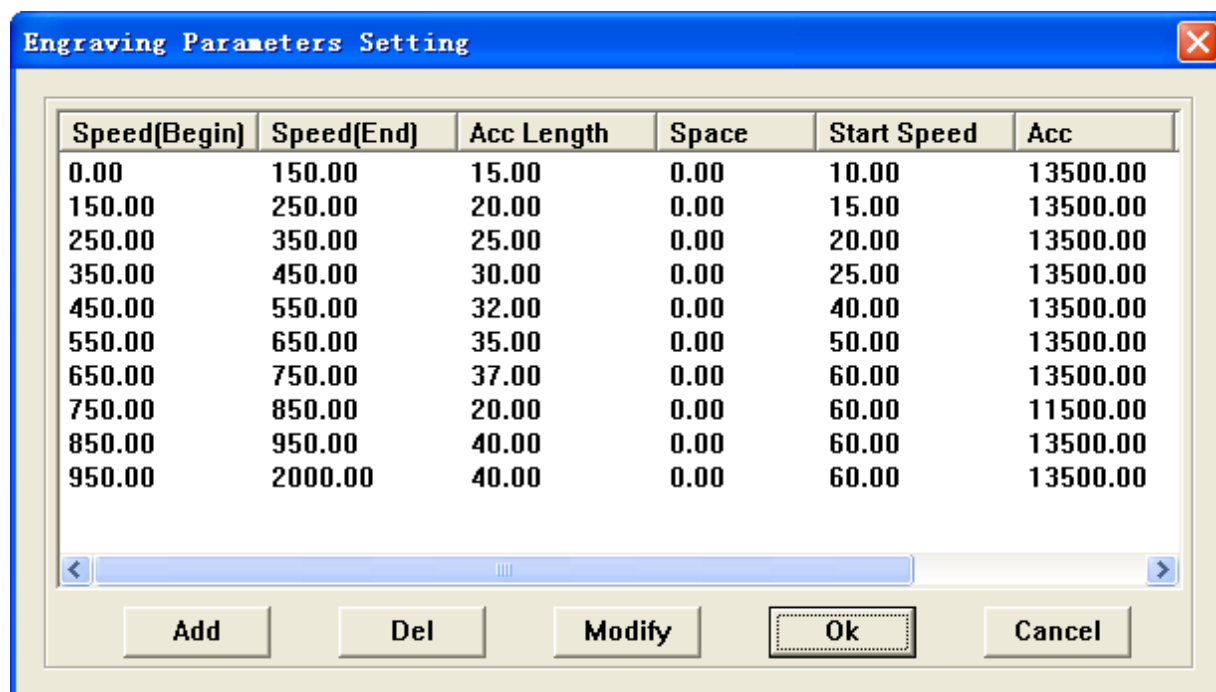
10、 Start-Auto-GoHome

11、 X-Axis Home Dir

It is determined by the position of original switch.

3.2.1.10 Engraving parameters set

Click this button, and then you can see the following dialog box:



Now let's use the first row as an example to explain each parameter:

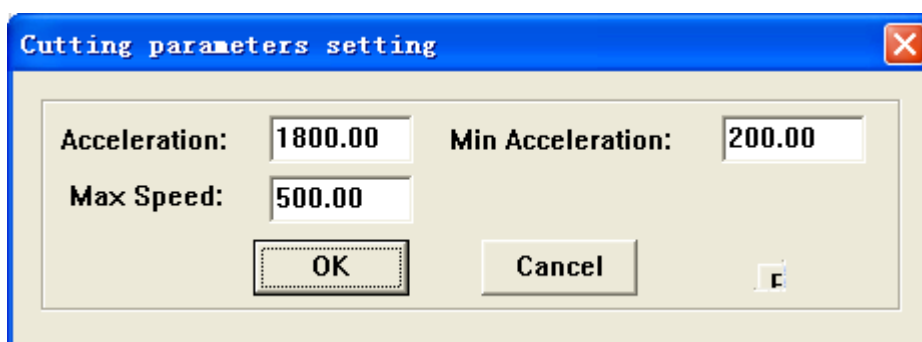
This row represents that when engraving speed (engraving speed is set up in “Layer Properties” which is in “Layers manager”) is between 1000 to 1200, acceleration is 30mm. That is, the engraving length without laser. This function is used for conquering inertia of machine. If you find graphics error happens (that is, motor lost step), you can set up a bigger number in “Speed du...”

“Add Space” is used for compensating mechanical returning clearance. If you find the engraving edge is not orderly, you can set up number in “Add Space”. This number can be a positive number or a negative number. The details are in the “Add Space Adjustment” part that is in the part “Modify” of Chapter Four.

When all the parameters are set, click “save” button please, then click “close” to escape.

3.2.1.11 Cutting parameters set

Click this button, and then you can see the following dialog box:



Acceleration

It determines the time that starting speed reaches to maximum speed. If the number set up is too high, machine will shake intensively. If the number set up is too low, processing efficiency will be lowered. So modify it according to actual situation.

Min acceleration

It determines the processing precise when the processing route turns the corner.

Max Speed : During cutting, it determines the speed when the laser is not emitting.

3.2.1.12 Exit

Click this button, and you can exit the software.

5. Scan Y axis speed

When engraving, the Y-axis's moving speed.

6. Slow speed

The starting speed of laser head moving without lasers emitting. If the number set up is too high, machine will shake intensively.

9. Slow acceleration

13. List for set engrave parameters

There is a list on the second half of “archive set” dialog box. The engrave parameters of movement on X-axis can be set up in this list. We suggest you to choose Windows default.

3.2.2 File

3.2.2.1 Undo

The corresponding icon is .

3.2.2.2 Redo

The corresponding icon is .

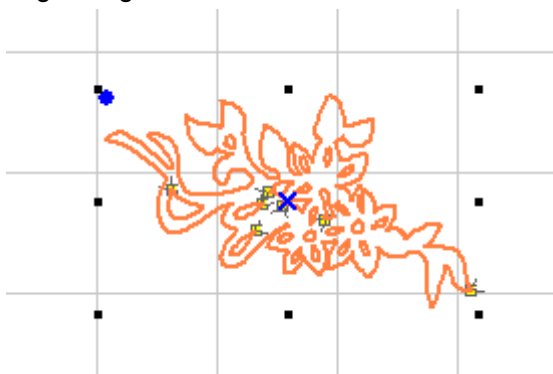
3.2.2.3 Select

The corresponding icon is .

Select graphics. Select graphics or a part of the graphics. You can delete, move, change layers of the graphics you select and etc.

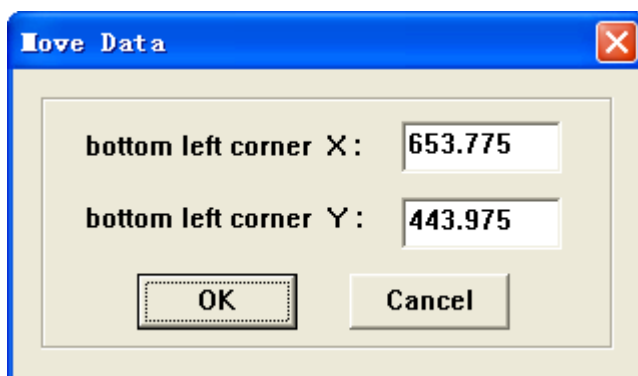
There are other functions about this button :

Click this button, and select the graphics you prefer, and then you can see the following dialog box:



Move the mouse to the nodes, then drag the mouse, you can change the shape of the graphics as you prefer.

After you select the graphics, click “Spacebar” and you can see the following dialog box:




Input the coordinate of the X-axis and Y-axis, you can change the position of the graphics.

3.2.2.4 Enlarge

The corresponding icon is .

Enlarge showing graphics. Click this button, then click your graphics with mouse and the graphics can be enlarged for show.

3.2.2.5 Reduce

The corresponding icon is .

Reduce showing graphics. Click this button, and the graphics can be reduced for show.

3.2.2.6 Move

The corresponding icon is .


Move screen. Click this button; press the left button of your mouse continuously, and move your mouse on any place of the graphics, then the graphics can move.

3.2.2.7 Worktable range

The corresponding icon is .

Show the whole processing area within the scale of reference frame.

3.2.2.8 Data range

The corresponding icon is .

Show the processing area completely. It can show the processing date in max on screen.

3.2.2.8 Move data to reference frame

When the data is input, it may be out of the reference frame. Click this button and you can move data to reference frame.

3.2.3 Drawing

3.2.3.1 Draw lines

The corresponding icon is .

Click this button, move your mouse on the screen, and you can draw straight lines freely. Press “Ctrl” key, and move mouse on the screen, you can draw horizontal lines.

3.2.3.2 Draw rectangle


The corresponding icon is .

Click this button, move your mouse on the screen, and you can draw rectangles of various sizes. Press “Ctrl” key, and move mouse on the screen, you can draw square.

3.2.3.3 Draw continual line


The corresponding icon is .

3.2.3.4 Draw ellipse

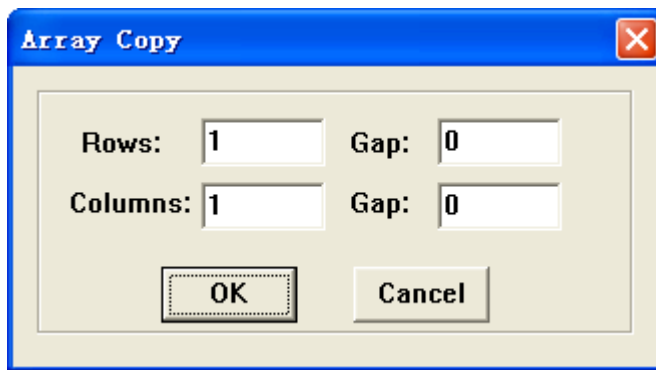
The corresponding icon is .

3.2.3.5 Array copy

The corresponding icon is .

Click “choose” button , and choose the graphics you want to array copy then click

this button, you will see following dialog box.



Input relative parameters, then a number of graphics are copied as “number of rows X number of columns”.

3.2.3.6 Circumrotate

3.2.3.7 Mirror vertical


The corresponding icon is .

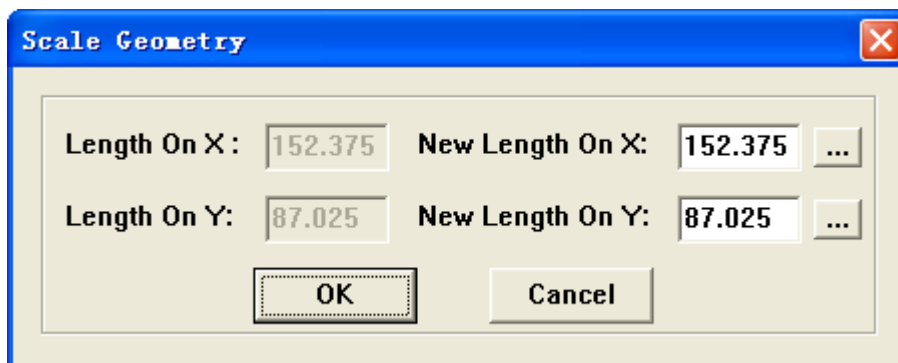
3.2.3.8 Mirror horizon


The corresponding icon is .

3.2.3.9 Change size

The corresponding icon is .

Change the size of graphics. Click “select” button , then select the graphics you want to process and click the button, you can see the dialog box as follows.



Now, input the number you prefer on X and Y-axis. Click “OK”, the size of graphics can be changed. If you don’t want to change the proportion of X and Y-axis, you can input one of the number (X or Y), then click the button .

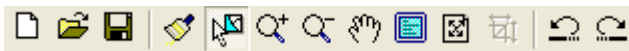
3.2.4 Tools

3.2.4.1 Draw lines

3.2.5 View

3.2.5.1 Tool bar

Standard tool bar: Click this button, you can display or hide the following bar.



Technics tool bar: Click this button, you can display or hide the following bar.




Edit tool bar: Click this button, you can display or hide the following bar.



Layer tool bar: Click this button, you can display or hide the following bar.



Click “select” button  and choose a certain part of graphics on screen (after choosing, the outline become gray), then click any color button you prefer on the layer bar. Now a new layer will be added in the layer list automatically.

3.2.5.2 Status bar

Click this button, you can display or hide the following bar.



The status bar show the coordinates of the position that mouse stay on. It also show the name and website of the manufacturer.

3.2.5.3 Language

Click this button, and you can see the following dialog box.



Select the language you need, and restart the software. The interface will display the language you need.

3.2.6 Help

3.2.6.1 Catalog

Click this button, and you can see the manual of the software. You can get any information about how to operate the software.

3.2.6.2 Version message

Click this button, and you can see the following dialog box.

It shows information of the software and our phone number. If you have any

question, don't hesitate to call us.

3.2.7 Other button on the tool bar

3.2.7.1 Refurbish screen

The corresponding icon is .

3.2.7.2 Load BMP


The corresponding icon is .

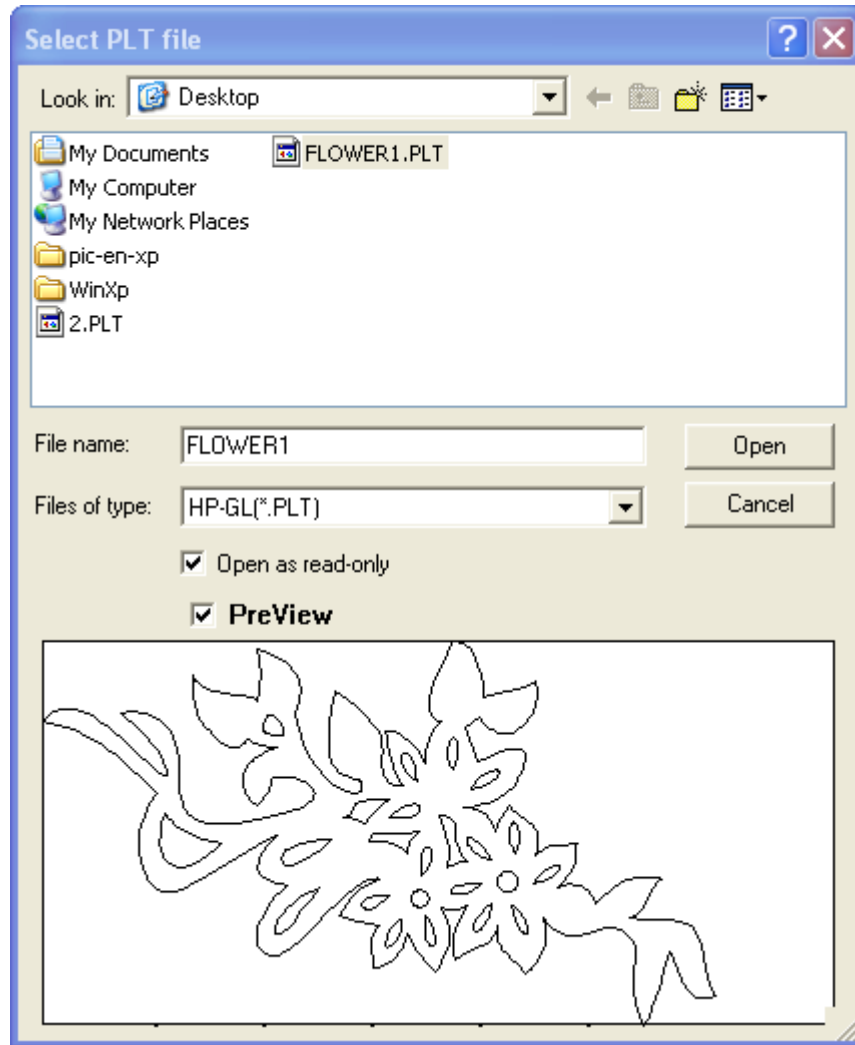
3.3 Make processing data

This system only provides simple editing tools. Processing graphics should be finished in CorelDraw、PhotoShop、AutoCAD and etc. At present, this system support BMP, PLT, AI, DXF, DWG, DST (embroidery software) and etc. You must save your graphics in design software as the ones that can be supported by this software system. After this, input the finished graphics to software through “Open” in our software.

3.4 Define processing parameters

3.4.1 Input processing data

Click , you will see the following dialog box:



You can choose graphics mode from Files of type (T).

3.4.2 Edit data

3.4.2.1 Typeset data

3.4.2.2 Coordinate data


3.4.2.3 Set technics parameters

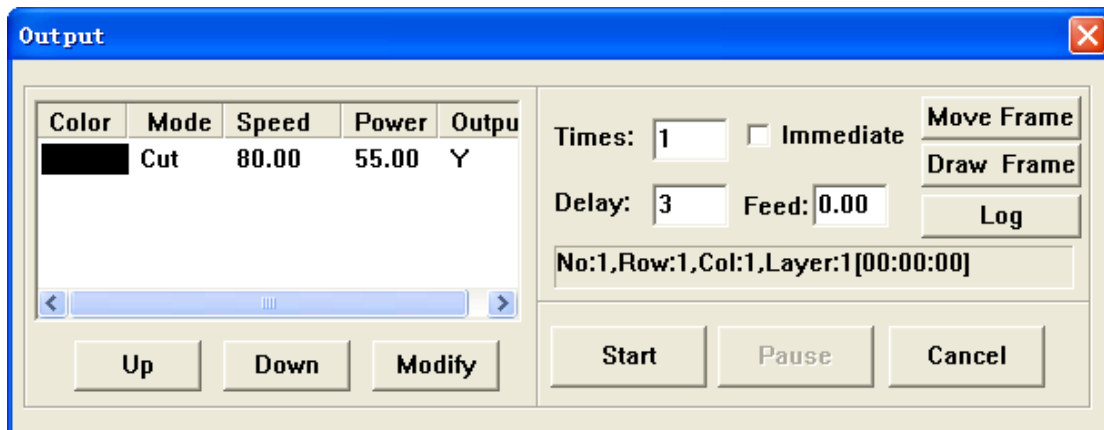
3.4.2.4 Set the position of origin point

3.4.2.5 Set the position of origin point

3.4.3 Define processing parameter

If you need to define processing parameter, you have to enter the "output" interface.

Click  and you can enter "output" interface.

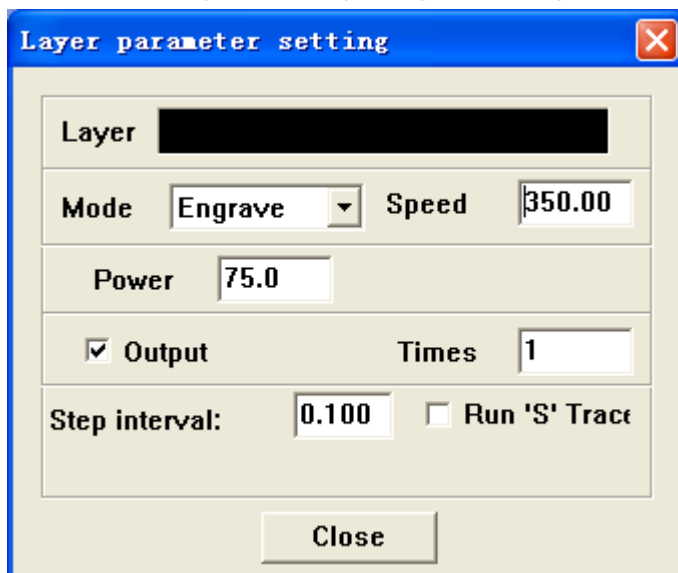


The left part of the interface is for defining processing parameter. Dblclick one row of the list (or select one row and click “modify”), and you can define processing parameter.

When there are many layers, the processing sequence is from the top down. If you need to change the sequence, please select one row and click up arrow or down arrow.

3.4.3.1 Collocate engraving parameter

When the processing way is engraving, the dialog is as following:



Definition of each parameter:

Speed: engraving speed on X-axis.

Power: modify the power when you process a layer.

Output: processing layer is output or not.

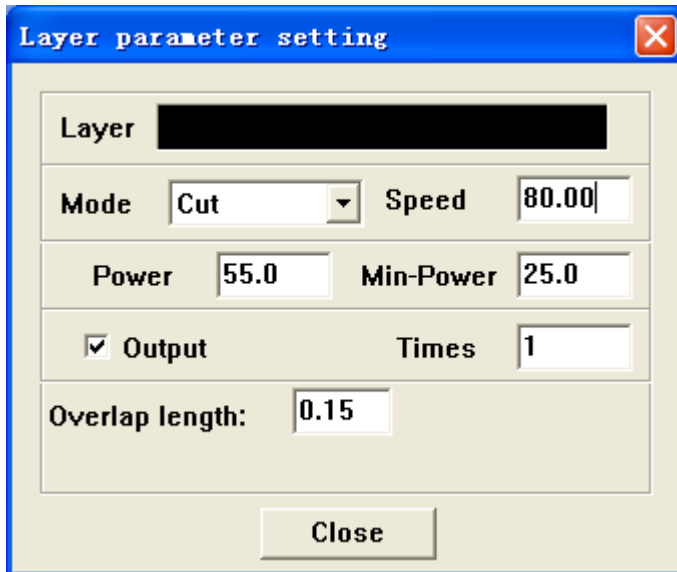
Times: choose processing times when you process a layer.

Step interval: movement distance on Y-axis when engrave a row on X-axis.

Run 'S' Trace: When engraving, laser emit on both negative X-axis and positive X-axis. When cancel this function, laser emit on only one direction.

3.4.3.2 Collocate cutting parameter

When the processing way is cutting, the dialog is as following:



Definition of each parameter:

Working speed: engraving speed on X-axis.

Power: modify the power when you process a layer.

Minimum: modify

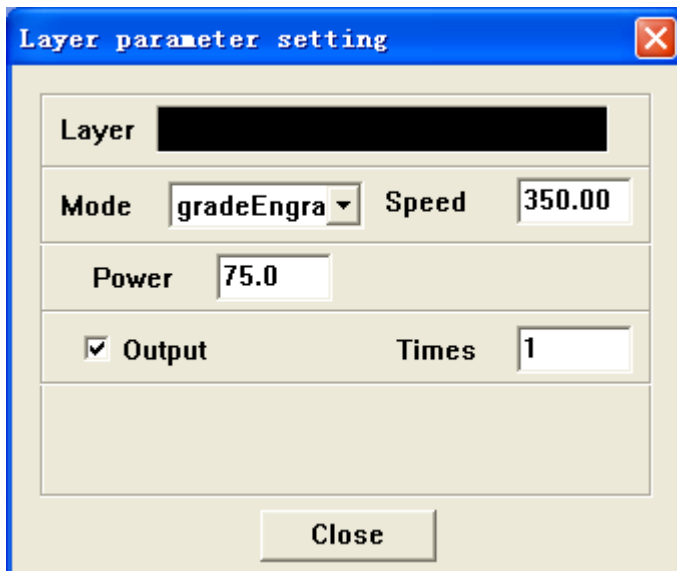
Output: processing layer is output or not.

Times: choose processing times when you process a layer.

Fengkou: When you can't cut a close graphics as it is, you can adjust this parameter to avoid it. This may be caused by mechanical gaps. The best way to avoid this problem is improve the mechanical precision of the machine.

3.4.3.3 Collocate slope-engraving parameter

When the processing way is slope-engraving, the dialog is as following:



Definition of each parameter:

Working speed: engraving speed on X-axis.

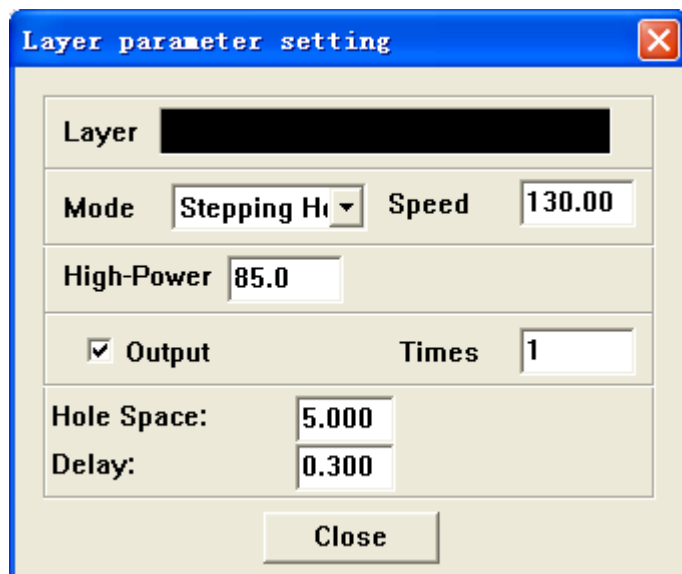
Power: modify the power when you process a layer.

Output: processing layer is output or not.

Times: choose processing times when you process a layer.

3.4.3.4 Collocate dotting parameter

When the processing way is dotting, the dialog is as following:



Definition of each parameter:

Working speed: engraving speed on X-axis.

Power: modify the power when you process a layer.

Output: processing layer is output or not.

Times: choose processing times when you process a layer.

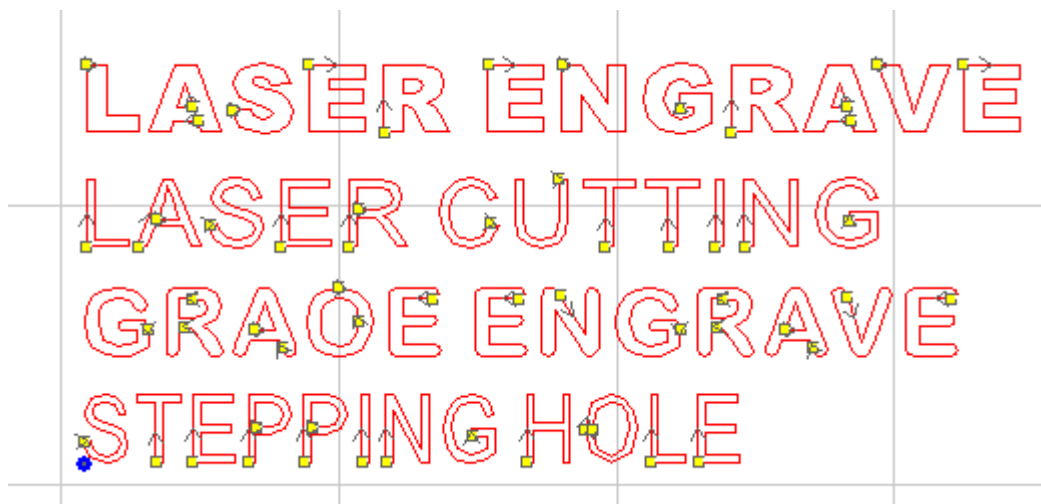
Space: it determines the space between two contiguous dots.

Yanshi: it determines the size of dots.

All the defaults are last saved parameters.

3.4.3.5 Sample of collocating parameters

The following is a PLT file. We'll take it as a sample to introduce how to collocate parameters.



Demand:

“激光雕刻” should be engraved.

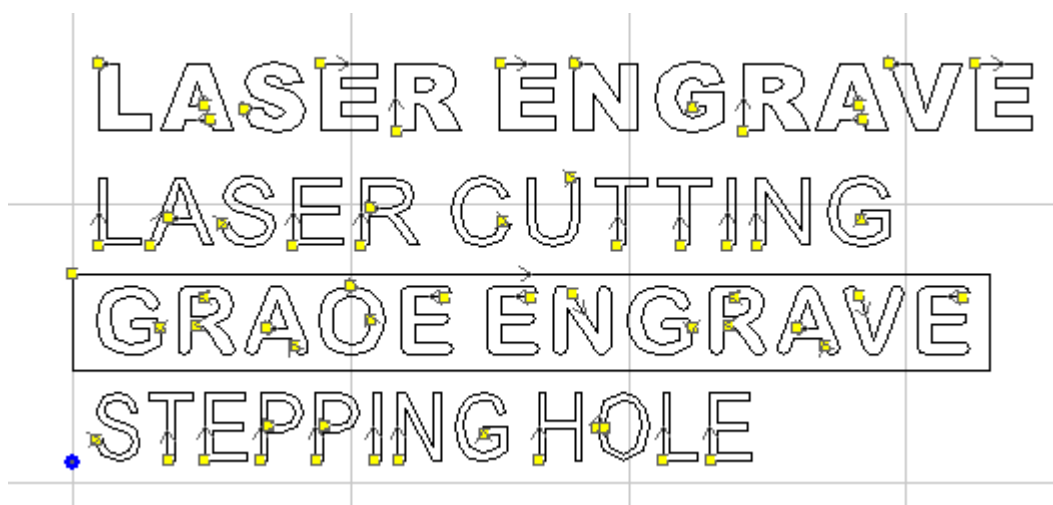
“激光切割” should be cut.


“坡度雕刻” should be slope engraved.

“激光打孔” should be dotted.

3.4.3.5.1 Set layers

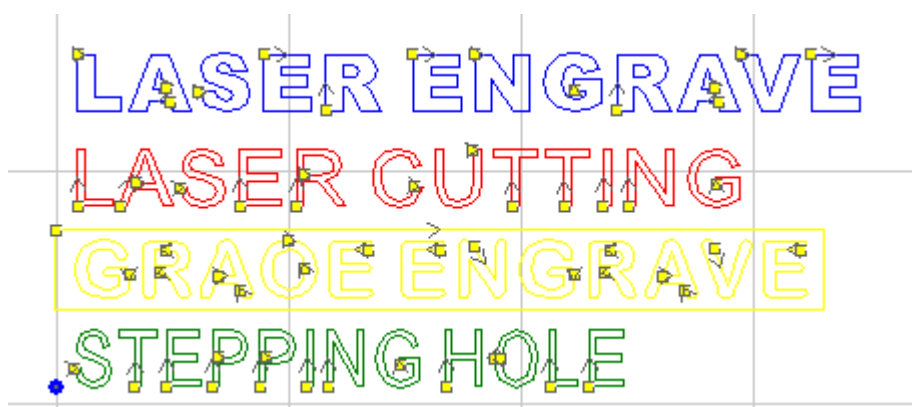
Because there are for different processing ways, you need for layers to collocate different parameters. In addition, if you need to slope engrave vector graphics (such as PLT、AI etc.), you must add a rectangle outside the graphics as following:




Click “select” button  and choose “激光雕刻” on screen (after choosing, the outline become gray), then click blue button on the layer bar. Now a new layer (blue) will be added in the layer list automatically.

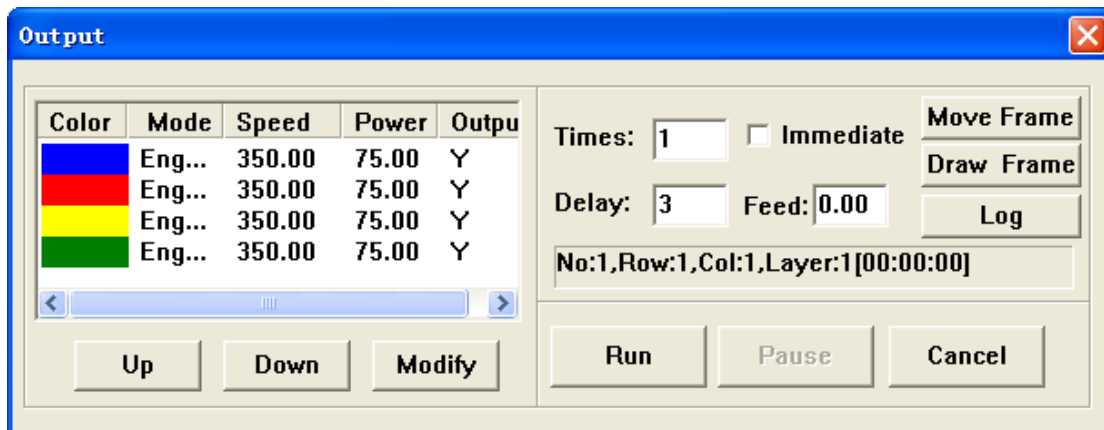
In the same way, set “激光切割” as red, “坡度雕刻” and the rectangle as yellow, “激光打孔” as green.

Now the graphics is made up of four kinds of graphics which are represented by four colors.

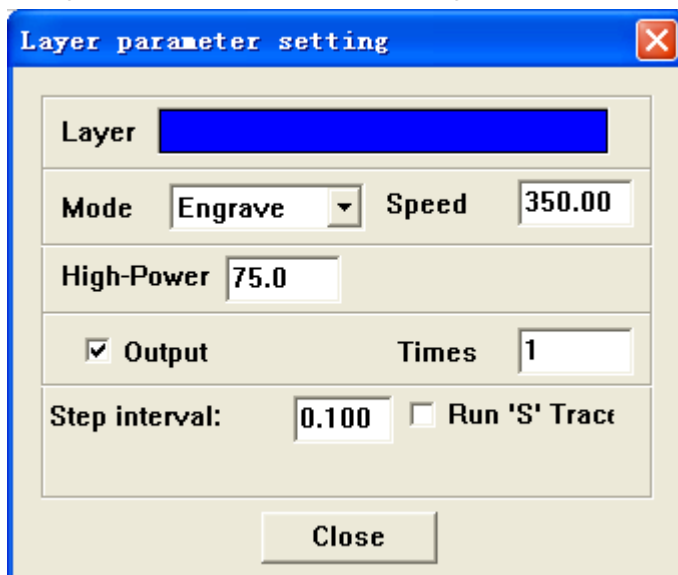


3.4.3.5. Collocate processing parameters

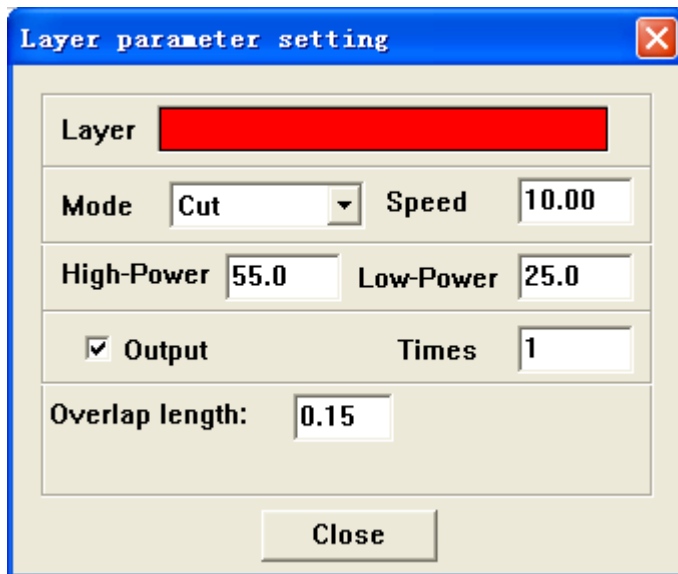
Click  and you can see the following dialog box.



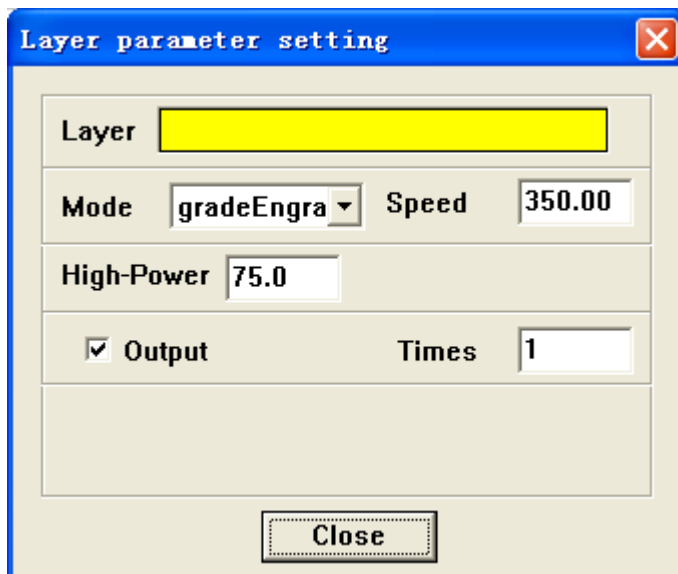
Dbclick the first row of the list (or select it and click “modify”), and you can see the following dialog box. You can define parameters as you prefer. According to the demand, the processing way should be defined as “engrave”.



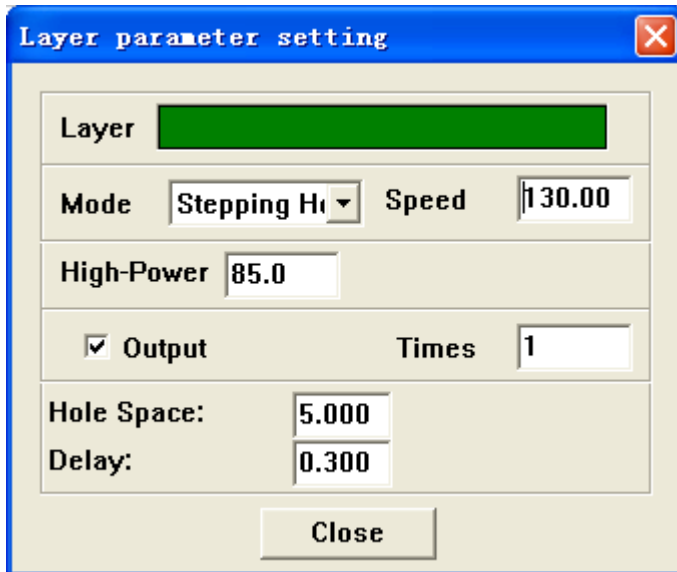
Dbclick the second row of the list (or select it and click “modify”), and you can see the following dialog box. You can define parameters as you prefer. According to the demand, the processing way should be defined as “cut”.



Doubleclick the third row of the list (or select it and click “modify”), and you can see the following dialog box. You can define parameters as you prefer. According to the demand, the processing way should be defined as “grade engrave”.




Doubleclick the fourth row of the list (or select it and click “modify”), and you can see the following dialog box. You can define parameters as you prefer. According to the demand, the processing way should be defined as “Stepping Hole”.



Now, Collocating processing parameters is finished.


3.5 Create processing file (*.LAS file)

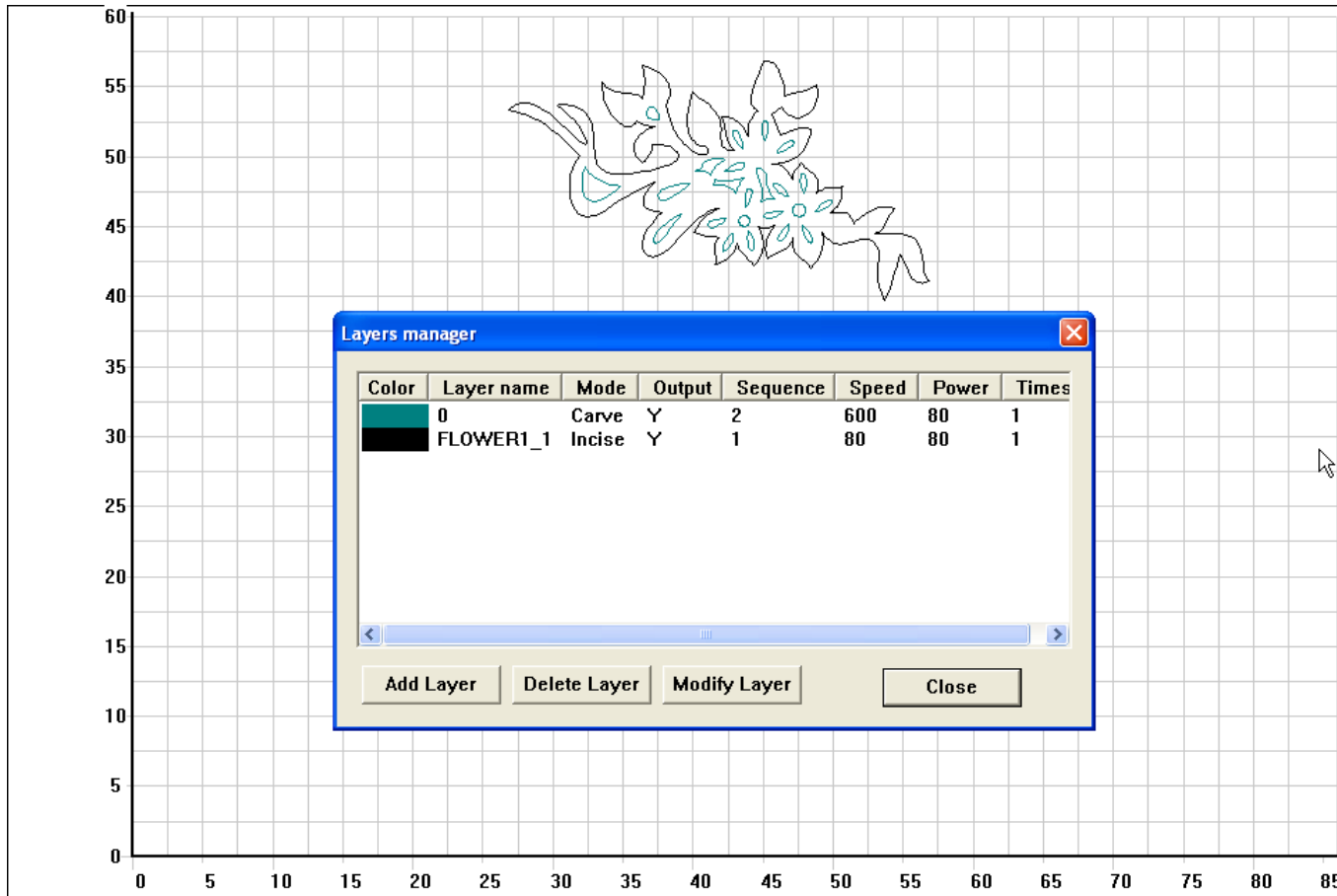
Press button , the processing data of above working graphics will be created as processing file (*.LAS file), and is saved under appointed directory. If you want to process the same graphics, just open it. It's not necessary to set up processing parameters again.

3.6 Output

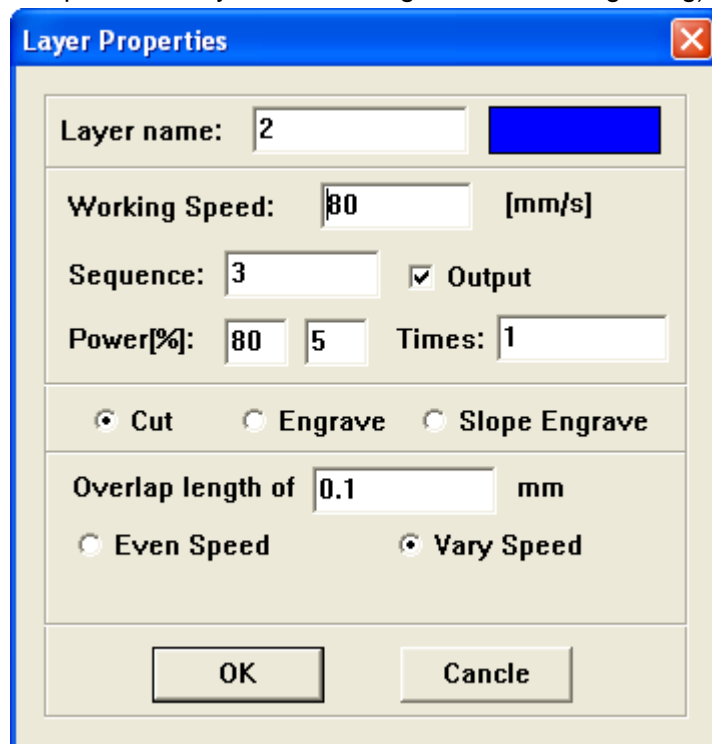
Press button, the processing data of above working graphics will be created as processing file (*.LAS file), and is saved under appointed directory. If you want to process the same graphics, just open it. It's not necessary to set up processing

- Collocate attributes of layers

Click , you can see the following dialog box:



Double-click the first column in the dialog box (Or after choosing, click “modify layer”), and then the dialog box as following is shown. Now you can set up output parameters of this layer. (According to requirement, layer “2” is cutting, ASDD_1 is engraving).



Define each parameter as following:

Working speed: For even-speed cutting, the speed is actual working speed; for Vary Speeding cutting, the speed is maximum speed.

Sequence: For graphics which has several layers, the parameters represent processing sequence.

Output: whether output the layer or not.

Power: modify the laser power of processing layer.

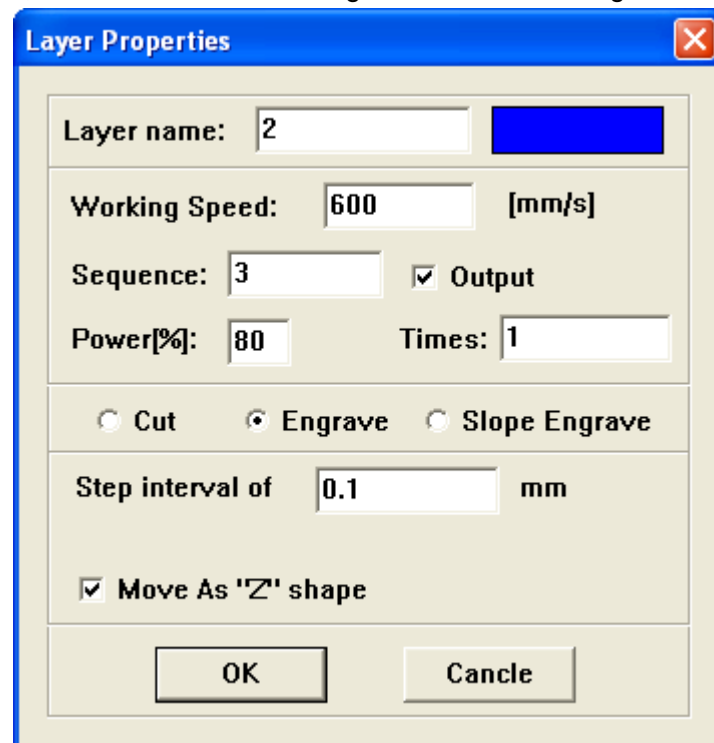
Times: processing times for this layer. For example: sometimes you can cut well after two times for the shortage of power. Then you should set 2.

Overlap Length: close graphics may not be cut for mechanical error. This parameter can solve this problem. But the parameter cannot be much big. We suggest you to solve this problem through adjusting mechanical precision.

Even speed: during the procedure of cutting, working speed is just the speed you set.

Vary Speed: during cutting, the speed will be changed according to the shape of graphics. The maximum speed is the set-up speed. Under this mode, machine runs repositively, but the depth may not be the same. This mainly used for cutting through, such as fabric cutting.

Double click the second row, Set "FLOWER_1" as "engrave" as the following showed:

**Definition of each parameter:**

Working speed: engraving speed on X-axis

Sequence: for the graphics with various layers, the parameter represents the sequence of process.

Output: Processing layer is output or not.

Power: modify the power when you process a certain of layer

Times: choose processing times when you process a certain of layer

Step interval: movement distance on Y-axis when engrave a row on X-axis

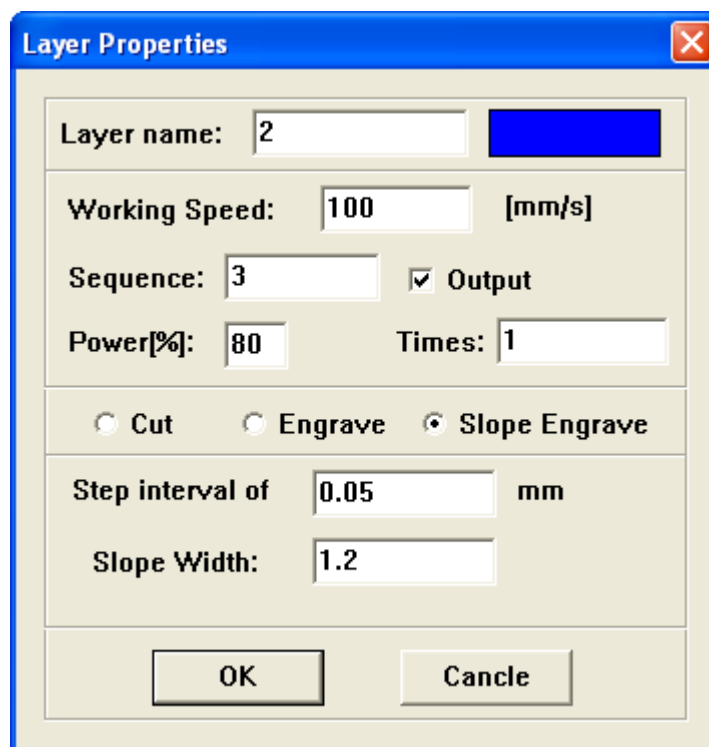
Convex and Concave: just for BMP engraving.

Move as “Z” shape: When engraving, laser emit on both negative X-axis and positive X-axis. When cancel this function, laser emit on only one direction.

After Setting up the above parameters, press “output” button, then processing begins according to engraving first and cutting second.

If you want to process three or more layers, you can repeat the above operation.

There is an additional function: slope engrave. If you want to engrave small words on rubber for printing, it is helpful. Check the “Slope Engrave”, you will see following dialog box:



Definition of each parameter:

Working speed: engraving speed on X-axis

Sequence: for the graphics with various layers, the parameter represents the sequence of process.

Output: Processing layer is output or not.

Power: no use. The power will be set in the power table.

Times: choose processing times when you process a certain of layer

Step interval: movement distance on Y-axis when engrave a row on X-axis

Slope Width: the width of the slope.

Create processing file (*.LAS file)

Press button .