LenMark_3D Marking Software Instruction

(All rights reserved by FEELTEK)

Suzhou FEELTEK Laser Technology Co., Ltd.
ADD: 4th Floor, Building A, New Industry Incubation Center,
Tariff-free Zone, Zhangjiagang, Jiangsu, China
苏州菲镭泰克激光技术有限公司
地址:中国江苏张家港保税区科创园 A 栋 4 楼

FEELTEK 菲镭泰克	Document Name	Version
APPROVED	LenMark_3D Marking Software Instruction	2017.2.0

Content

Chapter1. Introduction 1
1.1 LenMark Installation and Setup 2
1.2 LenMark Language Option & Define 2
1.3 LenMark Quick-Start Operation 3
Chapter 2. Function 8
2.1 File 8
2.1.1 File Overview 8
2.1.2 New 8
2.1.3 Open 9
2.1.4 Save 9
2.1.5 Save as 9
2.1.6 Import 9
2.1.7 Export 11
2.1.8 Close 11
2.1.9 Close all 12
2.1.10 Recent Files 12
2.1.11 Exit 12
2.2 Draw 12
2.2.1 Overview 12
2.2.2 Select 13
2.2.3 Node edit 13
2.2.4 Point 14
2.2.5 Line 15
2.2.6 Curve 15
2.2.7 Ellipse 16
2.2.8 Circular arc 16
2.2.9 Rectangle 17
2.2.10 Polygon 18
2.2.11 Text 18

LenMark

2.2.12 Tool Bar 26
2.3. Edit 28
2.3.1 Overview 28
2.3.2 Undo 28
2.3.3 Redo 28
2.3.4 Cut 29
2.3.5 Copy 29
2.3.6 Paste 29
2.3.7 Delete 29
2.3.8 Select all 29
2.3.9 Inverse Select 29
2.3.10 Center 30
2.3.11 Array copy 30
2.4. Alignment 31
2.4.1 Overview 31
2.4.2 Transform 32
2.4.3 Combine & Un-combine 37
2.4.4 Group & Un-group 38
2.4.5 Flip vertically 38
2.4.6 Flip horizontally 38
2.4.7 Lock object 39
2.4.8 Unlock object 39
2.4.9 Unlock all 39
2.4.10 Align 39
2.4.11 Distribute 40
2.4.12 Import path 41
2.4.13 Separate 41
2.4.14 Concert to curve 42
2.4.15 Modeling 42
2.4.16 Curve edit 43
2.4.17 Optimized path 43
2.4.18 Convert to dotted line 44
2.5. Special 45
2.5.1 Special menu Overview 45
2.5.2 Segmentation mark 45
2.5.3 Rotation mark 47
2.5.4 Multi-files mark 49
2.5.5 LGP 50
2.5.6 Dial mark 51
2.6. View 51
2.6.1 Overview 51
2.6.2 View 52
2.6.3 Ruler 52

LenMark

2.6.4 Grid....52
2.6.5 Ruler grids....52
2.6.6 Snap to grid....53
2.6.7 Snap to ruler grids....53
2.6.8 Snap to a feature point....53
2.6.9 Language....53
2.6.10 Unit....53
2.7 Tool....54
2.7.1 Overview....54
2.7.2 System toolbar....54
2.7.3 Alignment toolbar....54
2.7.4 View toolbar....54
2.7.5 Draw toolbar....55
2.7.6 Auto toolbar....55
2.7.7 Status toolbar....55
2.7.8 Object list....55
2.7.9 Property page....56
2.7.10 Home Toolbar....72
2.7.11 Preview Mark toolbar....72
2.7.12 Scale Strokes Toolbar....73
2.7.13 Quick-layer toolbar....73
2.7.14 Special Tools....73
2.8. Auto....73
2.8.1 Overview....73
2.8.2 Delay....74
2.8.3 Input port....74
2.8.4 Output port....75
2.8.5 R Rotate....76
2.8.6 XY Linkage Step....76
2.8.7 Z Step....77
2.9. Window....78
2.9.1 Overview....78
2.9.2 New Window....78
2.9.3 Cascade Windows....78
2.9.4 Tile Windows....79
2.9.5 Arrange icons....79
2.9.6 Close all....80
2.10 Setting....80
2.10.1 Overview....80
2.10.2 Laser setting....80
2.10.3 Mark Zone Setting....85
2.10.4 System Parameters Setting....87
2.10.5 Stepper Motor Setting....89

LenMark

2.10.6 User Level Management 91
2.10.7Authorized duration setting 91
2.10.8 Dynamic axis fine-tuning 92
2.10.9 Automation I/O set 92
2.10.10 Log setting 93
2.11. Execute 94
2.11.1 Overview 94
2.11.2 Laser on 94
2.11.3 Preview 95
2.11.4 Mark 95
2.12. Help 96
2.12.1 About us 96

LenMark

Chapter1. Introduction

LenMark series marking software is specially designed for laser application, which sets powerful graphics editing and various marking functions as an organic whole, fits to use with Lenmark Driver control card and scanning galvanometer, also can achieve all kinds of high precision, fast speed laser processing requirements. Software interface is as figure 1.

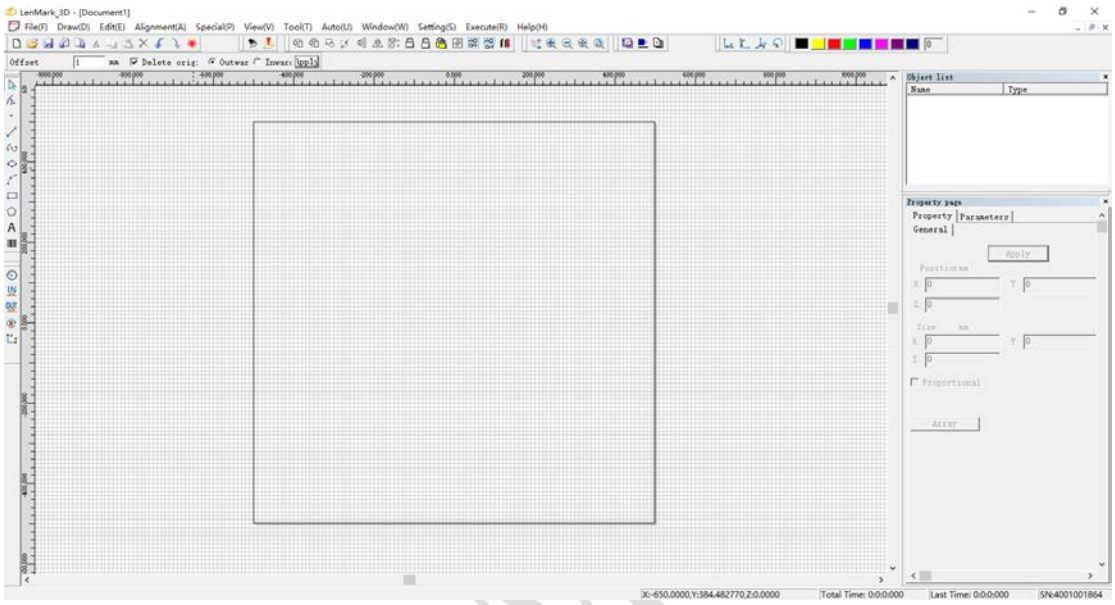


Figure 1 software main interface

Software key features and functions as the following:

(1) Compatible with Windows 2000 and Windows XP and Win7 and Win8 operating systems;

(2) The indicator light real-time preview function;

(3) Unlimited times in authorized time setting function;

(4) Retract-enlarge function, and scale simple closed-objects inside and outside;

(5) Worktable automatic up-down function;

(6) The CO2 Laser pulse inhibition function;

(7) Multi-hatching, including single filling, two-way filling, two-way optimization filling, back filling, offset filling, multiple filling, second angle filling, non closed graphics filling, boundary ring filling and indentation filling;

(8) Rapid formula method and accurate correction table method;

(9) Cutting function optimization: through the parameter adjustment, can realize center energy and boundary energy ratio accordance;

(10) Unclosed graphic automatic connected function;

(11) Two arrays: entity array & virtual array;

(12) Division & marking function;

(13) Rotary marking function;

(14) Multi-document & multi-window operation;

(15) Edit function in variety of practical graphics, points, lines;

(16) Support common bitmap format (BMP, JPEG, GIF) and vector graphics (PLT, DXF, AI) import

function;
(17) Import file current-time preview function;
(18) Multi-Languages;
(19) Inches and mm two dimensions;
(20) Support 255 processing layer, with layer choose function and layer switch function;
(21) Common bitmap processing functions (gray scale conversion, brightness disposing, contrast treatment, etc.), and fine image processing;
(22) User level management;
(23) Support for multi-laser types: YAG、CO2、FIBER--Ⅰ、FIBER--Ⅱ;
(24) Support TrueType font, single font, 1D barcode and 2D code;
(25) Text processing functions, including fixed text, serial number, file text, date text and arc text
(26) Processing counting function: automatic calculation and display processing product quantity and remaining processing product countdown function;
(27) Through the automatic command achieve external equipment interworking;
(28) Support the X, Y, Z, R four axis stepper motor control function;
(29) Dynamic Focus System version software has much work scope to be automatic adjustment function, the special focal length of the compensation algorithm make the focal spot diameter in center and focal spot diameter in marginal basically the same
(30) Support indication signal output in work status;
(31) Support safety carving &marking mode, which can make the staff in the high power laser work more safety;

1.1 LenMark Installation and Setup

Installing the LenMark, make sure the computer hardware and software meet the following configuration：
·computer basic frequency in 586 MHZ above;
·screen resolution in 1024 X 768 above;
·memory 128M or above, hard disk more than 10G;
·operating system requirements for Microsoft Windows 2000 / XP / 7 / 8;
All in this manual is defaulted for Microsoft Windows 7 operating system.
To run the supplied disk, which inside contains the following documents:
·LenMark.exe: LenMark software and control card driver installation program
·Manual Folder contains: Lenmark Driver Control card instructions.doc
LenMark software instructions.doc
Double click “LenMark.exe” file, select “Installation”, user can operate as the installation guide.

1.2 LenMark Language Option & Define

Pop up a language selection box after software installation completed, user can choose interface language by first time open software. At present our software provides two selections of languages: simplified Chinese and English. In addition, user can define other languages through

the following methods:
In installation directory find " .lng "language file, can create language as user's requirement (Currently provided simplified Chinese & English version in software), backup the file, then use Notepad open and modify the corresponding parts, then saved .

e.g.: Make "Chinese.Lng version" convert to "English, version". " Description = English " change to "Descripition = English" ; "1835=显示预览图片" change to "1835=Show preview pictures " (only change Chinese words into English which located after sign "="). File name saved as "English.lng ". As figure1-2-1 "Language Setting Configuration File"
Reopen the software, in the "View (V)--language", Chinese has been changed into English.

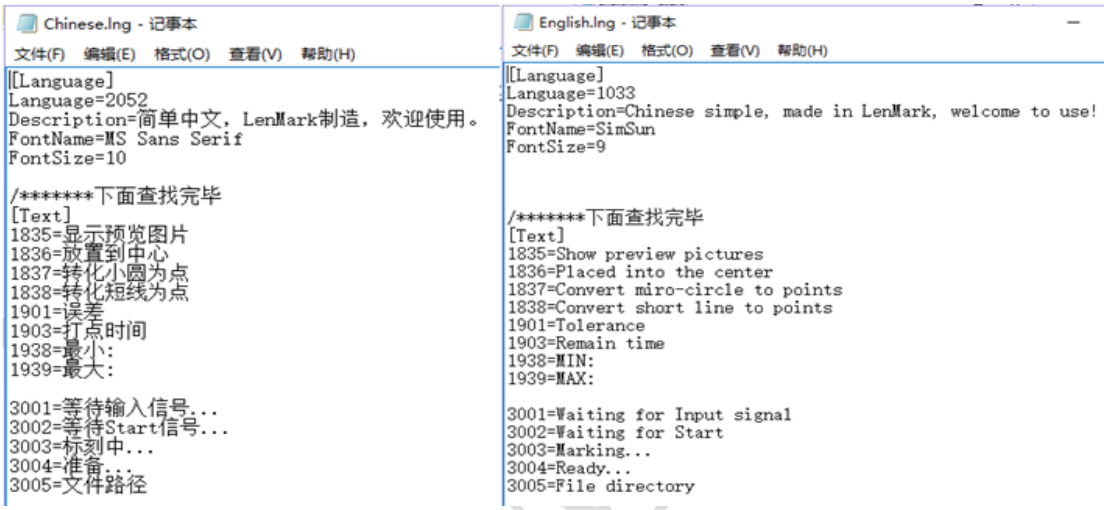


Figure 1-2-1 Language Setting Configuration File

1.3 LenMark Quick-Start Operation

After start LenMark, the screen will pop up an interface, as Figure1-3-1 "Software main interface"：

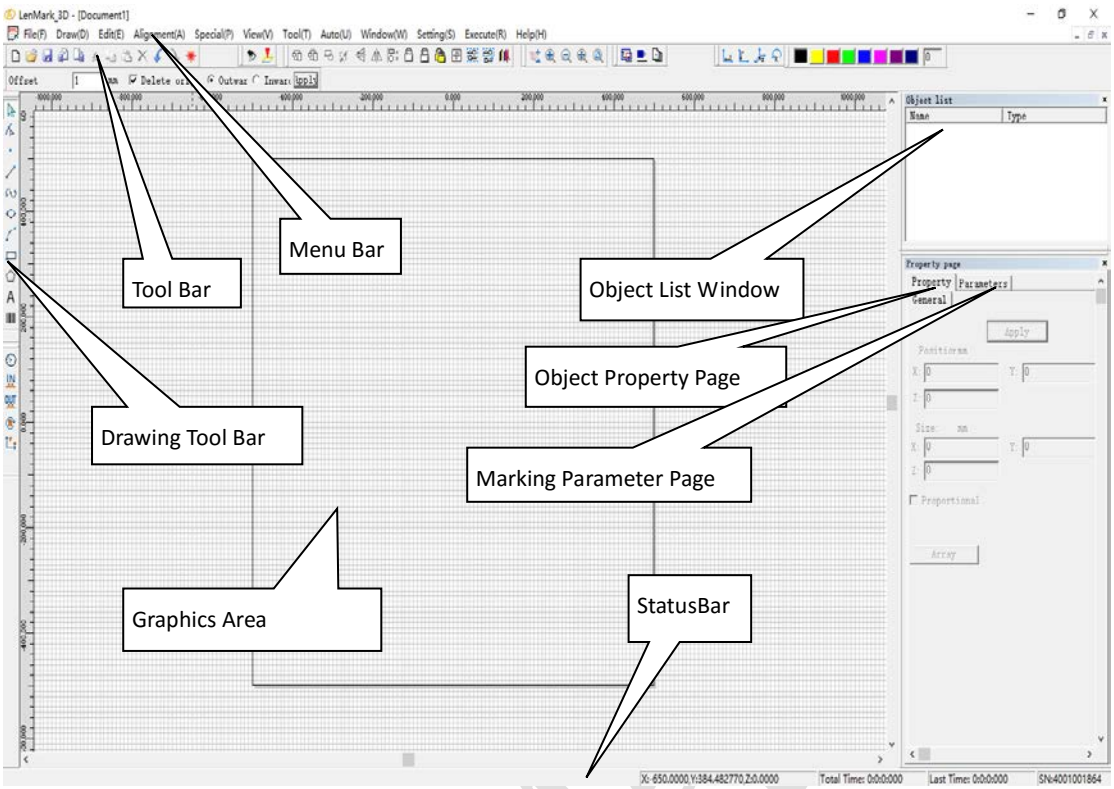


Figure 1-3-1 Software main interface

From top to bottom in software interface, there are: Title Bar, Menu Bar, Toolbar, Graphics Area and Status Bar, Objects List Column, and Object Property Page.

It is simply to operate the software. The following we provided user is a practical example to illustrate the operation.

e.g.: Draw a rectangle, with FIBER-Ⅰ Laser. Operation steps:

(1) New Files: click "New" under "File" or click icon like in Tool Bar, and show a new Work Zone.

(2) Laser settings: select the " Laser Settings" menu under the " settings" command, set the laser as "FIBER- I", click OK to exit, as figure 1-3-2"Laser setting".

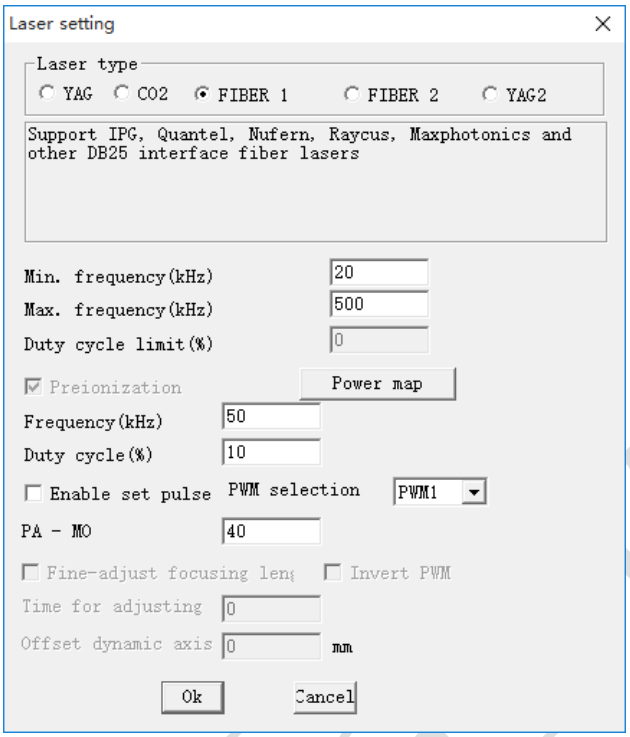


Figure 1-3-2 Laser setting

3)Mark zone settings: select the "mark zone settings" command under "Settings" menu, according to the laser, select the scanhead model and correction file, as figure 1-3-3" mark zone settings ":

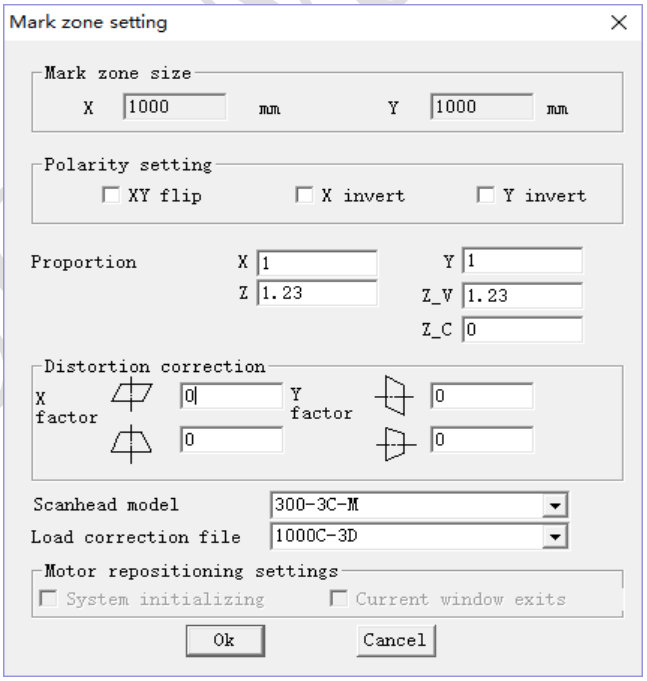


Figure 1-3-3 Mark zone settings

4)Draw File: click "Draw –Rectangle" or click icon like in Drawing Tool Bar. In the Graphics Area draw rectangular arbitrarily. Select the rectangular, can be changed Size (long and wide) in "Property Page -Property - General ", click the "Apply". Then end this step operation. As Figure

1-3-4：

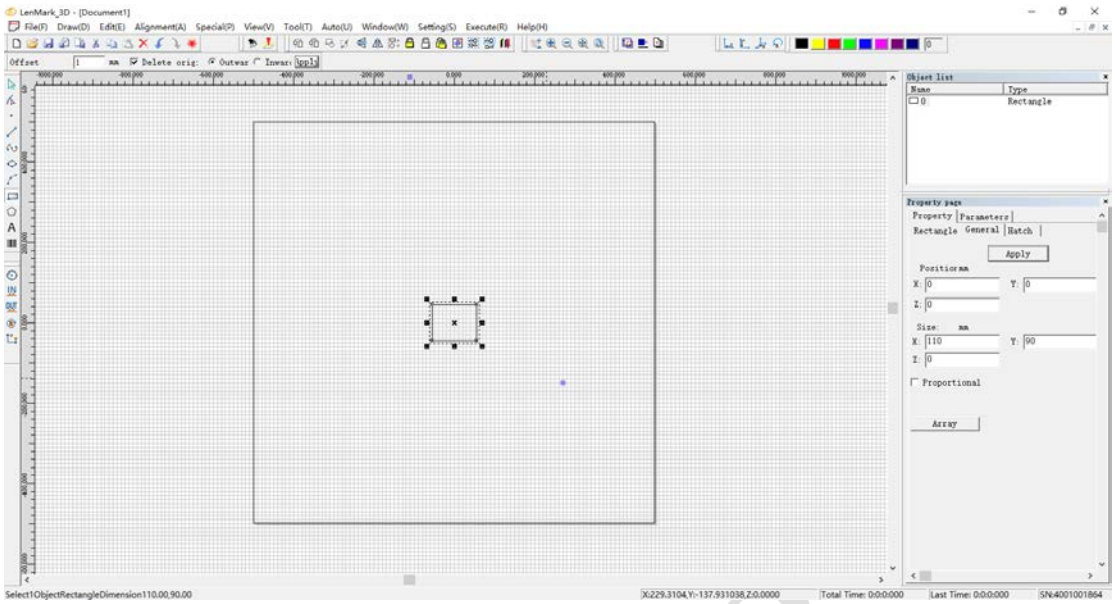


Figure 1-3-4 Draw rectangle interface

5)Parameter Settings: find "Property Page-Parameters", set up needed parameters. Finally, click "Apply" for saving the setting parameters. Interface is as Figure 1-3-5;

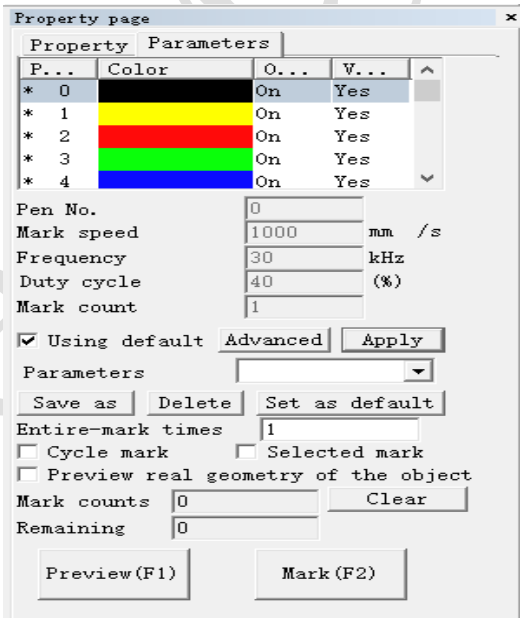


Figure 1-3-5 Property page

Click "advanced", set more details, interface as figure 1-3-6;

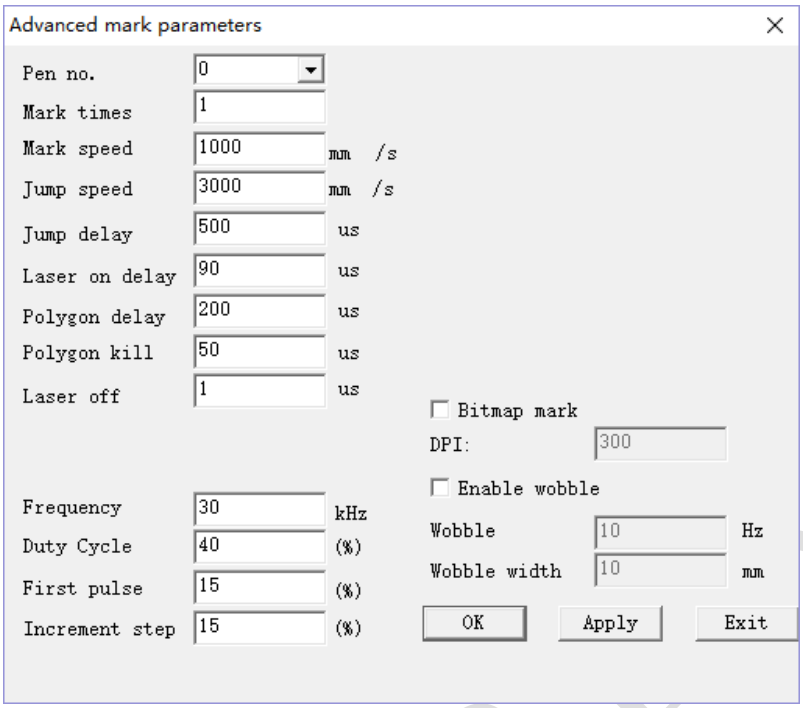


Figure1-3-6 Advanced mark parameters

(6) Execute Marking: set "Entire-mark times" to 1, click "Mark (F2)" or press shortcut key "F2" on the key board for finish. Setting interface is as Figure 1-3-7, mark prompt window is as figure 1-3-8:

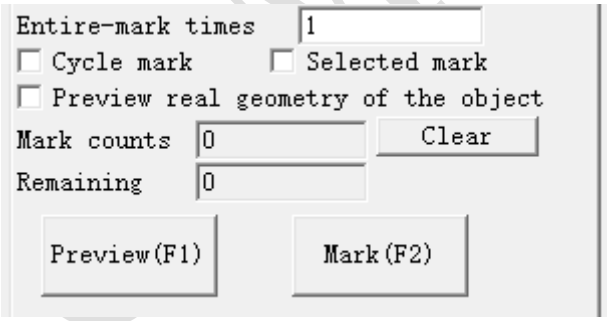


Figure 1-3-7 Entire-mark times

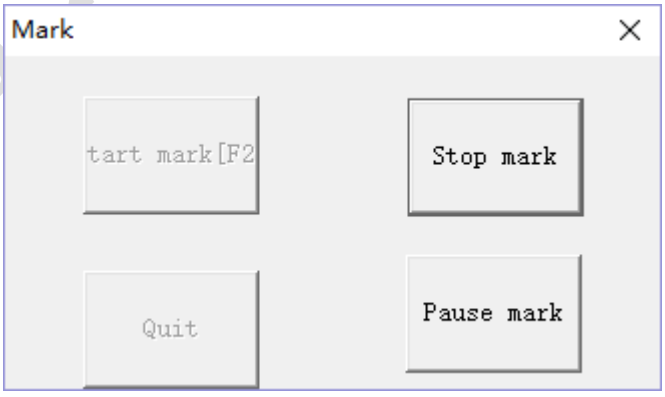


Figure 1-3-8 Mark prompt window

(7) File Saved: click on Tool bar or click" File-save", save the current edited object and its parameters for next time marking conveniently.

Note: documents can only be saved as .stm format.

Chapter 2. Function

LenMark menu items:
File: File operation;
Draw: Drawing tools;
Edit: Edit Control;
Alignment: Graphic transformation & combination;
Special: Special Function;
View: View shows;
Tool: Users can use common function conveniently;
Auto: Related with external control;
View: Display controlled function and operation;
Setting: Marking Machine's hardware settings;
Execute: Marking Task;
Help: Help user achieve LENMARK Marking;

2.1 File

2.1.1 File Overview

Key Feature:
New: Prepare a new job;
Open: Prepare a new job;
Save: To save the current job;
Save as: Save the current job which you are doing under a new file name;
Import: Data or Doc Import;
Export: Data or Doc export;
Close: To close the current job;
Close all: To close all the jobs;
Recent job: Display documents have been used or opened recently;
Exit: Quit from LENMARK software;

2.1.2 New

In LenMark, create a new page in the work place.

LenMark

Tool bar:
Shortcut: Ctrl + N

2.1.3 Open

User can open one or more documents saved as .stm in the disk.
Tool Bar:
Shortcut: Ctrl + O

2.1.4 Save

Save the current document in .stm format. In the first time saving, LENMARK display saved as dialog box. Interface is as figure 2-1-1:

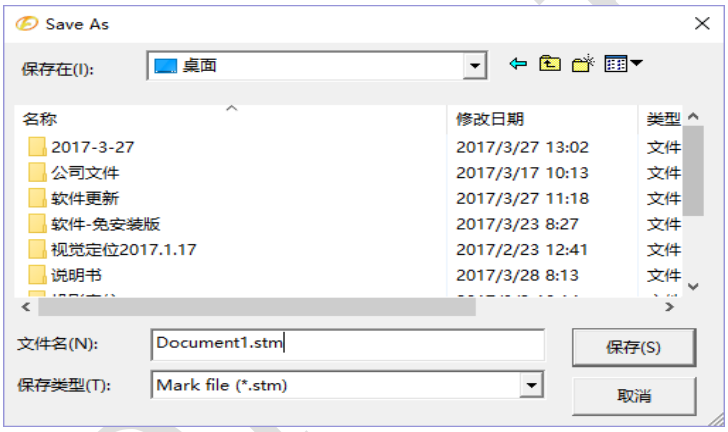


Figure2-1-1 Initial save as interface

Tool bar:
Shortcut: Ctrl + S
Note: This function must be used at least one document which is open.

2.1.5 Save as

Use this function to save and rename the current document in .stl format. LENMARK will display a dialog box as figure above 2-1-1.
Note: this function must be used at least one document which is open.

2.1.6 Import

Use this function to import the bitmap and vector diagram format files, LENMARK will pop up a

dialog box to import files. Interface as Figure 2-1-2:

Tool bar:
Shortcut: Ctrl＋I

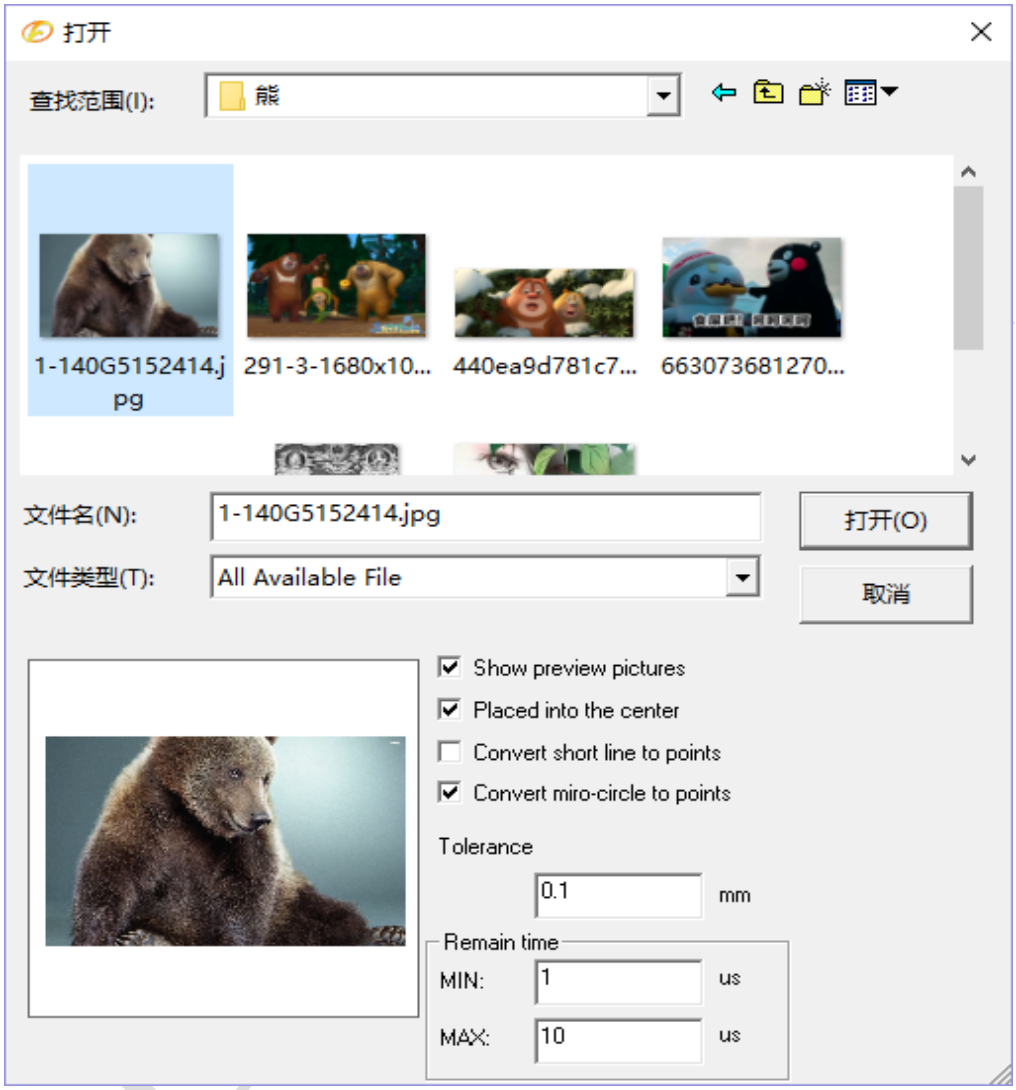


Figure 2-1-2 Import dialog interface

In LenMark Software, users can draw graphics by themselves, and also can use other standard graphics file formats. Such as bitmap formats: .BMP, .JPEG, .GIF & vector formats: .DXF, .PLT and .AI. These files can be generated by a general- purpose processing software, such as: AutoCAD, CorelDRAW, Photoshop. After generated by above software, user can directly use and operate in LenMark software, and can maintain the proportion of correct size without having to adjust and modify. If imported graphic is a group objects, user can use the "ungroup" to divide into more than one independent object, then edited as user require.

Import file real-time preview function: when chosen "Show Preview Picture", selected object to be import will be previewed. "Placed into the center" make imported picture center.
Convert short line to spot: when importing DXF file, short line with length smaller than specified

error changes to spot automatically.

Convert mic-circle to spot: when importing DXF file, small circle with diameter smaller than specified error changes into spot automatically.

Remain time: users can set different dotting time through modifying parameters.

2.1.7 Export

Export the file in .plt format, save to disk, LenMark will pop up the Export dialog box to export the file , interface is as figure 2-1-3.

Tool bar button: 

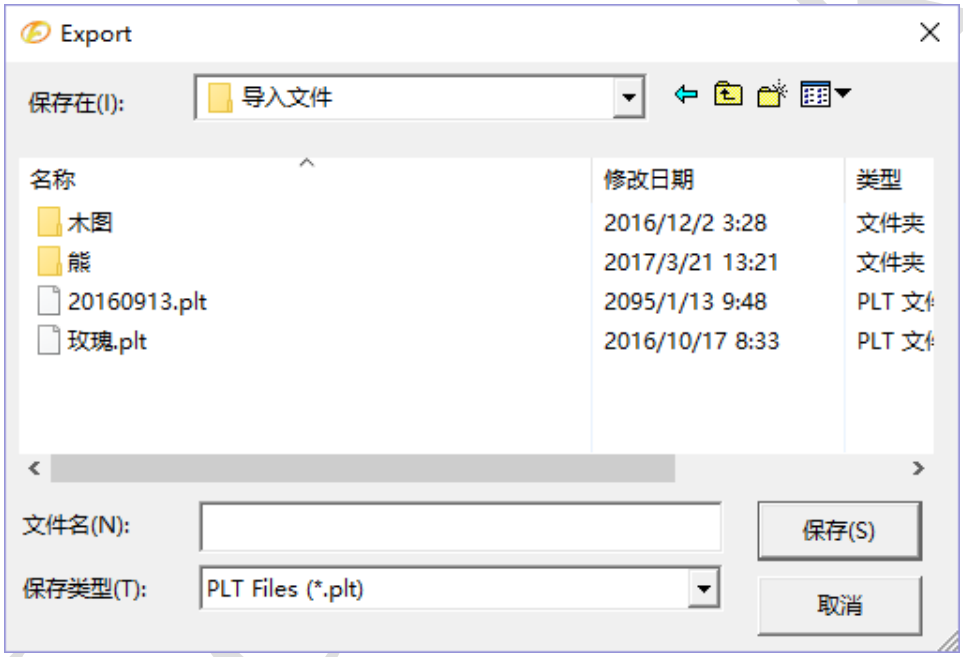


Figure 2-1-3 Export Dialog Frame

2.1.8 Close

Use this function to close the current file. LenMark advices user save the current file before close it. System will pop up a “Save changes to Document” dialog box on the screen when user forget to save, meanwhile, only to click “YES” for done the job .As Figure 2-1-4:

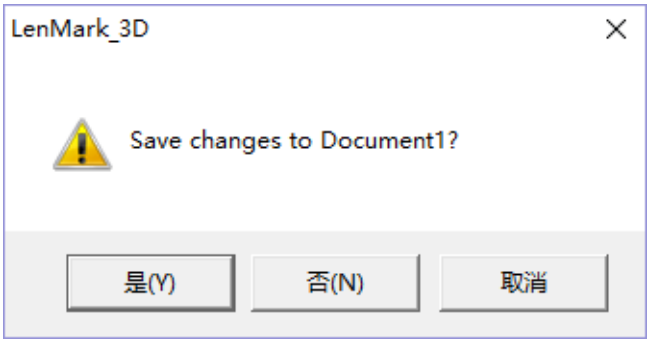


Figure 2-1-4 Y/N save dialog

Before close an unnamed document, LenMark will pop up a saving dialog box for saving or not. If user just wants to close the current file, but not to quit from LenMark software, just click the right button on mouse, also user can choose to click close icon on right-top in the file window.
Note: this function must be used at least one document which is open.

2.1.9 Close all

If you open a number of documents to be closed at the same time, you can use this function to close all open documents. If the document is not closed, the system will pop up whether to save dialog box, the interface as shown above 2-1-4.

2.1.10 Recent Files

List of recently opened files, choose to anyone of these files, user can quickly do the operation.

Note: Recent files maximum is 5 on display. Only being used in opened or saved as .stm files in LenMark, or this function is not available.

2.1.11 Exit

Finish using LenMark software. Similar with the closed function as we mentioned above, if user forget to save the file which has been modified and adjusted, the system will pop up a dialog box on the screen to prompt.

2.2 Draw

2.2.1 Overview

Key Feature:

LenMark

Select: To select objects;
Node edit: To edit feature points on the curve;
Point: Draw points;
Line: Draw continuous straight line;
Curve: Draw continuous curve;
Ellipse: Draw ellipse or circle;
Arc: Draw circular arc;
Rectangular: Draw rectangular or square;
Polygon: Draw symmetric polygon
Text: Enter text and words
Barcode: Create one-dimensional bar code or two-dimension code

2.2.2 Select

Selection mode, user can take this function to select object.
Drawing Tool Bar : 

2.2.3 Node edit

Under Node edit, all targets are curves which can be modified through a feature point on the graph to achieve the shape of the curve
Drawing Tool Bar: 

Select , use mouse to click the object in Graphics Area, the object will show all its nodes. The nodes show as open- squares, and among all of them, the larger one is the starting point of the curve. Meanwhile, node editing tool bar will appear. As Figure 2-2-1:

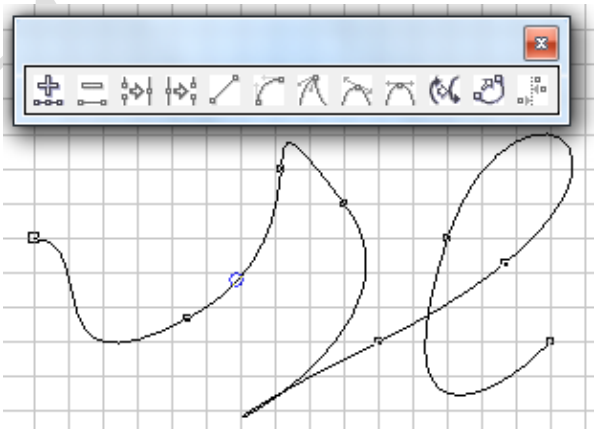


Figure 2-2-1 Node Edit Toolbar

Node edit tool function;

LenMark

:Add; Use mouse to click not the node location but any other points on the curve, which one then appears a blue ring. Choose the order, then get a new node.

:Delete; Use mouse to click any one node on the curve which will appear a small blue rectangular, Choose the order, node will be disappear.

: Fusion; Two nodes are located very close, use mouse Drag-select the two nodes, choose "fusion", and the two nodes will become in one.

:Line; Take mouse click at any point between adjacent node on the curve, choose "line", then the line (probably are straight line, arc or curve) between two adjacent nodes to become a straight line.

Curve; Take mouse click at any point between two adjacent nodes on the curve, choose "curve", then the line (probably are straight line, arc or curve) between two adjacent nodes to become a curve line.

Cuspides;Use mouse to click any one point on the curve, chosse“ cuspides”, and meanwhile the point become a cusp, and curve’s bending is much larger. Drag control the cusp point, and with it possibly only one side of the curve was changed.

:Symmetric; Use mouse to click any one point on the curve, choose “symmetric”, then curve which around nearby the chosen point will be symmetric. Meanwhile no matter how to make changes, the curvature shape on both sides of the chosen point are the same, and the distance between control point and the chosen point aretotally equal.

:Smooth; Use mouse to click any point on the curve, choose“ smooth ”, then the curve which around the chose point will become smooth, meanwhile curve’s bending is much smaller. Drag control the chosen point, both sides of the curve will be changed.

:Direction; Choose “direction”, start point and end point of the curve will exchange, meanwhile curve’s direction will be changed.

:Close; Choose “close”, curve will self-close.

:Alignment; Use mouse drag and choose more than two points on the curve, choose“ alignment”, pop up node alignment dialog box, user can choose node alignment, and the chosen points, control points will be aligned.

2.2.4 Point

Draw a point.

Tool Bar:

To draw a point, select “Draw (D)” - “point” or click icon like in a drawing tool area. Then pitch on this point, set at “Property page”-“Property” . Interface is as Figure 2-2-2:

LenMark

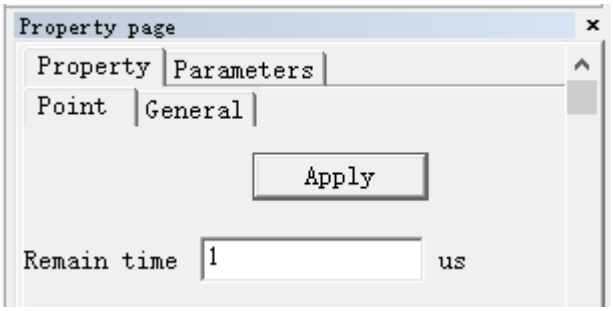


Figure 2-2-2 point property page

Remain time: Time to stay marking on this point

Note：after changed and modified the parameters in “Object Property Page”, user need to click "Apply" to save, then all changes made in this step operation can take effect, following the same without notice.

2.2.5 Line

Draw a line.

Tool Bar: 

To draw a line, select “Draw (D)”- “line” click icon like  in drawing tool bar area. While in drawing a line, user can take shortcuts C make the present line which is in drawing into closed form path, meanwhile finish the drawing line step.

If want modify the line, in “Property page”- “property”-"line" to set line, interface is as Figure 2-2-3:

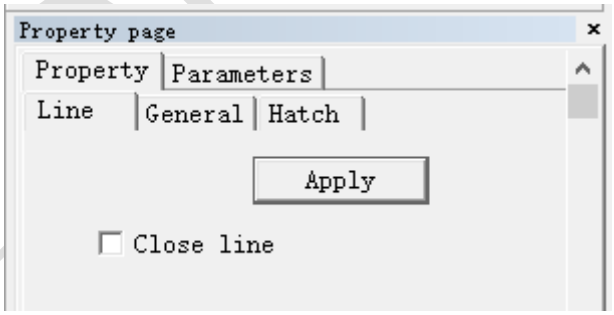


Figure 2-2-3 line property interface

Close line: set the line as close or not.

2.2.6 Curve

To draw curve line

Tool Bar: 

To draw a curve, select “Draw”- “Curve” click icon like  in drawing tool bar area; and also user

can take shortcuts C to make the present line which is in drawing into closed form path.
If want modify the curve, in “Property page”- “property”-"line" to set line, interface is as Figure 2-2-4:

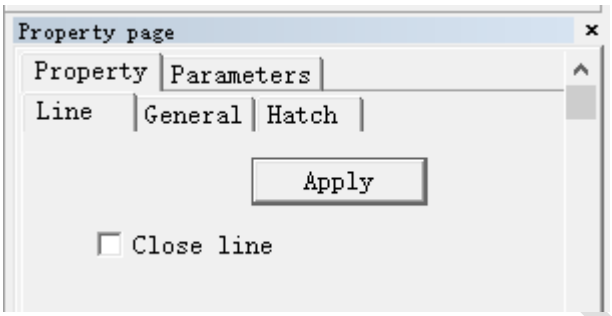


Figure 2-2-4 curve property interface

2.2.7 Ellipse

To draw an ellipse or a perfect circle.
Tool Bar:
To draw an ellipse, select “Draw”- “ellipse” click icon like in drawing tool bar area; during drawing, Left click + Ctrl can take a perfect circle.

If want modify the ellipse, in “Property page”- “property”-"ellipse" to set ellipse, interface is as Figure 2-2-5:

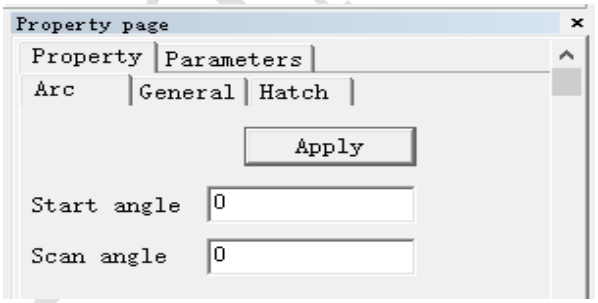


Figure 2-2-5 ellipse property interface

Start angle: refer to the angular between the X-axis forward positive with the line which is connected from the starting point of the arc to the center.
Scan angle: refer to the angular between the X-axis forward positive with the line which is connected from the ending point of the arc to the center.

2.2.8 Circular arc

To draw a circular arc.
Tool Bar:

To draw a circular arc, select “Draw”- “arc” click icon like in drawing tool bar area;
If want modify the arc, in “Property page”- “property”-"arc" to set arc, interface is as Figure 2-2-6:

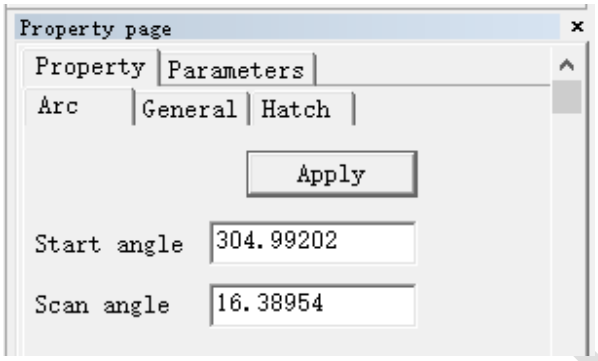


Figure 2-2-6 Circular arc property interface

Start angle: refer to the angular between the X-axis forward positive with the line which is connected from the starting point of the arc to the center.
Scan angle: refer to the angular between the X-axis forward positive with the line which is connected from the ending point of the arc to the center.

2.2.9 Rectangle

To draw a rectangle.
Tool Bar:
To draw a rectangular: select “Draw (D)”- “rectangle” click icon like in drawing tool bar, can draw a rectangular which user prefers to. During drawing, Left click +Ctrl take a perfect square.

If want to modify rectangular, in "Property page”- “property” to set, interface is shown as figure 2-2-7:

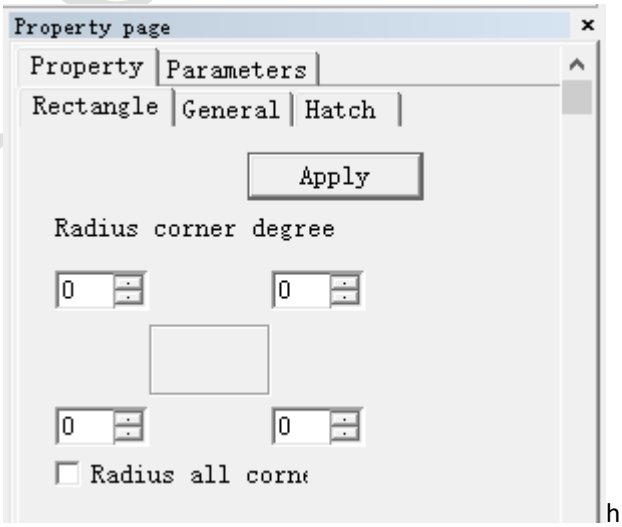


Figure 2-2-7 Rectangle property interface

Radius conner degree: set the rectangular sleek corners.
Radius all corners: check the “Radius all corners”. Once one certain angle is changed into a round angle, will all other angles be changed into the same ones.

2.2.10 Polygon

To draw a polygon.
Tool Bar:
To draw a polygon, user can select “Draw”- “Polygon” click icon like this in a drawing area, then draw an arbitrary polygon in Graphic Area. During drawing, Left click + ctrl take a perfect polygon.

If want modify polygon, in “Property page”- "propert” to set polygon, interface is shown as Figure 2-2-8:

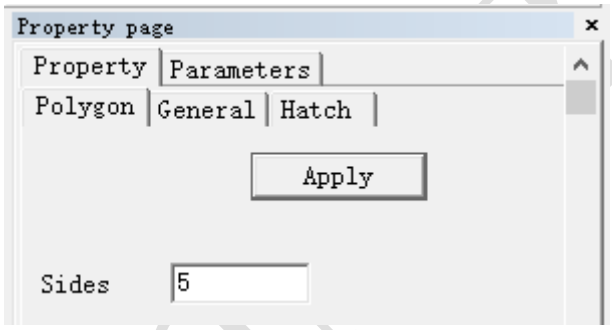


Figure 2-2-8 Polygon property interface

Sides: polygon sides, range between 3-500.

2.2.11 Text

Basic Settings
Input text in drawing area.
Tool Bar: A
To input text at Graphic Area, user can select “Draw” - “Text” or click icon like A in a drawing area, then take mouse to click anywhere user wants to put words in Graphic Area, on the screen will pop up a dialogue box. As Figure 2-2-9:

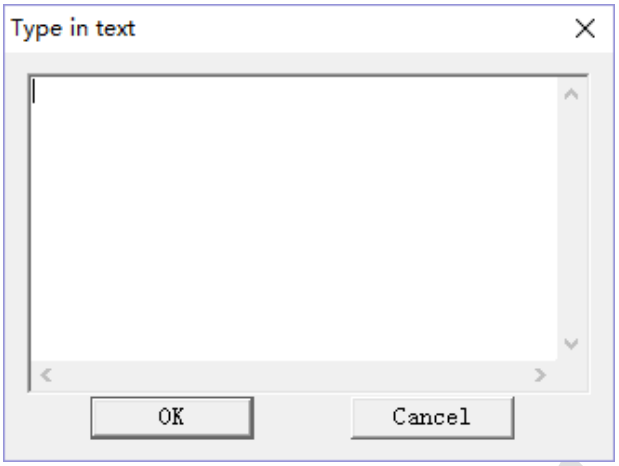


Figure 2-2-9 Type in text dialog

Input text in the dialogue box, click “OK”, then done the job.

If user wants to modify this text, just pitch on the text, in “Property page”- “TEXT” to operate related set. Interface is as Figure 2-2-10:

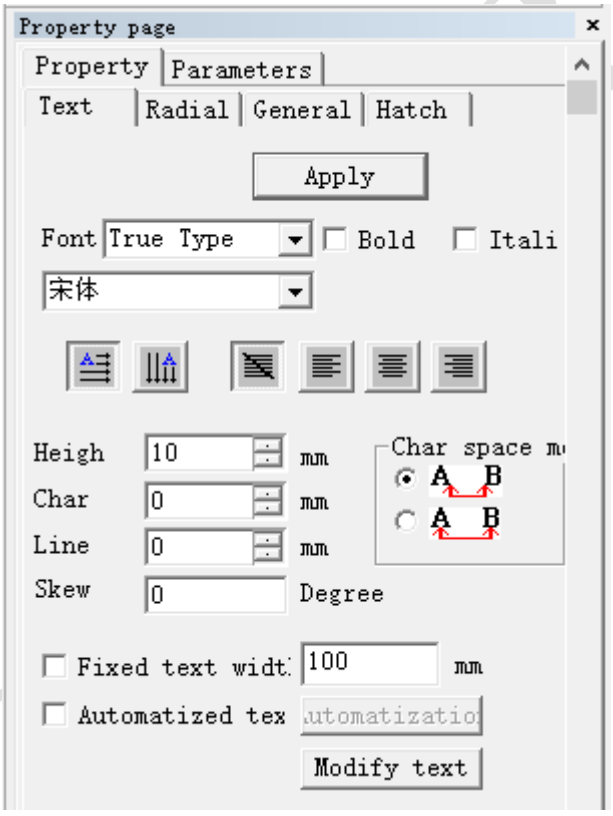


Figure 2-2-10 Text property interface

Parameter Specification:

Font: modify the selected text font.

Bold: set the selected text from font to be bold.

Italic: set the selected text from font to be italic.

: Horizontally aligned text

: Vertically aligned text

: Cancel the alignment of the text.

: Set the text left-aligned.

: Set the text centered alignment.

: Set the text right-aligned.

Height*:* the height of the font of the current text.

Char: the distance between one word and the next one of the current text

Char space mode: the edge or center of the text kerning;

Line: the distance between one row and the next following one of the current text

Skew: refers to the Horizontal tilt angle of the current text, tilt angle range is *-75° ~ 75°*.

Fixed text width: check “Fixed text width”, on matter how long the content is, the text length value is limited by set point which has been adjusted.

Automatic text: check "automatic text", click the "apply" button to activate automatic text function.

Automatic text

Check "Automation", pop up Automatic text dialog. Interface is as figure 2-2-11:



Figure 2-2-11 Automatic text--Fixed text mode

Basic functions:

Add: add a new automatic text.

Delete: to delete the selected text object or line breaks;

Up: to make the selected object one–position-ahead in the automatic text list.

Down: to make the selected objects move up one position in the automatic text list.

Modify: modify the automatic text.

Ord-wra: to insert a line break.

OK: confirm the operations performed entry into force.

Cancel: cancel the current operation.

Automatic text mode as the following

(1) Fixed text: refer to the process of fixed text, as shown figure 2-2-11;

(2) File text: in use of current LenMark, user can call TXT text or EXCEL two formats. As Figure 2-2-12:

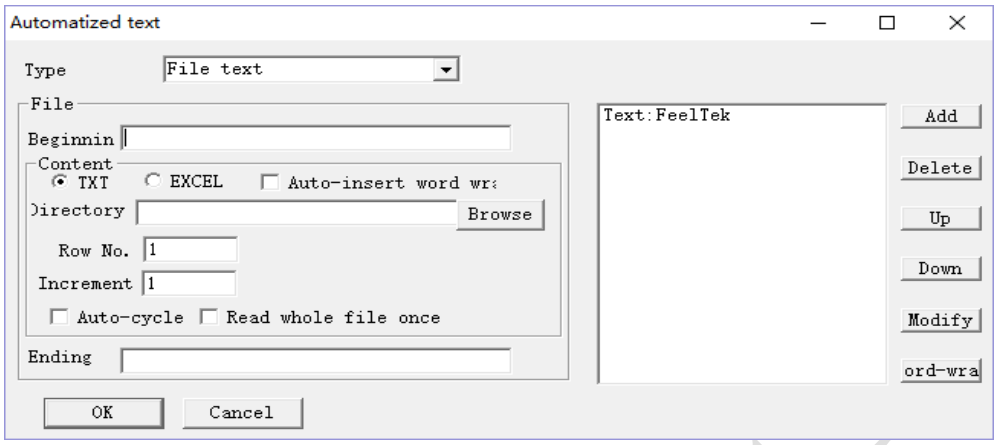


Figure 2-2-12 Automatic text--Files text mode

File text Parameter Specification:

Beginning: to add fixed words before the text file, and also can be set as blank.

Ending: to set fixed words after the text file, and also can be set to blank.

Directory: TXT texts or EXCEL files which saved in the computer.

Row No.: to transfer TXT text or EXCEL file from software, the system will automatically to choose which row to start marking, the default is line 1. For example, Row No. is set to "3", and marking start from line 3.

Increment: EXCEL file transferred, skip the number of rows after finish marking, which defaulted is one line.

Auto-cycle: when processing to end a text file, the line number will reset to 0, and meanwhile re-start from the first row.

Read whole file once: directly read the entire file while processed to one text or one file.

(3) Serial number: the text is changed by a fixed increment in the processing. As figure 2-2-13:

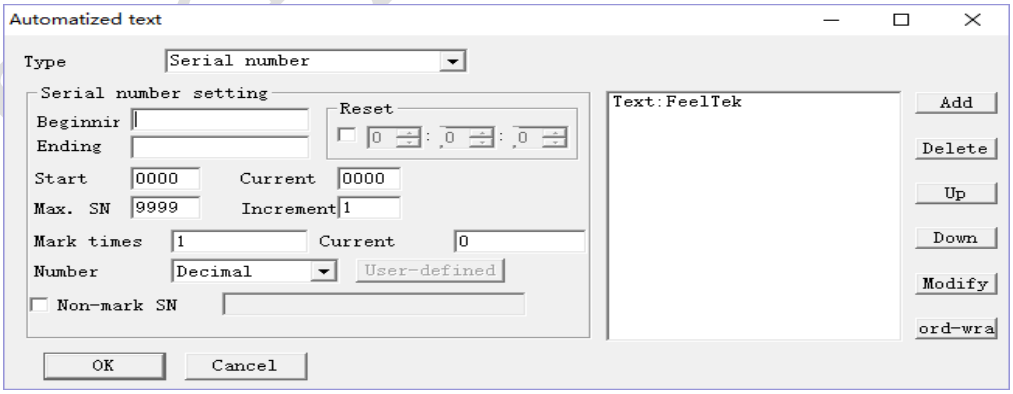


Figure 2-2-13 Automatic text--serial number text mode

Serial number Parameter Specification:

Start: the first one will be processing.

Current: serial number which will be processing.

Max.SN: system automatically returns to the start serial number, when processing sequence number equal to the ordinal number.

Increment: the increment of current number, can be set as negative value and this condition

means the number decreases progressively.

Mark times: each serial number will be changed after processing the specified number marking times.

Current (2): times of sequence number which has been processed. Automatically set to 0 when the value is equal to the number of each marking.

Non-mark SN: check “Non-mark SN”, e.g. SN with tail number **4 which is not marking, ** indicates any number.

Reset: if use “Reset” function, check “Reset”，then change the time, in processing when the SN meet the same time which has been set, SN will be automatically reset to the beginning . As figure 2-2-14:



Figure 2-2-14 reset function

(4) Date: in processing, system takes the date and time information from the computer automatically, interface is shown as figure 2-2-15:

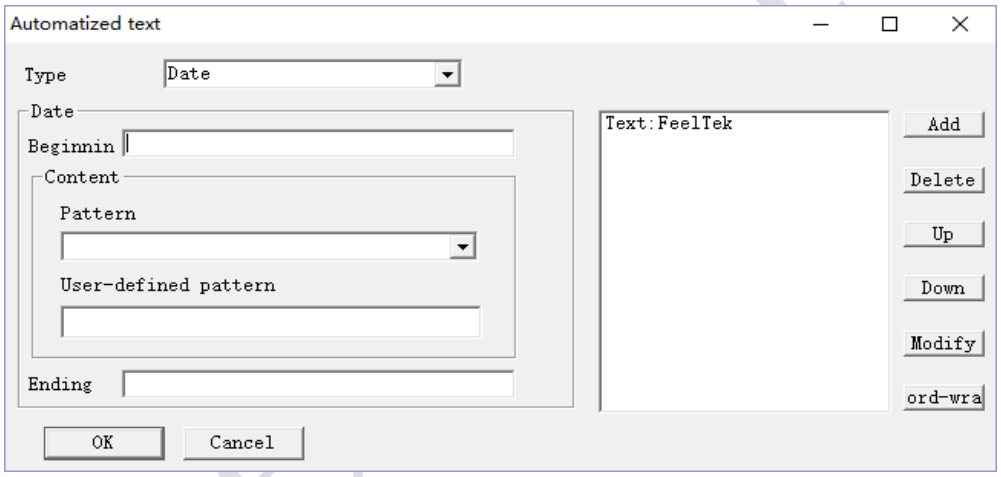


Figure 2-2-15 date text mode

Date Parameter Specification：

Pattern: including custom date format, also user can self-define it. As the Following Table 2-2-1:

%a	Week abbreviations
%A	Week full name
%b	Month abbreviations
%B	Month full name
%c	Date and Time
%d	Date
%H	24-hour format
%I	12-hour format

%j	What day of the year
%m	Month
%M	Minutes
%p	AM or PM in 12-hour format
%S	Seconds
%U	What week of the year (Sunday is the first day of the week)
%w	Week
%W	What week of the year (Monday is the first day of the week)
%x	Date
%X	Time
%y	No AD marked the year
%Y	AD marked the year
%z	Time zone mark full name
%Z	Time zone mark abbreviations
%%	Percent sign

(5) Keyboard input: text is input by user from the keyboard in the process, as figure 2-2-16

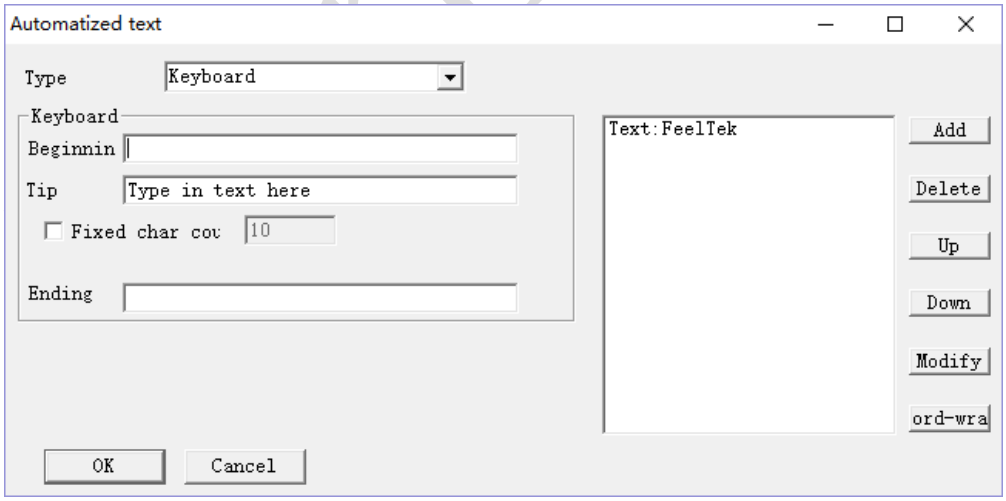


Figure 2-2-16 Automatic text--keyboard text mode

Added postwork text as: please enter the text to be processed;

After marking, pop up the text input box, enter the text and click Enter, the input text will be marked on the workpiece.

(6) Serial port: in processing, the system automatically reads text from the peripheral device through the computer serial port, as Figure 2-2-17:

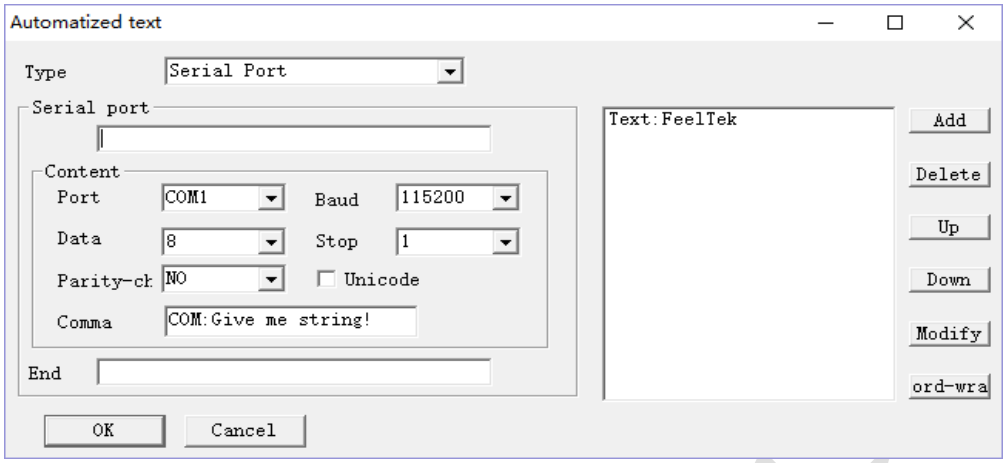


Figure 2-2-17 Automatic text--serial port text mode

Serial port Parameter Specification：

Port: the port number connect the computer to a peripheral unit;

Baud: serial communication baud rate;

Data: serial communication data bits number;

Stop: serial communication stop bit number;

Parity: the number of bits used for serial communication for serial communication;

Comma: when the system processing to this text, the system will send this command to a certain IP server trough lan port to request the text for processing now from server, and the system will keep waiting for the server to answer. After the server answered, the system will automatically process the returned string from server.

Unicode: when choose unicode, all the strings in system sent to or received from server are in Unicode format, otherwise it is in ASCII.

7) Network port: during the process, the system automatically reads the string from the network through the computer network interface. As Figure 2-2-18.

Note: this article refers to the network port using TCP / IP protocol communication network interface.

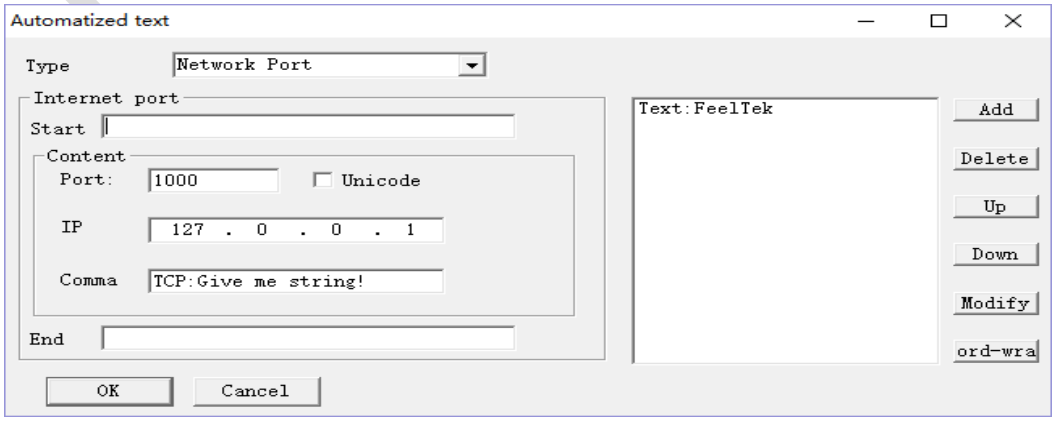


Figure 2-2-18 Automatic text--network port text mode

Network port mode parameter description:

IP: IP of the server;

Port: the port number used for network communication;

Comma: when the system processing to this text, the system will send this command to a certain IP server trough lan port to request the text for processing now from server, and the system will keep waiting for the server to answer. After the server answered, the system will automatically process the returned string from server.
Unicode: when choose unicode, all the strings in system sent to or received from server are in Unicode format, otherwise it is in ASCII.

Here's how to use this feature in conjunction with a concrete example:
To process 100 workpieces, the marking content is a text, but the text to be marked is different on each workpiece, so need to read the content to be processed every time before processing through a network server (IP: 192.168.2.1 port for 1000).
(1) Open LenMark to generate a text object, adjust the text size and position, and processing parameters.
(2) To generate a text object, select to enable "automatic text", click "Apply", click "Auto", the system will pop up a dialog box, select "network port", set the network port parameters: fill IP address in the IP of server, here is "192.168.2.1", set the port parameters as communication port number, it is 1000; Note that the network port parameters must be the same with what is set on the server, otherwise the communication will fail, set command is TCP: Give me string (this command can be defined for any server command).
(3) Click “Add” button when the network port is set up.
(4) Click “OK” button, the automatic text settings are completed.
(5) Press “mark” to start processing, LenMark will immediately send the command "TCP: Give me string" to the server through the network port, and wait for the server to return.
(6) The server receives the command -- "TCP: Give me string", it will immediately read the database to get the current processing string, and then answer to LenMark.
(7) LenMark changes processing data and send to the control card to execute marking right after getting the text to be processed.

(8) Arc configuration
After choose “Property page”-“Radial”, user can set the input text to be circular arc arrangement. Interface is as figure 2-2-19:

LenMark

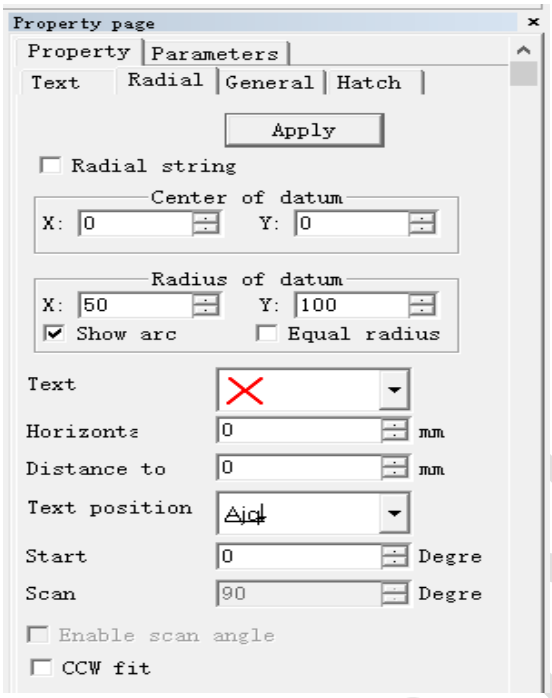


Figure 2-2-19 Arc configuration port text mode

Arc Parameter Specification：

Center of datum: to set the center position.

Radius of datum: to set the radius size of a circle.

Show Arc: show the path of the arc arrangement.

equal radius: make the arc arrangement path is a perfect circle.

Text: to choose the four special positions of the text arrangement path.

Horizon: to set relative distance between starting position and the text words.

Distance to: the vertical distance between the text and the path.

Text position: the way of text alignment path.

Start: text's starting angle of the arc arrangement.

Scan: check "Enable scan angle", can limit the text arranged range by setting scanning angle.

CCW fit: the text will reverse between left and right & inside and outside.

2.2.12 Tool Bar

Input bar code in the Graphic Area;

Tool bar:

Draw method: check "Draw(D)" -"Barcode" or click the icon like in the drawing tool bar, then left click where the bar will be placed, it will pop- up a dialog box as Figure 2-2-20:

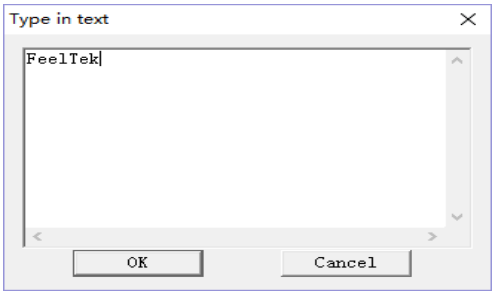


Figure 2-2-20 Tool Bar type in text dialog

Input content in this dialog, click “OK”, bar input is be finished.

If want modify bar text, select Barcode, in property page and set related parameters. Interface is as figure 2-2-21：

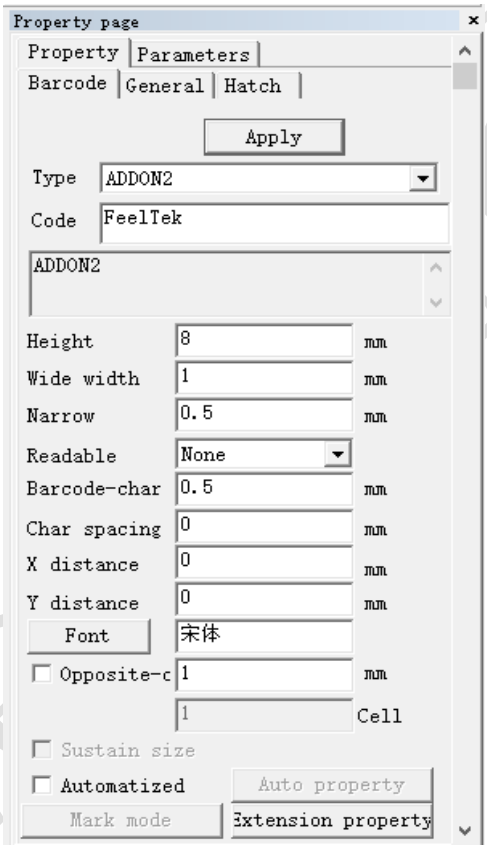


Figure 2-2-21 Tool Bar property interface

Bar Parameter specification：

Type: to select barcode standards.

Code: to choose the barcode value.

Height: the height of the bar code.

Wide width: the barcode unit Width.

Narrow: the barcode unit Narrow.

Readable: explicit and implicit of barcode character value: TOP means at the top, BOTTOM, below; None, not displayed.

Barcode-char: the distance between the character and barcode code value.

Char spacing: the distance between code value and barcode.

X distance: take the left of the bar code as a reference, the distance moved by the characters in

the horizontal direction.
Y distance: according to the position of the readable characters, take the top of the barcode (top) or the lower (bottom) as a reference, the distance moved by the characters in the vertical direction.
Font: click to set the font and style.
Opposite: the reverse function of the barcode;
Automatized: similar with automatic text which mentioned above.

2.3. Edit

2.3.1 Overview

Key Feature:
Undo: To revoke the last step operation;
Redo: To re-execute the operation which has been revoked previously;
Cut: To cuts the selected part and placed it on the clipboard;
Copy: To copy the selected part and placed it on the clipboard;
Paste: To insert the clipboard contents;
Delete: To delete the current selected part;
Select All: To select all the documents;
Inverse Select: To reverse selected objects;
Center: To middle the selected object;
Array Copy: To array selected object;

2.3.2 Undo

Undo the last step, not all step can be undone
Tool Bar: 
Shortcut: Ctrl + Z

2.3.3 Redo

Cancel the last Undo action, opposite to Undo.
Tool Bar: 
Shortcut: Ctrl + Y

LenMark

2.3.4 Cut

Using this function to cut the selected part, and placed it on the clipboard.
Tool Bar: 
Shortcut: Ctrl + X

2.3.5 Copy

Using this function to copy the selected part in current file and placed to the clipboard, meanwhile, also in the current file retain the original object.
Tool Bar: 
Shortcut: Ctrl + C；

2.3.6 Paste

Using this function, Graphic objects in the clipboard are copied to the current file.
Tool Bar: 
Shortcut: Ctrl + V

2.3.7 Delete

Using this function, delete the selected object in current file.
Tool Bar:
Shortcut: "Delete"

2.3.8 Select all

Using this function, choose to all parts and objects in current file.
Tool Bar: 
Shortcut: Ctrl + A

2.3.9 Inverse Select

Using this function, choose the left all parts except the selected object.
Tool Bar: 

LenMark

2.3.10 Center

The selected objects can be laced into the center position of Graphic Area.
Tool Bar:
Shortcut: F5

2.3.11 Array copy

Array the selected object.
Operation: after selected object, click “Edit (E)”- “Array copy”, on the screen will pop up array setting dialog box. As Figure2-3-1:

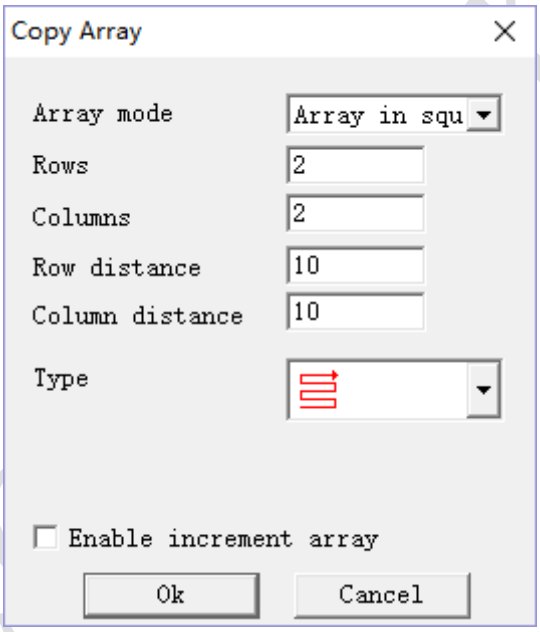


Figure 2-3-1 Array setting dialog

Setting as follow:

Array Mode: set the array mode as "Array in square" or "Array in ring".
Rows: means the arrayed rows.
Columns: means the arrayed columns.
Row distance: after arrayed, the distance between rows.
Column distance: after arrayed, the distance between columns.
Type: graphics are arrayed orderly, as well as it determined the processing order.
After arrayed, graphics aligned from left to right, then from right to left in loop two-way, also determined the processing order.
After arrayed, graphics aligned from bottom to top, and then to right in loop two-way, also determine the processing order.
After arrayed, graphics aligned from left to right order individually, also determine the processing order.

After arrayed, graphics aligned from bottom to top order individually, also determine the processing order.

Enable increment array: use the "automatic text - serial number" can be increased in a certain fixed number in order; select the array mode as "ring array", the array settings dialog is as shown in figure 2-3-2:

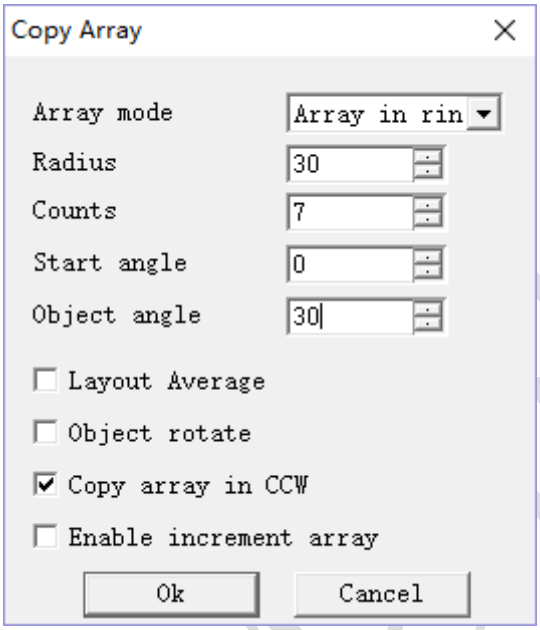


Figure 2-3-2 ring array setting interface

Setting as follow:

Radius: set the radius of the ring array;

Counts: set the number of the array object;

Start angle: set the start angle of the ring array;

Object angle: set the rotation angle of the object array;

Layout average: check it, and average distribute the array;

Object Rotate: check it, and rotation array with the last node of the selected object as the reference point;

Copy array in CCW: check it, array in CCW;

2.4. Alignment

2.4.1 Overview

Key Feature:

Transform: including position, rotate, mirror, zoom and tilt transform command.

Combine & Un-combine: operation which composite and disband objects

Group & Un-group: operation which group and ungroup objects.

Flip horizontally: objects deal with X- axis direction mirrored.
Flip vertically: object objects deal with Y- axis direction mirrored.
Lock object: lock the currently selected parts.
Unlock object: unlock the currently have been locked objects.
Unlock all: unlock all currently have been locked objects.
Align: according to a selected direction, align two or more objects which are selected.
Distribute: according to the specified array rules, arrange more objects which are selected.
Import path: array the text with the specified graphics path.
Separate: separate the text from the graphics path.
Convert to curve: non-curve objects are converted into a curve objects.
Modeling: including union, intersect, diff and exclusion four types.
Curve edit: including auto-connect and smoothen curve two editing models.
Optimized mark: including three types, automatic shortest path, marking by row, marking by column.
Broken line: convert the selected line to dotted line.

2.4.2 Transform

Transform function can make the selected objects Position, Rotate, Mirror, Scale, and Incline. The five functions are contained in Transform dialog. User can take operate flexibly in property page.

When activated, Transform Dialog Box will be kept there on the screen all the time, unless click to close it, and user can still take other operations.

Transform Dialog Box can dynamically tracking the state of the selected object, such as position, scale, etc. Below each property page, there is a control points of reference button (As Figure 2-4-1), which is applied to the datum point of transform operation, default the center control points of the object, and the eight buttons corresponding to the tracker eight control points.

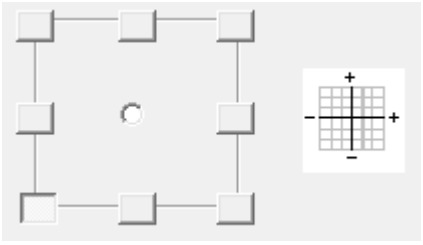


Figure 2-4-1 control point

Position

Interface is as figure 2-4-2:

LenMark

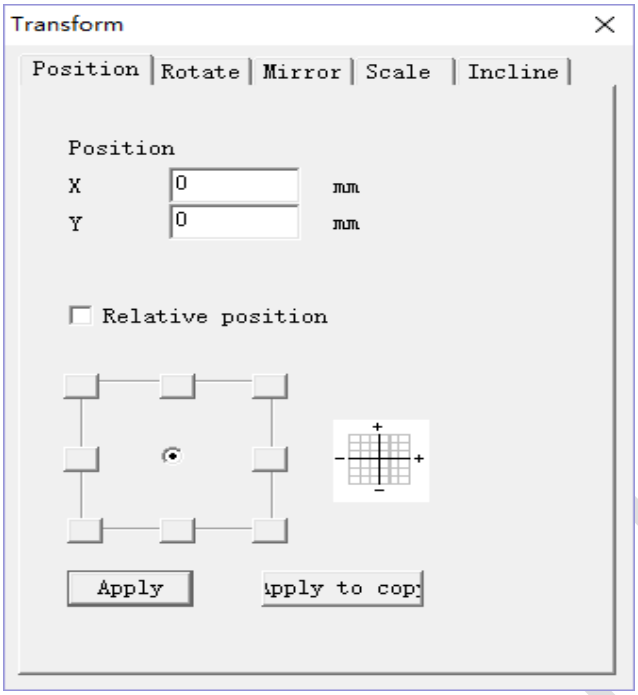
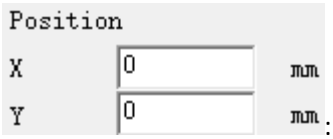
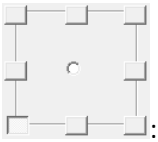
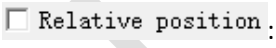


Figure 2-4-2 position transform dialog



: Indicate the reference point coordinate of the currently selected object. In the absolute coordinate case, this function is equivalent to coordinate of X-axis & Y-axis in “Object Property Page”- “Property”.

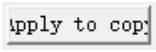

: The reference point position of the currently selected object.



: Indicate the location coordinates are relative coordinates.



: Move the selected- object to a new location.



: Copy the currently selected-object, and move to a new lacation.

Rotate

Interface is as figure 2-4-3:

LenMark

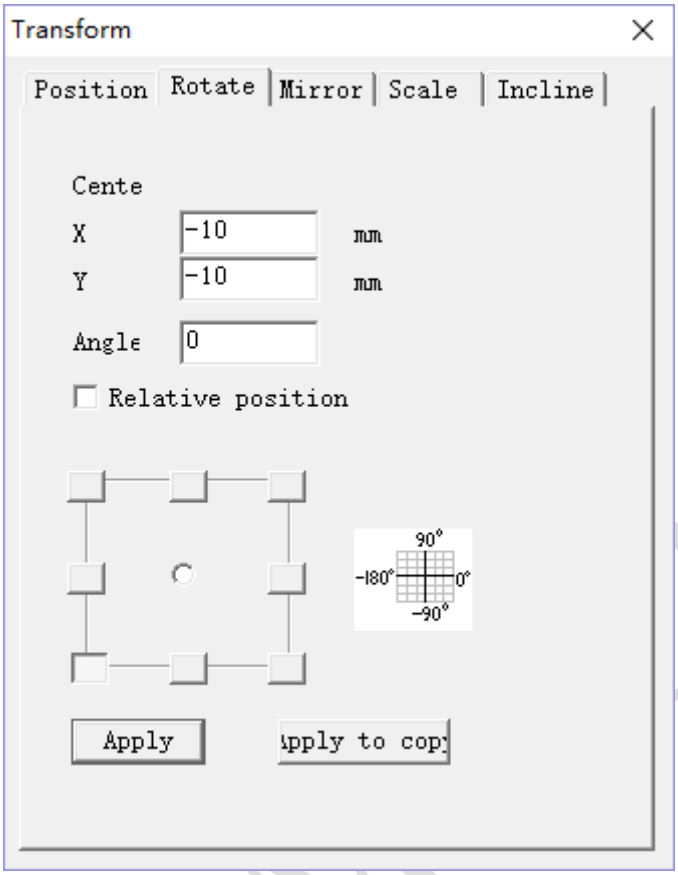
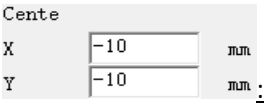


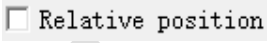
Figure 2-4-3 rotation transform dialog



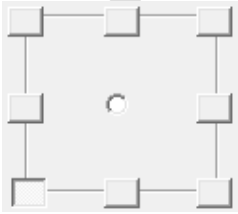
: To rotate the center point of the currently selected object.



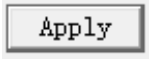
: Currently selected object rotation angle.



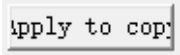
: Indicate the location coordinates are relative coordinates.



: Indicate the center point of the currently selected object.



: Selected object is rotated to a new position.



: Copy the currently selected object,and rotate to a new location.

Mirror

Interface is as figure 2-4-4:

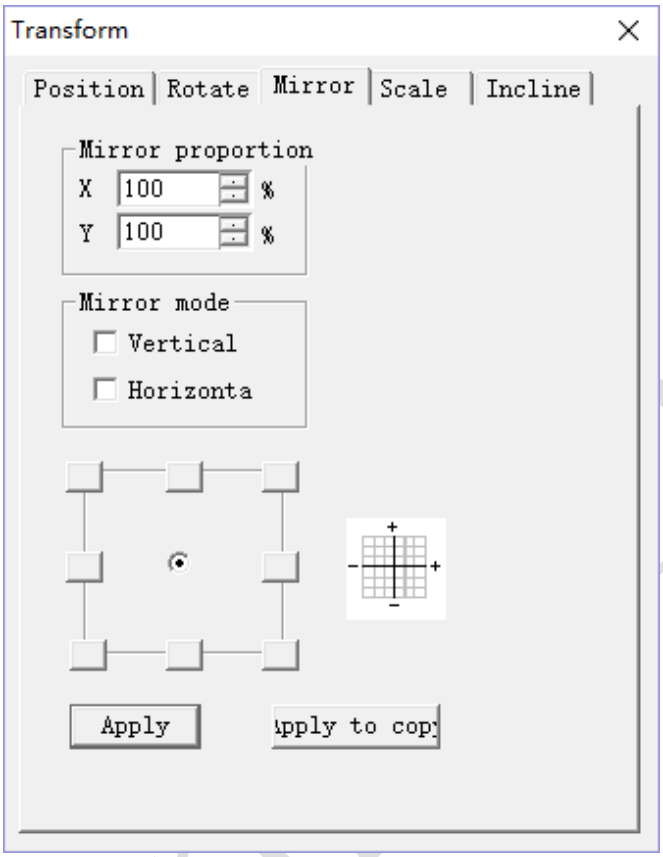
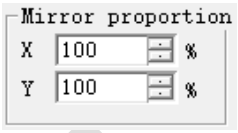
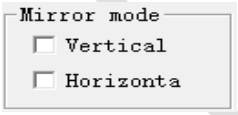


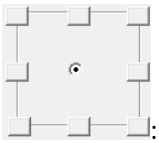
Figure 2-4-4 mirror transform dialog



: Selected currently object, X, Y direction scaling.



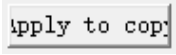
: Check it, to choose a current selected object presents flip way. *Horizontal* and Vertical function can be used together, in practical applications please use the relative functions. Others confirm uncheck, in case bring you unnecessary trouble.



: Indicate the reference position of the currently selected object.



: Mirror the selected- object to a new location.



: Copy the currently selected object, and mirrored to the new location.

Scale

Interface is as figure 2-4-5:

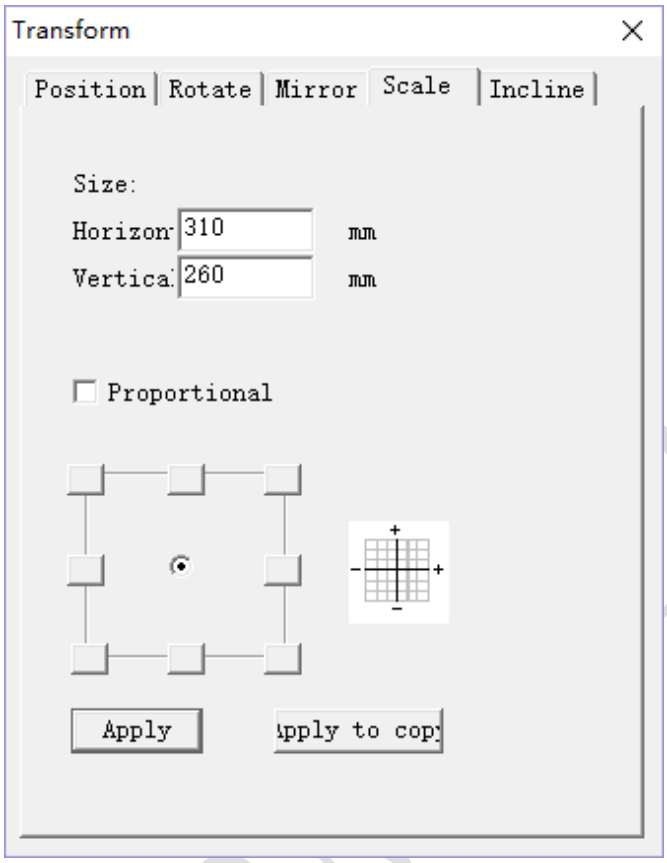
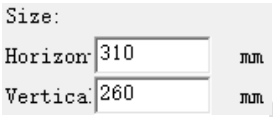
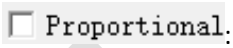


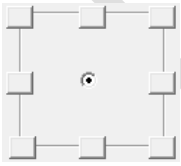
Figure 2-4-5 scale transform dialog



: The size of currently selected object after scaling size.



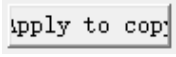
: Click, lock the object size proportion.



: Indicate the reference position of the currently selected object.



: Selected the object is scaled to a new location.



: Copy the currently selected object, and scaled to a new location.

Incline

Interface is as figure 2-4-6:

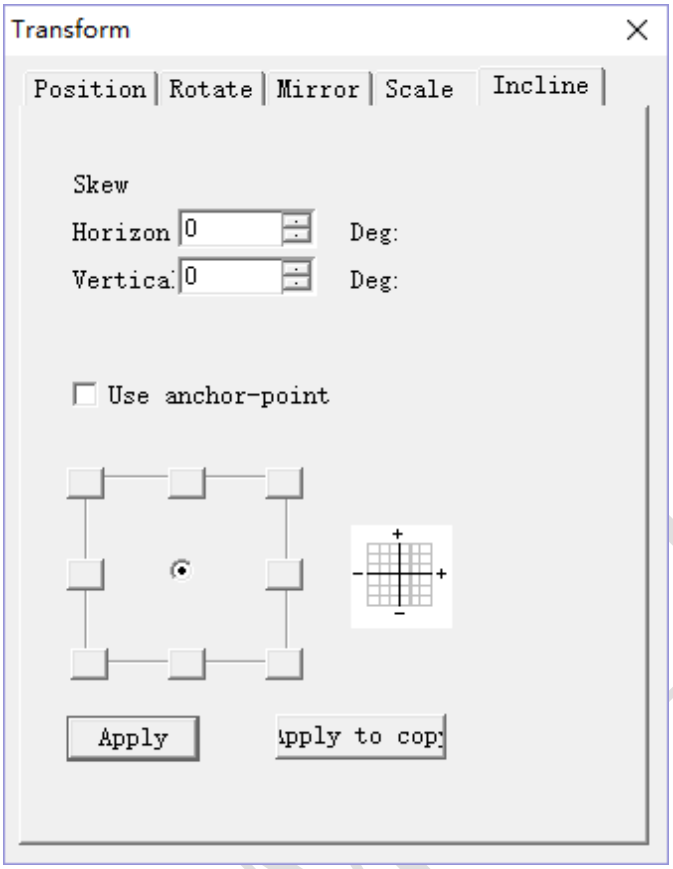
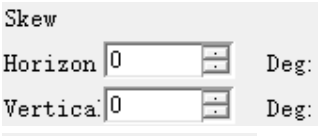
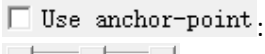


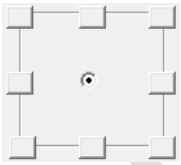
Figure 2-4-6 incline transform dialog



: Indicates the inclination angle of the currently selected object.

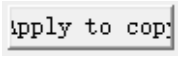


: The point keep static when processing incline


: Indicate the reference position of the currently selected object.



: Tilt the selected object to the new location.



: Copy the currently selected object, and tilt to a new location.

2.4.3 Combine & Un-combine

Combine

Use Combine function will select all objects together as a new curve object, which is totally same like others, can be selected, copied, pasted, also can bet set object properties.

Combine in Tool Bar:

Un-combine

Use Un-combine function can make combination object is reduced to a single curve object.
Un-combine in Tool Bar:

2.4.4 Group & Un-group

Group

Use Group function, will attribute few graphic objects together as a new one , the new grouped graphic object is totally same like other, can be selected, copied, pasted, also can be set object properties. Group is the multiple objects all together in one, become a collection of objects, but do not change the filling, layer property of each one.
Group in Tool Bar：

Un-group

Use Un-group function, will separate the grouped object into multiple objects, each object still contains its own property as before.
Un-group Tool Bar：

2.4.5 Flip vertically

The function to be used the selected-objects turn around vertically. As Figure 2-4-7:
Tool Bar:

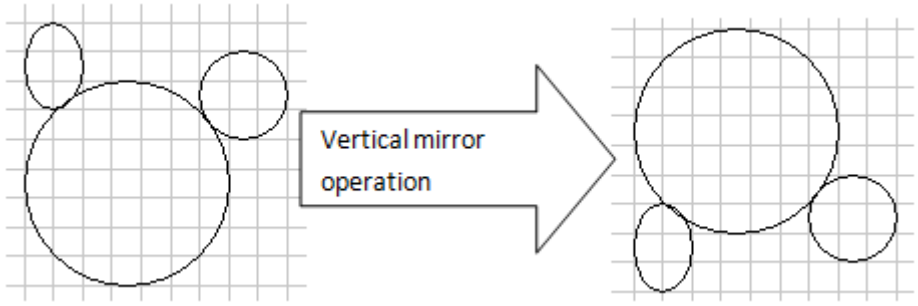
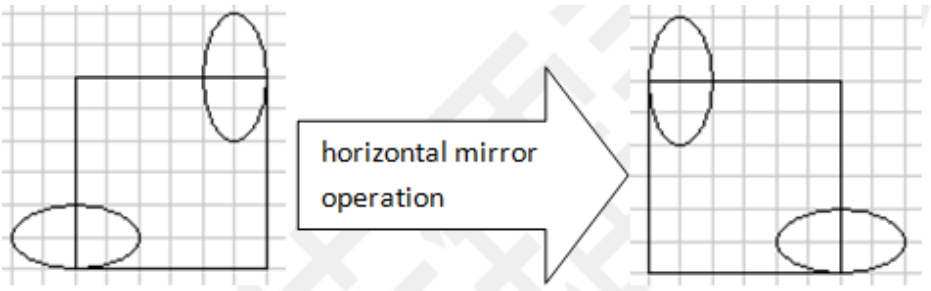


Figure 2-4-7 Flip vertically

2.4.6 Flip horizontally

The function to be used the selected-objects turn around horizontally. As Figure 2-4-7:
tool bar:



2-4-7 Flip horizontally

2.4.7 Lock object

Lock the currently selected object, so they can't be edit operation.
Tool Bar:

2.4.8 Unlock object

Unlock currently selected locked object, so that it can be edited operation.
Tool Bar:

2.4.9 Unlock all

Unlock all current is locked objects, so that it can be edited operation.
Tool Bar:

2.4.10 Align

Use Align function, according to a selected direction can align two or more selected objects in Graphic Area, selected at least two objects, that can make alignment becomes available.

Tool Bar:
Application, click "" under "align", then on the screen the system will pop -up Align dialog box. As Figure2-4-9:

LenMark

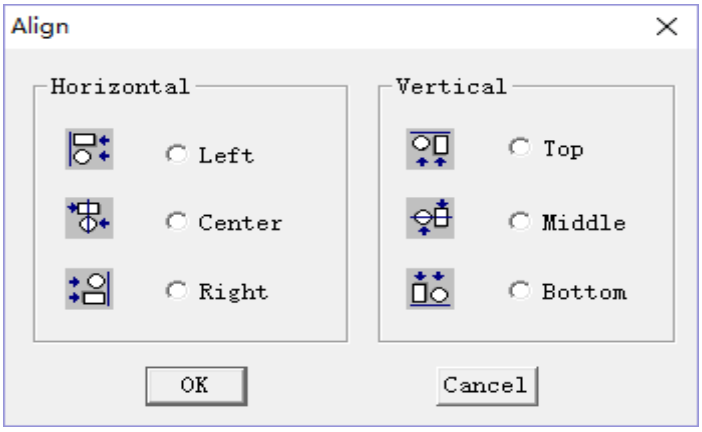


Figure 2-4-9 align setting dialog

The Align Function as following:

Horizontal:

Left: all objects are aligned in accordance with the left edge;

Center: all objects are aligned in accordance with the vertical central line;

Right: all objects are aligned in accordance with the right edge;

All of three ways above: all objects only move horizontally.

Vertical:

Top: all objects are aligned in accordance with the top edge.

Middle: all objects are aligned in accordance with the horizontal central line alignment.

Bottom: all objects are aligned in accordance with the bottom edge.

All of three ways above: all objects only move vertically.

Note: alignment benchmark is the last selected object, which all others are moving according to.

2.4.11 Distribute

Use Distribute function, according to a specified alignment rules to rank more selected objects in Graphic Area, and following to the specified rules to make them under the rules specified distribute Equal space in Graphic Area.

Operation method: click "distribute" under "alignment", the screen will pop up a dialog as Figure 2-4-10:

LenMark

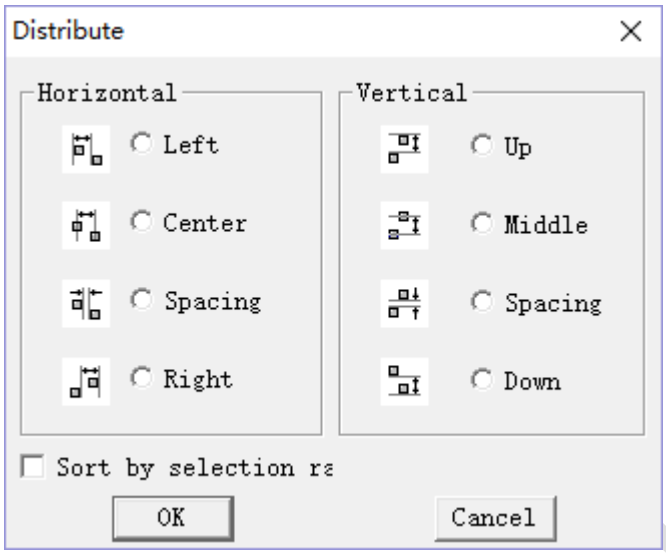


Figure 2-4-10 distribute setting dialog

Distribution has several following way in direction order:

Left: all objects are distributed horizontally in accordance with the left edge in Graphic Area.

Center: all objects are distributed horizontally in accordance with the vertical central line in Graphic Area.

Spacing: all objects are distributed horizontally in accordance with Graphics spacing.

Right: all objects are distributed horizontally in accordance with the right edge in Graphic Area.

Up: all objects are distributed vertically in accordance with the top edge in Graphic Area.

Middle: all objects are distributed vertically in accordance with the vertical central line in Graphic Area.

Spacing: all objects are distributed vertically in accordance with Graphics spacing.

Down: all objects are distributed vertically in accordance with the bottom edge in Graphic Area.

Sort by selection: selected object are distributed in selected area or in Graphic area without checking.

2.4.12 Import path

Array the text with specified path.

Drawing: select text and execute "import path", end up clicking the graph which is selected as the path.

2.4.13 Separate

You can only manipulate text objects that have already been imported path to cancel the path property.

LenMark

2.4.14 Concert to curve

Remove the properties of the selected graphic objects, convert o curve objects.

2.4.15 Modeling

Click “Alignment” - “Modeling”, on the screen will pop up a dialog box, as Figure 2-4-11:

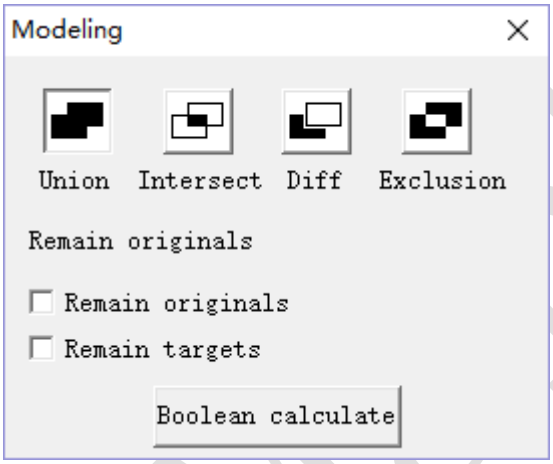


Figure 2-4-11 modeling dialog

Union: two intersecting closed areas can be merged into one enclosed area.
Intersect: two intersecting closed areas can be merged into one enclosed area, and retian the intersect part.
Diff: part of a graphics area within another area can be pruned.
Exclusion: remove the intersecting area of two area where enclosed.
Remain originals: Using for the object to perform the graphic operation on another object.
Remain targets: shapes on the selected object with another object.
Performance is as figure 2-4-12:

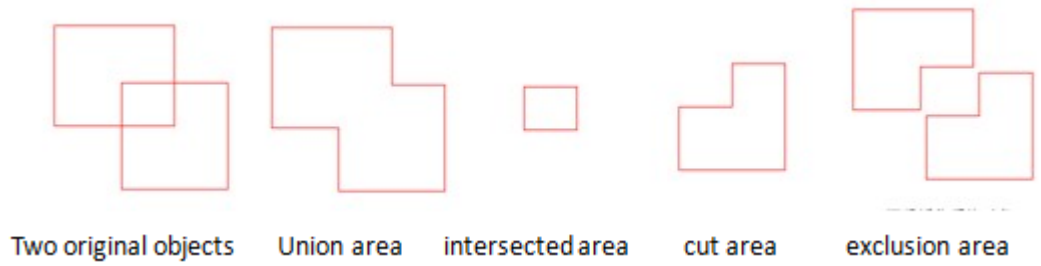


Figure 2-4-12 modeling performance

2.4.16 Curve edit

Auto-connect

Click “Alignment”- “curve edit”- “Auto-connect”, on the screen will pop up a dialog box as Figure 2-4-13:

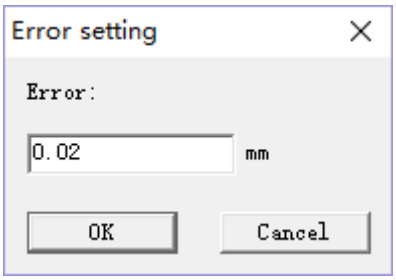


Figure 2-4-13 error setting dialog

Error: the two selected line are connected to one, when the distance between start point of one line and end point of the other line is less than the parameter stated (0.02 mm). As Figure2-4-12:



Figure 2-4-12 Auto-connect sample

Smoothen curve:

After checking "smoothen curve", the node of curve will decline and finally convert into a line after several times of click.

2.4.17 Optimized path

Optimized marking function of edit menu;

Operation method: Click "array" menu to find "optimized path", system will pop up a dialogue box, as figure 2-4-15:

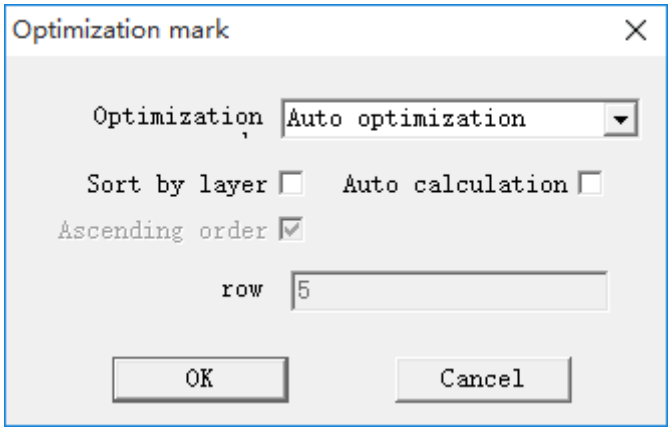


Figure 2-4-15 Optimized editing dialog

Its properties are as follow:

Optimized way: three types and the default is automatic shortest path.

Auto optimization: automatically calculate the shortest path and apply it.

Marking by row: mark row by row.

Marking by column: mark column by column.

Sort by layer: marking priority in the same layer data.

Auto calculation: check in the management of marking and automatically calculate the number of rows and columns.

Ascending order: select this function, it will follow left to right, bottom to top marking sequence; if it is not selected, the default setting is descending sort. (Note: The function item is placed in the gray state in the automatic shortest path optimization)

Row: users can set the optimized row numbers.

2.4.18 Convert to dotted line

Convert the selected object to dotted line and change its property.

Operation method: select the object, click the "array" menu and find "convert to dotted line", system will pop up a dialogue box as figure 2-4-16:

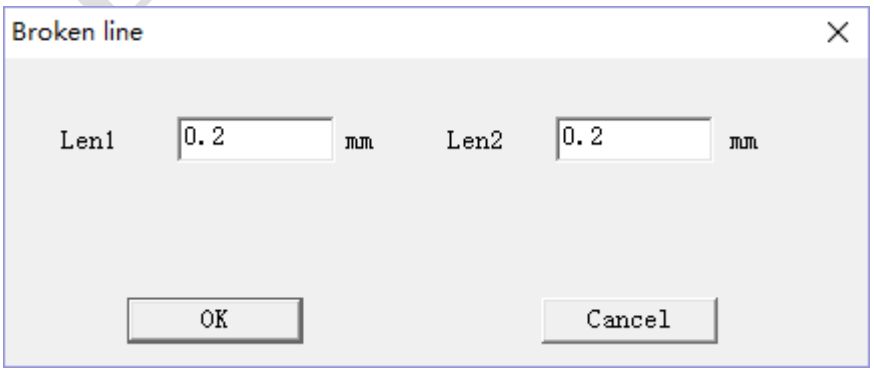


Figure 2-4-16 Convert to dotted line dialog

Set the length and click "ok", the selected full line will convert to dotted line.

LenMark

2.5. Special

2.5.1 Special menu Overview

Key Feature:
Segmentation mark: large-format splicing marking with the stepper motor X-Axis, Y-Axis on worktable;

Rotation mark: rotation mark with the stepper motor R-Axis;

Multi-document marking: users can control marking of different files through inputting the files into control port;

LGP: mark on transparent acrylic plate;

Dial mark: marking with the disk rotation;

2.5.2 Segmentation mark

Choose “Special”- “Segmentation mark”, on the screen will pop up a dialog box. As Figure 2-5-1:

LenMark

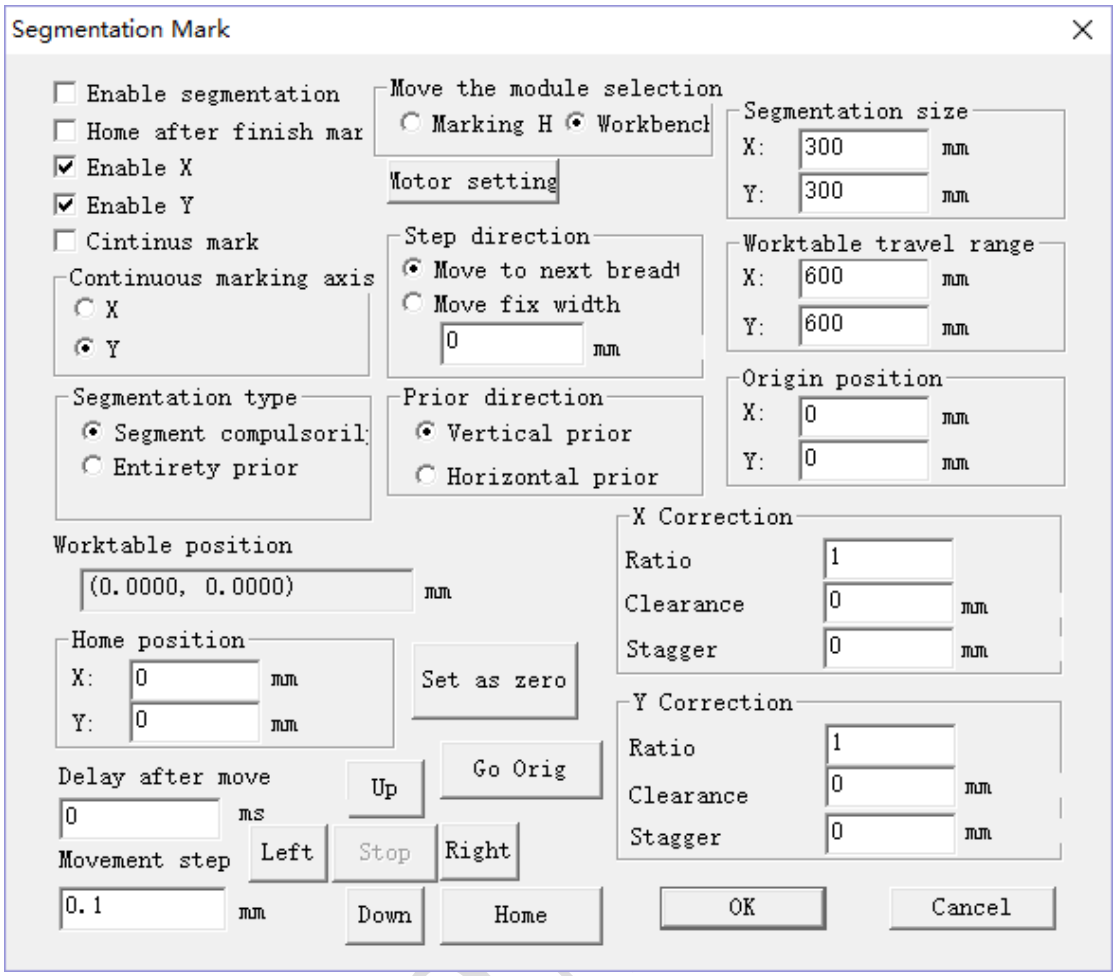
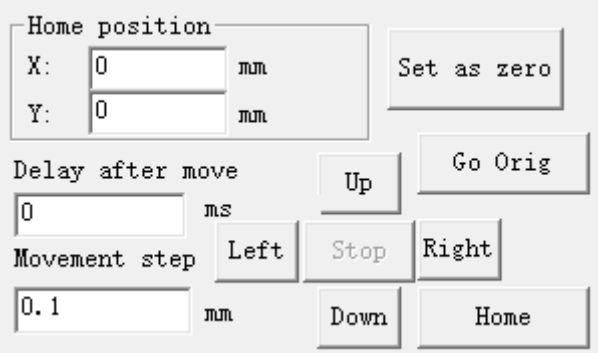


Figure 2-5-1 segmentation marking adjusting dialog

Enable segmentation: to start Segmentation mark function (Note: Do not check this function when it is not being used.);
Home after finish mark: finish processing, the work table back to the zero position;
Enable X: X-axis to enable available;
Enable Y: Y-axis to enable available;
Move the module selection: select the moving object to be Marking Head or Workbench;
Motor setting: set the parameters of stepper motor;
Continuous marking: check this item and the selected marking axis will repeat the marking operation;
Continuous marking axis: set the direction of continuous marking;
Continuous marking step: set the position of continuous marking and users can choose to mark in the next split-graphic or after moving a fixed distance away;
Segment compulsorily: in the processing of one graphic object, no matter what size of the sub-object (one object included in the group), "Segment compulsorily" function would divide the graphic into some adjacent blocks in accordance with the parameter that has been set in Segmentation size to do processing;
Entirety prior: according to the object size and segmentation size, to make sure whether the segmentation is necessary in order to reduce segment operation;
Vertical prior: in segmentation processing, finish this segmentation with only one time of vertical movement and times of adjusting worktable in horizontal direction;
Horizontal prior: in segmentation processing, finish this segmentation with only one time of horizontal movement and times of adjusting worktable in vertical direction;
Segmentation size: the value of segmentation size;

Note: Segmentation size is very important for the entire stitching in processing, it directly affects the processing time and the effect.
Work table size: the size of the range of the stitching work table;
Origin position: **t**he origin of Galvanometer located in the work table coordinate system;
Ratio: the ratio value of zoom in or out after the object has been segmented;
Correction-clearance: also called Backlash Compensation, to compensate the clearance error between the gears gaps while in the direction movement.
Correction-Stagger: when the mechanical manufacturing error is relatively large, the machining of the flat stitching will result in misalignment phenomenon, and adjusting this parameter can eliminate the misalignment;
In order to set the work table back to the home position after the completion. As Figure 2-5-2:



2-5-2 home position setting

Work table position: present the position of current work table;
Home position: the home position of work table after finishing working;
Set as home position: work table's current location set as home position;
Delay time after movement: the movement time after which the work table starts to mark and the time can be set here;
Movement step: click on the arrow keys adjust distance value;
Arrow keys Short cut: click and move the work table a specified distance away in the direction. Shortcut: Ctrl + →、Ctrl + ←、Ctrl +↑ and Ctrl +↓;
Stop: stop movement during the work movement;
Back to origin: click this button, work table back to origin;
Back to home: click this button, work table back to home;
After setting all parameters well, user can click “Marking” to start processing.

2.5.3 Rotation mark

Choose “Special”- “Rotation mark”, on the screen will pop up a dialog box. As Figure 2-5-3:

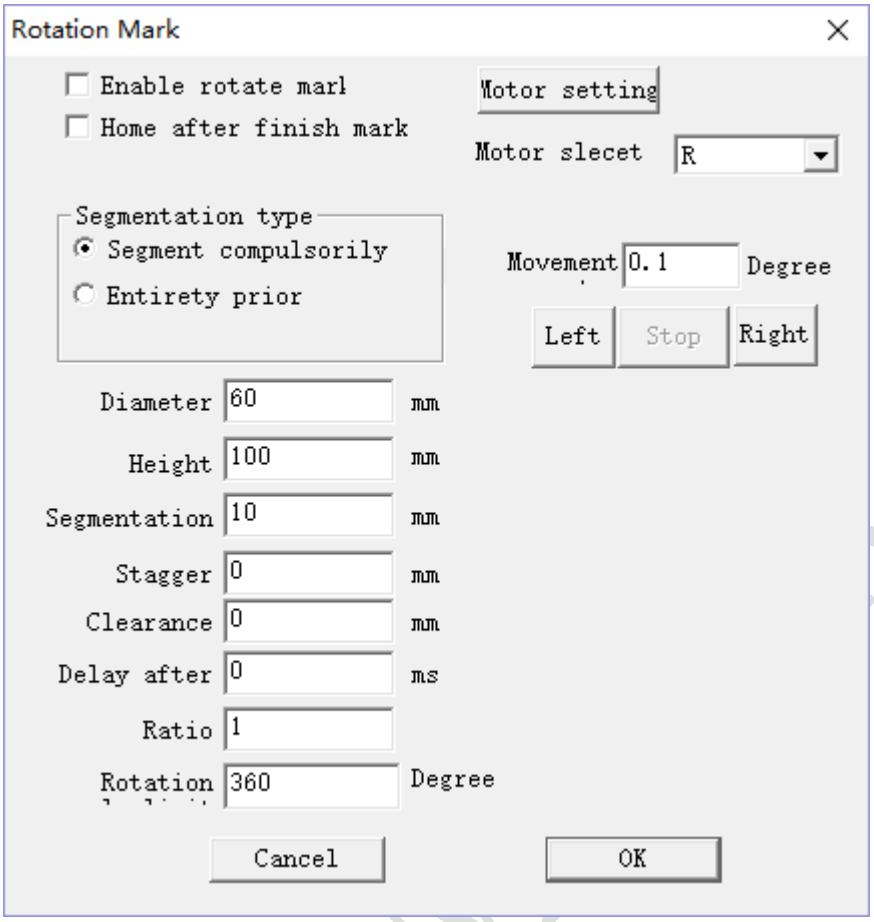


Figure 2-5-3 rotation mark setting

Enable rotate mark: to start Rotation mark function;

(Note: do not check this function when it is not being used or it will affect the appropriate mark area.)

Home after finish mark: finish processing, the rotation axis back to the home position;

Segmentation type: including segment compulsorily and entirety prior, the meaning is the same with that of "segmentation mark";

Diameter: marking work piece diameter, need to accurately measure, correctly set-up, otherwise it is impossible to correctly calculate the position of the marking;

Height: marking work piece length, need to accurately measure, correctly set-up, otherwise it is impossible to correctly calculate the position of the marking;

Segmentation size: the value of segmentation size;

(Note: segmentation size is very important for the entire stitching processing, it directly affected the processing time and the effect.)

Stagger: when the mechanical manufacturing error is relatively large, the machining of the flat stitching will result in misalignment phenomenon, and adjusting this parameter can eliminate the misalignment;

Clearance: also called Backlash Compensation, to compensate the clearance error between the gears gaps while in the direction movement;

Delay after: set to start marking time in the extension of the axis of rotation;

Ratio: the ratio value of zoom in or out after the object has been segmented;

Rotation angle: set the rotation angle of the rotation axis;
Motor setting: set the parameters of stepper motor;
Motor select: select the rotation axis;
Movement step: used to adjust the position of rotation axis. Users can move it through the left and right arrow keys;
Arrow keys: click this item and user can move the work table a specified distance away in the selected direction. Short cut: Ctrl+→、Ctrl+←;
Stop: stop movement during the work movement;

2.5.4 Multi-files mark

Select "Special" menu "multi-files mark" command, the system will pop up a dialog box, as figure2-5-4:

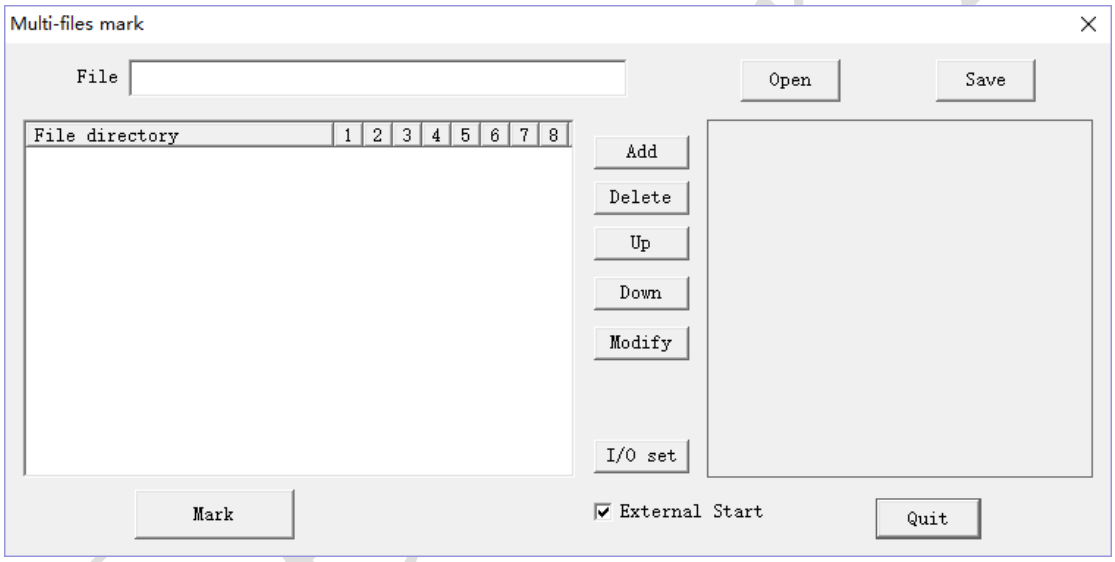


Figure 2-5-4 multi-files marking setting

The parameters:
File: display complete saving path of multiple files;
(Note: .stm standard format for the saving of software, .mmf file format for the saving of multi-files.)
Open: open the .mmf file;
Save: the corresponding settings will be saved to the .mmf file format;
File list: display path and port properties;
Add: the .stm file and the corresponding settings will be added to the file list;
Delete: delete selected choices in the list;
Up: selected item goes up;
Down: selected item goes down;
Modify: modify port configuration or file of the selected item;
I/O set: set the input port;

External Start: start external trigger. Such as foot switch;

Preview area: displays the selected item in the preview area, as Figure below 2-5-5:

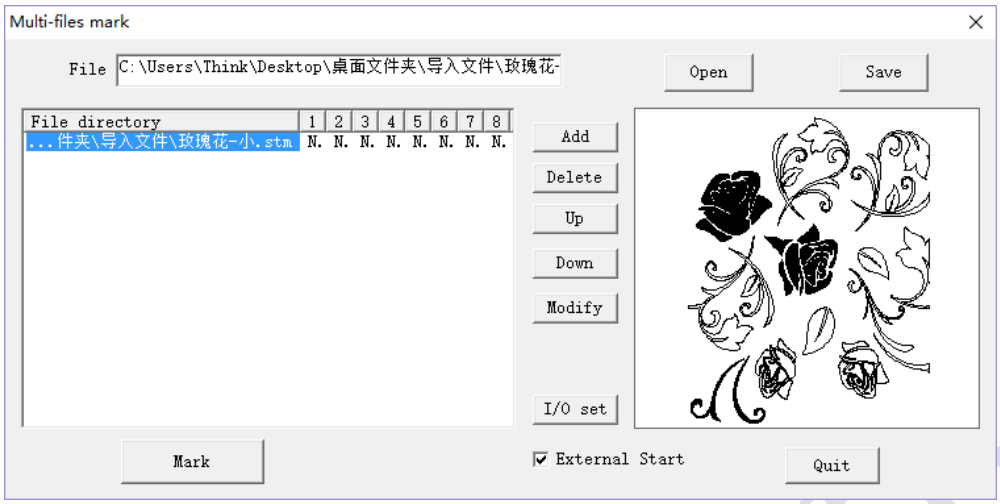


Figure 2-5-5 multi-files mark preview

Mark: start the detection port input, execute engraving,

Exit: exit multi-files mark processing;

2.5.5 LGP

Select "Special" menu "LGP" command, the system will pop up the light guide optimization dialog box, as shown in Figure 2-5-6:

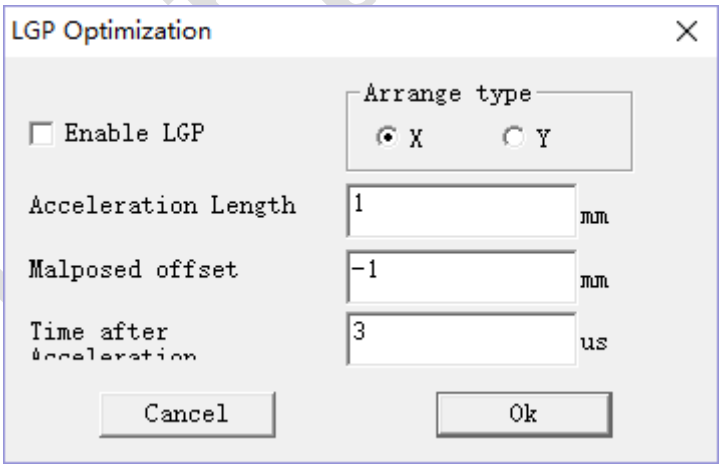


Figure 2-5-6 LGP optimization setting

Key feature:

Enable LGP: start of the light guide plate function;

(Note: when do not use this feature, please do not choose.)

Arrange type: select the orientation of the point;

Acceleration length: set the length of the acceleration zone;

Malposed offset: when the dislocation occurs, you can eliminate this phenomenon by adjusting

the parameters;
Time after Acceleration: wet how long to start engrave after acceleration;

2.5.6 Dial mark

Select "Special" - "dial mark" command, the system will pop up the dial mark dialog box, as shown in Figure 2-5-7:

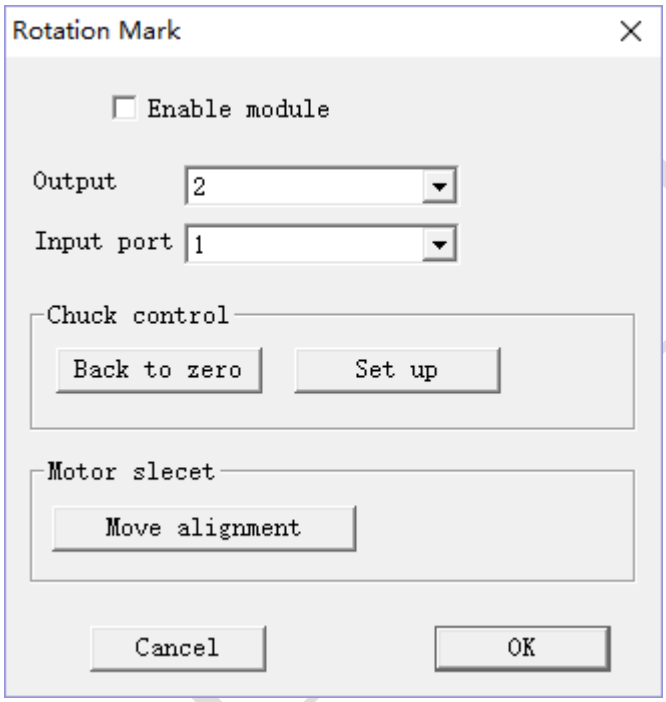


Figure 2-5-7 dial marking setting

Key feature:
Enable module: start the dial mark function module;
(Note: when do not use this feature, please do not choose.)
Output: set the signal output port;
Input port: set signal input port;
Back to zero: click on the rear chuck to rotate back to zero;
Set up: click to enter the rotation mark settings dialog box, you can set the relevant parameters;
Movement alignment: click on the dial to automatically reset;

2.6. View

2.6.1 Overview

Key Feature：
View: to observe the Graphics Area.

Ruler: dynamically display horizontal and vertical scale.
Grid: show the grid in the Graphics Area.
Ruler grids: assist in drawing.
Snap to grid: moving objects can automatically align the grid lines.
Snap to ruler grids: moving objects can automatically snap to the ruler grids.
Snap to a feature point: while Drawing graphics, can automatically find the feature points of existing objects.
Language: switch the type of language.
Unit: switch type of units.

2.6.2 View

View Tools include：Zoom in ,Zoom out, Move workspace,Fit in Window,and Show full workspace

Zoom in: Magnify the current view.
Zoom out: Narrow the current view.
Move workspace: Move the current view.
Fit in Window: All objects in the current workspace fill the entire Graphics Area for observation.
Show full workspace: Current workspace fills the entire Graphics Area for observation.

2.6.3 Ruler

Dynamically display horizontal and vertical scale.

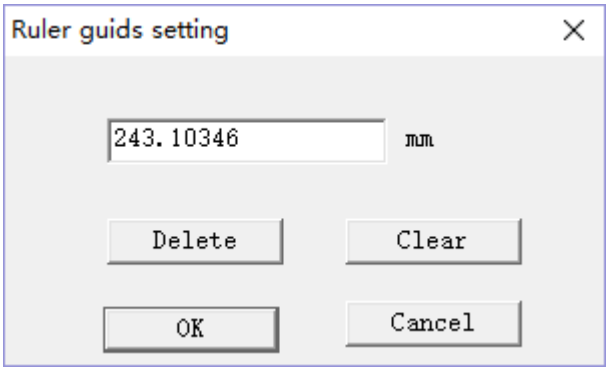
2.6.4 Grid

Check this function to show grid in the Graphics Area.

2.6.5 Ruler grids

Choose this function to show ruler grids in the Graphics Area.
Usage method: Ruler grids can in anywhere of the ruler. Hit the mouse left - drag to the position you need. If want to move to a precise location, please double-click on this ruler grids, on the screen will pop up a dialog box, as Figure 2-6-1:

LenMark



2-6-1 rulers guids setting

Enter the location information in the dialog box, click *"OK" ,* the ruler grids automatically move to the right location.

2.6.6 Snap to grid

After checking this function, moving objects can automatically align the grid lines.

2.6.7 Snap to ruler grids

After checking this function, moving objects can automatically snap to the ruler grids.

2.6.8 Snap to a feature point

“Snap to a feature point” default as non-selected state. If enable this feature, it will automatically find the existing object vertex, midpoint, endpoint, the center, the point of intersection, etc.

2.6.9 Language

Click “View (V)”- “language” , can choose the main interface language as English or Chinese.

2.6.10 Unit

Switch dimensions in mm or inch.

LenMark

2.7 Tool

2.7.1 Overview

Key Feature：
System toolbar
Alignment toolbar
View toolbar
Draw toolbar
Auto toolbar
Status toolbar
Objects list
Property toolbar
Home toolbar
Preview Mark toolbar
Scale strokes toolbar
Quick-layer toolbar
Special Toolbar

2.7.2 System toolbar

Shortcuts as following:



New / Open / Save / Import / Export / Cut / Copy / Paste / Delete / Undo / Redo / Laser-on

2.7.3 Alignment toolbar

Shortcuts as following:



Combine / Un-combine / Group / Un-group / Vertical mirror / Horizontal mirror / Align / Lock / Un-lock / Unlock all / Center / Select all / Inverse / Layer select

2.7.4 View toolbar

Shortcuts as following:

LenMark



Move workspace / Zoom in / Zoom out /Fit in window/Show full workspace

2.7.5 Draw toolbar

Shortcuts as following:



Select / Node edit / Point / Line / Curve / Ellipse /Arc/ Rectangle / Polygon / Text / Barcode

2.7.6 Auto toolbar

Shortcuts as following:



Delay / Input / Output / Rotation / XY command / Z command

2.7.7 Status toolbar

Real- time display the selected objects' information, such as number, type and size, the cursor Coordinate point, overall marking time, current marking time and control card type.

2.7.8 Object list

Object list Window is used to display the drawing object names and types, click on the list to select the object. As figure 2-7-1:

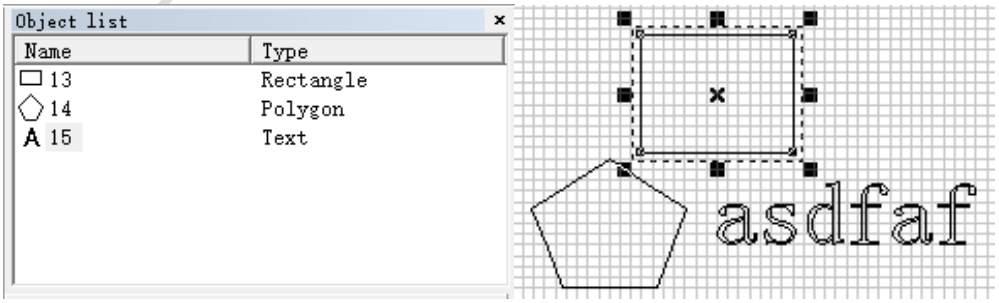


Figure 2-7-1 object list and select object

Objects can be sorted on demand in the object list. User can select an object in the list directly to drag-control, or by hit- right mouse choose to adjust the order.

LenMark

Sort ways: Move forward. Move backward. Move to top. Move to bottom.

Note：During in processing, system works according to the order (top to bottom) in the object list.

2.7.9 Property page

It contains two parts: Object property and Marking property.

Object property

1) General

"General": Indicate the selected object's general properties, including Position, Size, Proportion, and Array. As figure 2-7-2:

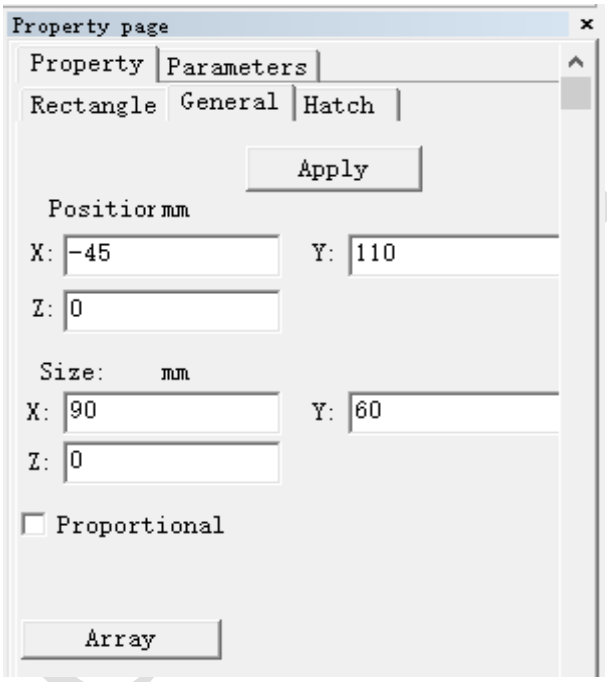


Figure 2-7-2 general property interface

Parameter Specification:

Position- X: the current selected object that the minimum lower-left corner in peripheral corner of the X- coordinate.

Position-Y: the current selected object that the minimum lower-left corner in peripheral corner in circle of the Y- coordinate.

Position-Z: the current selected object that the minimum lower-left corner in peripheral corner in circle of the Z- coordinate.

Size-X: the current selected object width.

Size-Y: the current selected object height.

Proportion: lock the current aspect ratio. If user changes XY size, after checked the *"Proportion"*, system will maintain the new size aspect ratio as a default value.

Array: select an object as main body and copy a number of objects through virtual copy so that the operation speed can be accelerated.

Click “Array”, on the screen will pop up a dialog box. As Figure 2-7-3:

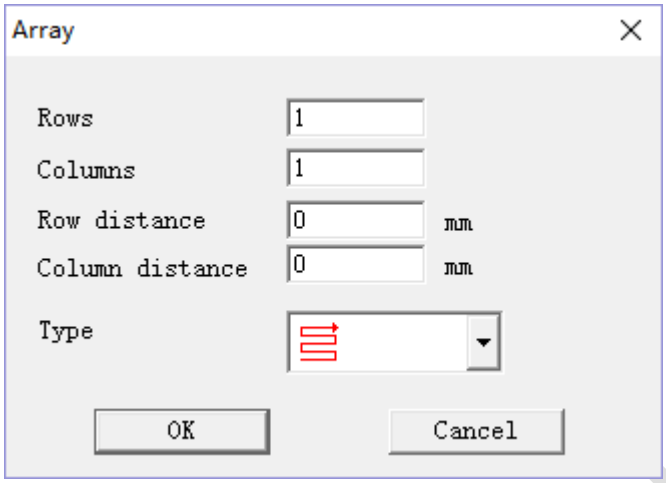


Figure 2-7-3 array interface

Parameter Specification：

Rows: the number of ranks in the array;

Columns: the number of columns in the array;

Row distance: the space between ranks and ranks;

Column distance: the space between columns and columns;

Alignment Types: graphics arrayed according to the order, also it’s the processing order;

After arrayed, graphics aligned orderly from left to right, then from right to left in loop two-way.;

After arrayed, graphics aligned orderly from bottom to top, and then to right in loop two-way;

After arrayed, graphics aligned orderly from left to right individually;

After arrayed, graphics aligned from bottom to top individually;

2) Hatch property

“Hatch”: it can fill specified and selected graphics, and the graphics may be a closed curve, also can be a non-closed curve. As Figure2-7-4:

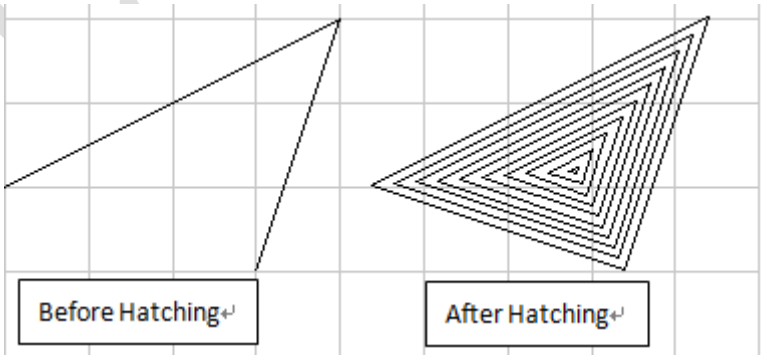


Figure 2-7-4 filling sample

The hatching property page, as Figure 2-7-5:

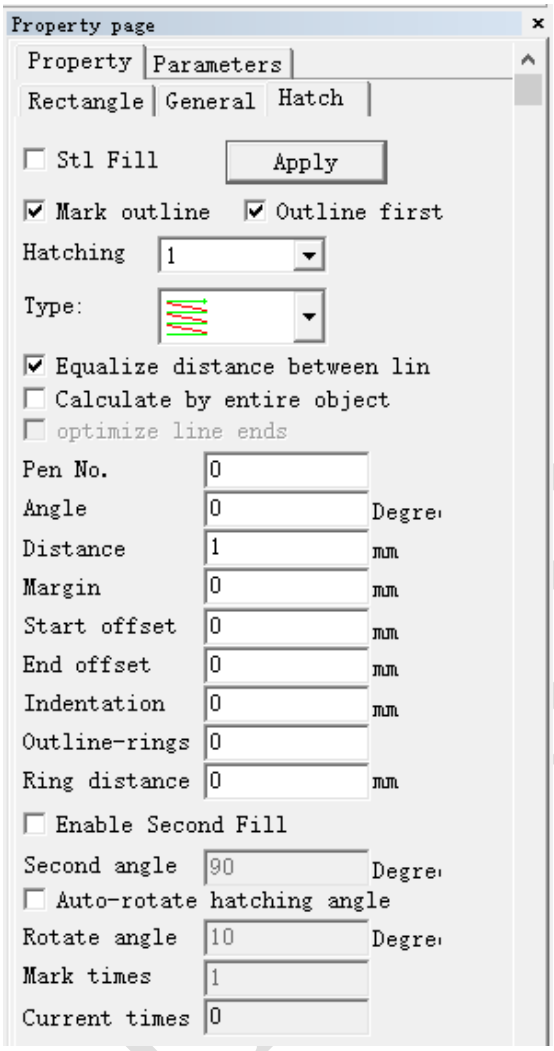


Figure 2-7-5 hatching property interface

Parameter Specification:

STL Fill: after checking, the file can be filled directly when imported as STL-formatted object.

Mark outline: indicate whether or not marking the outline of the original graphic.

Outline first: check "Outline first", indicate first marking the outer contour, then the hatching line. If not check "Outline first", the system default firstly marking the hatching line, then marking the outer contour.

Hatching times: times of objects that can be filled.

Types:

Cancel hatching: cancel the current hatching.

Unidirectional hatching: the direction of the filling line always from left to right.

Bilocal hatching: the direction of the hatching line first from left to right, then change the direction from right to left, and in this way do cycle filling.

Optimized Bilocal hatching: similar to Bilocal hatching, but the hatching line is continuous

without gaps between in the next two lines.

”回”- shape hatching: the hatching line starts at the peripheral outline from outside to inside.

Equalize distance between lines: solve the problem of uneven distribution of the hatching line at the beginning and end of the hatched object. Due to the hatched object size and distance between the hatched lines, etc, hatching in the start and at the end of the hatched object may appear the uneven distribution phenomenon of the hatch line. For simplify operation, without user re-setting line distance, can also achieve the purpose of uniform distribution of all the hatching line, we add this function. After checking this function, software will automatically adjust the hatch line spacing slightly on the basis of user's hatch line spacing in order to make the hatching line evenly distributed.

Calculate by entire Object: after checking, the object is hatched according to its shape, instead of the order in the object list column.

Optimize line ends: while selecting snake hatch, check this function can add outline automatically.

Pen No.: 0-254.

Angle: the hatch line with the angle of the X-axis. As Figure2-7-6:

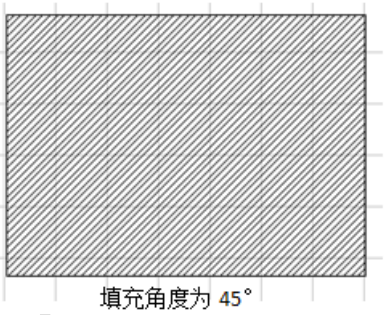
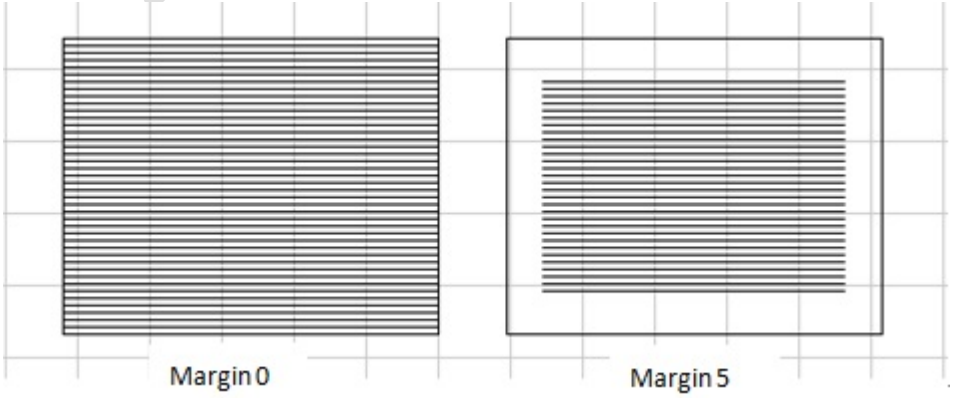


Figure 2-7-6 Hatch Angle 45°

Distance: distance between adjacent hatch lines.

Margin: distance between hatch line and object outline. After modifying the parameters, the result is as Figure2-7-7:



2-7-7 margin sample

Start offset: first hatch line distance from the outline.

End offset: last hatch line distance from the outline. As Figure 2-7-8:

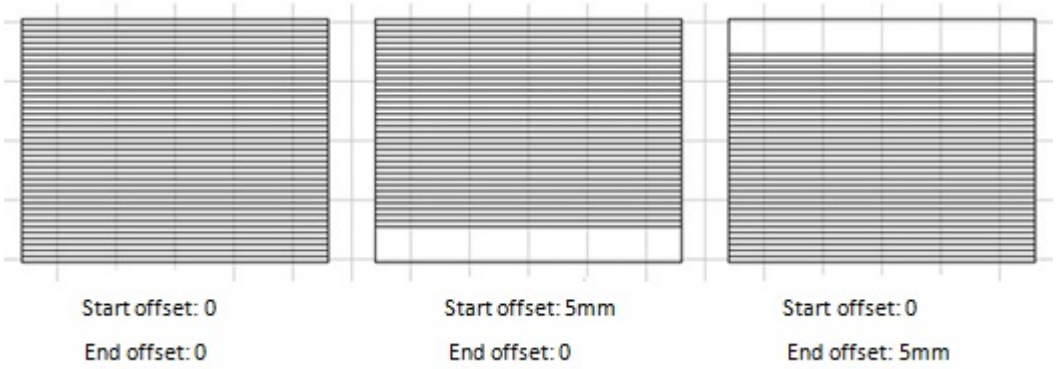


Figure 2-7-8 Start offset/ End offset sample

Indentation: refers to the two sides' indentation value of the hatching line, the Positive value is indentation-in value, negative value is indentation-out value.

Outline-rings: on the outer edge of the selected object, leave an equidistant margin several times, then to be hatching in accordance with the selected hatch type.

Ring distance: distance between the ring and the ring in "回"- shape filling. As Figure 2-7-9:

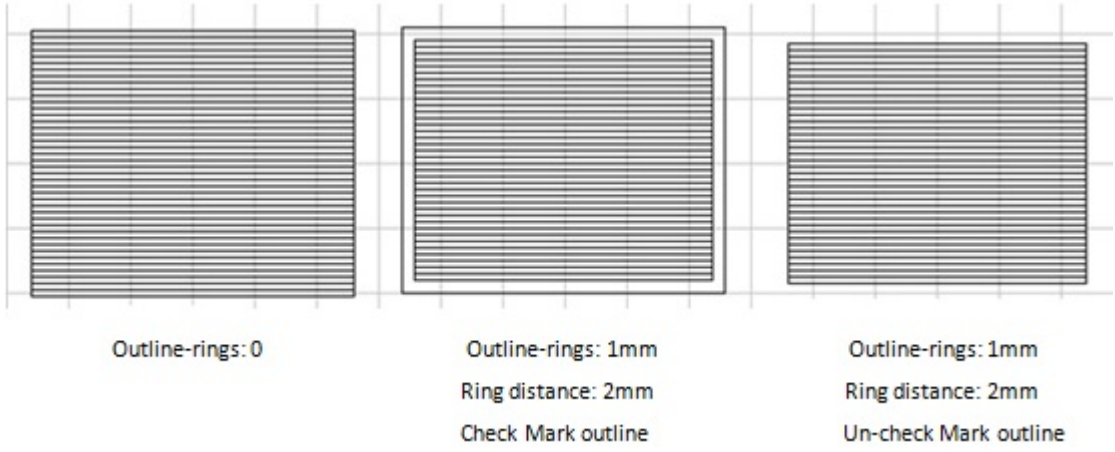


Figure 2-7-9 Ring distance/ Outline-rings sample

Enable second fill: select post enable;

Second angle: the object once again filled with this angle;

Auto-rotate hatching angle: select post enable;

Rotate angle: after marking, the fill line rotates the angle automatically;

Mark times: the filling line is rotated after this mark times of marking;

Current times: display the number of times of current marking on counter;

* Note: the object-specific property page, in the drawing menu for a detailed description, please refer to the corresponding chapter content.

Marking Parameter

The property page is used to set the layer, marking parameters and the marking way. As Figure 2-7-10:

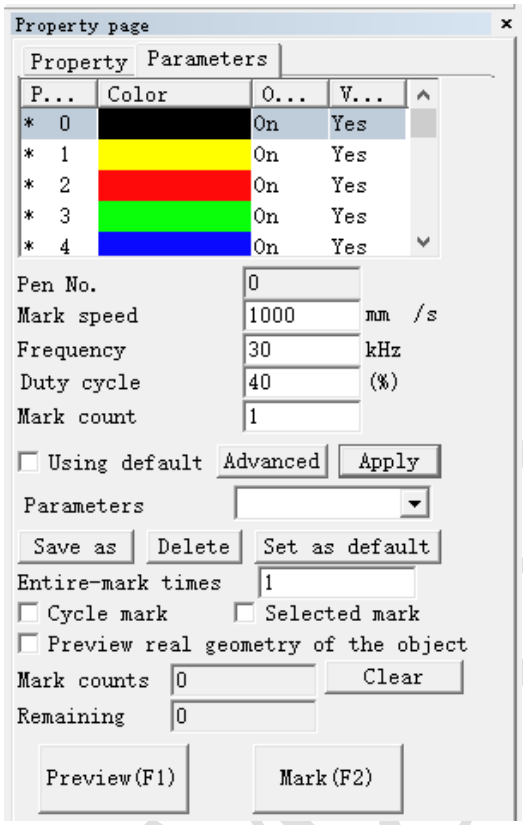


Figure 2-7-10 marking property interface

1)Layer setting:

The following colors are called pen No.. As Figure 2-7-11.

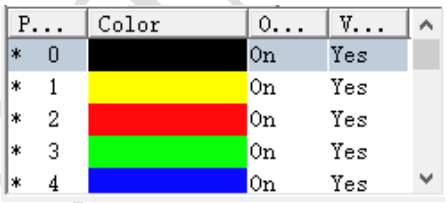


Figure 2-7-11 Pen NO. list

We offer user 255 layers, each layer with one kind of color and a corresponding number, each layer also can be set individually marking parameters to meet the needs of the user's.

After the Color, there is On/Off switch button, double-hit the button will open or close the Layer.

On: means the layer open, user can operate for marking. Default open state.

Off: means the layer close, user can't operate for marking.

In addition, we add layer visible function. Double-click the "Visible" can set the layer as visible or invisible.

Click mouse right in Pen No. area, on the screen will pop up a dialog box. As Figure 2-7-12:

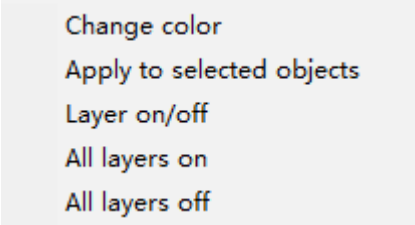


Figure 2-7-12 Pen NO list menu interface

The properties:

Change color: the selected object will be changed the color by choose the Color.

Apply to selected objects: set the selected object to be the current layer.

Layer on/off: open or close the current layer.

All layers on: all Layers is turned on, can carry out the marking operation.

All layers off: all layers have been shut down, can't carry out the marking operation.

2)Marking parameter setting as Figure 2-7-13:

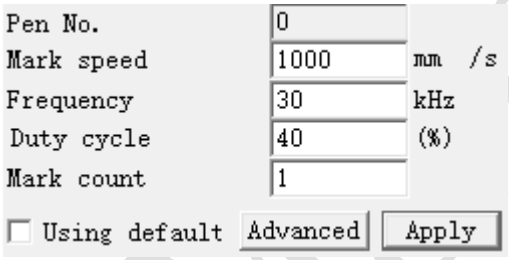


Figure 2-7-13 marking parameter setting

Mark speed, Frequency, Duty cycle, and Mark count are commonly used marking parameters. If having high machining accuracy requirements for marking objects, user needs to change advanced parameter settings. Click "Advanced", on the screen will pop up a dialog box. As Figure 2-7-14：

Lenmark

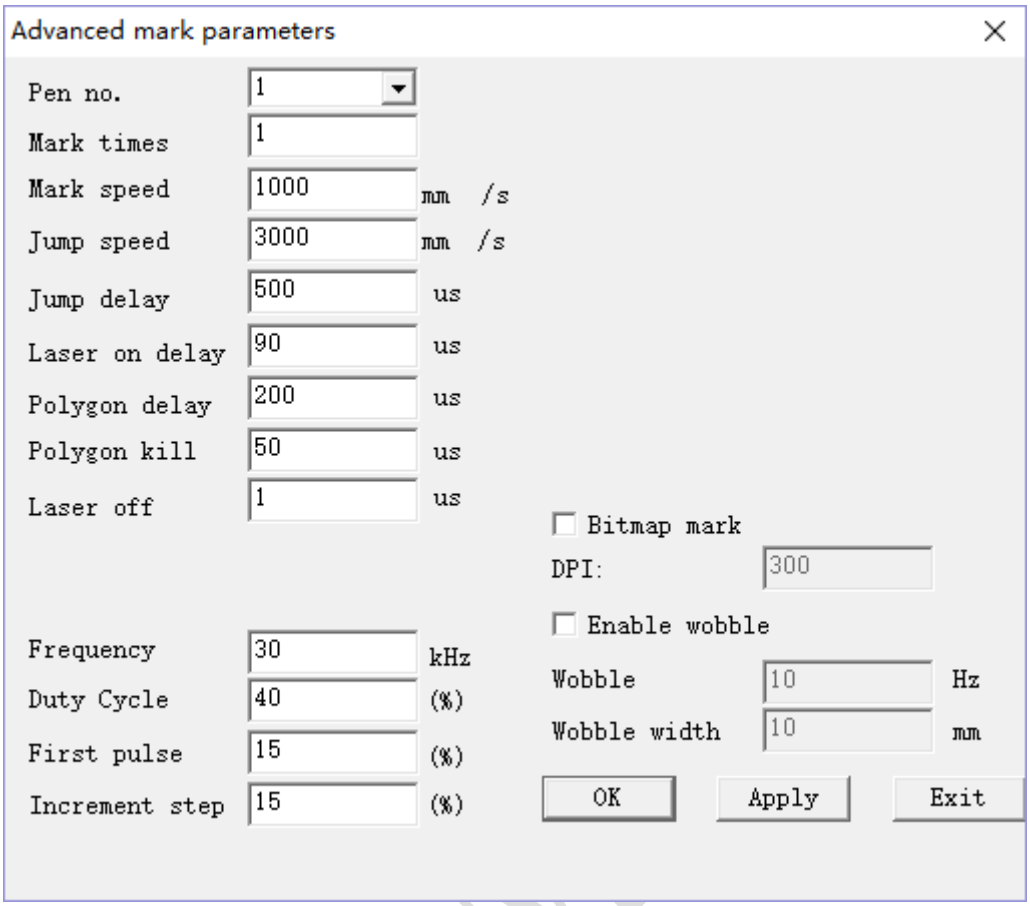


Figure 2-7-14 advanced mark parameters setting

Specific parameters with different types of lasers please make the appropriate changes.

Marking parameter setting is a very important aspect of this software, it is necessary to set the following kinds of parameters before marking:

The galvanometer control is mainly reflected in the following parameters: Mark speed, Jump speed, Jump delay and Polygon delay;

Laser control is mainly reflected in the following parameters: Laser on delay and Laser off delay.

Common marking parameter specification:

Pen No.: assign the current layer parameter to the layer selected by the pen number;

Mark times: set the number of times for different pen number referred objects;

Mark speed: the speed of the galvanometer movement, that in a actual marking on the work piece;

Jump speed: in the marking process, the transfer speed (orientation) between each stroke or graphic. If the jump rate is too large, the empty stroke processing time is short, the total marking time decreases, the strokes may be connected. If the jump speed is too small, the empty stroke processing time is long, the total marking time increases. As Figure 2-7-15:

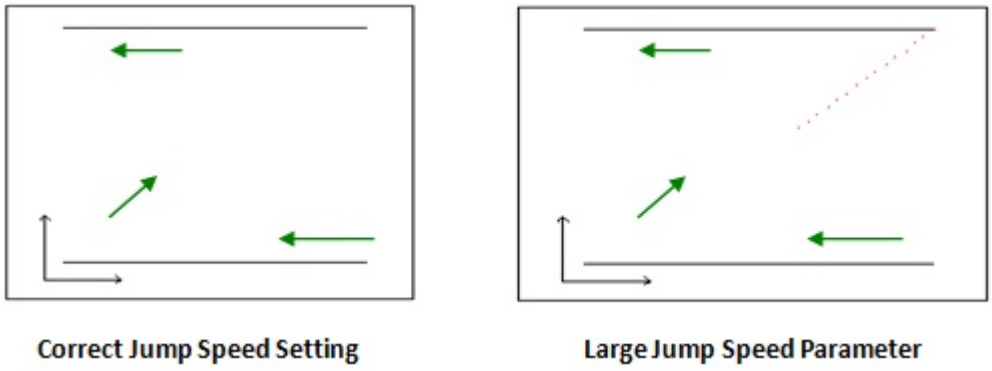


Figure 2-7-15 Jump speed sample

Jump delay: when the last stroke command is given, due to galvanometer hysteresis, reaching the designated position needs a period of time, so user should set the parameter and wait for galvanometer to reach the designated location. If the parameter is too big, galvanometer has fully turned to, and has been staying for a period of time to process the next stroke, thus increasing the marking time. If the parameter is too small, galvanometer has not yet fully turned to, laser has been lighting, the strokes where started will appear scatter. As Figure 2-7-16:

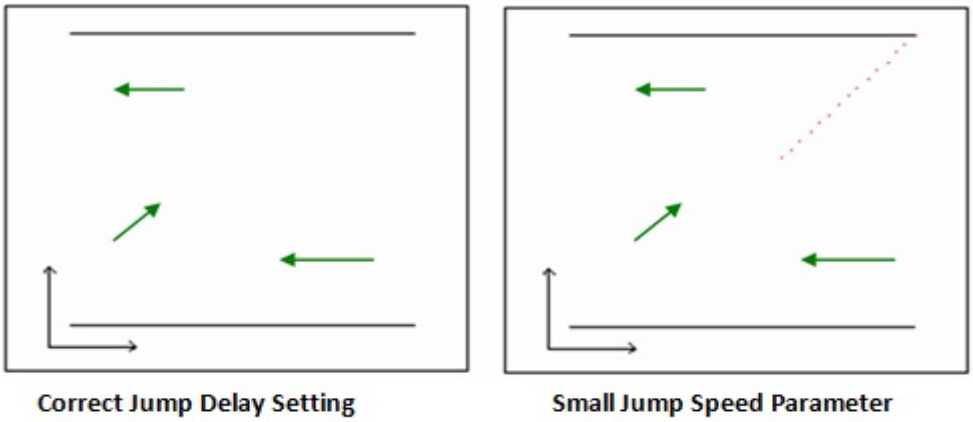


Figure 2-7-16 Jump Delay Setting

Laser on delay: end one stroke, to start another stroke, due to First Pulse issue, at the starting point will increase the marking time and high-energy, and result in the marking high-energy. Delay Laser on time, make galvanometer move forward a distance, can avoid this kind of phenomenon. If the Laser on delay is in large value, galvanometer moves forward excessively and laser is just on. This will result in stroke lacking. If the value is too small, the galvanometer has moved only for a short period, and the laser has opened, at the starting point will increase the marking time and result in high-energy. As figure 2-7-17:

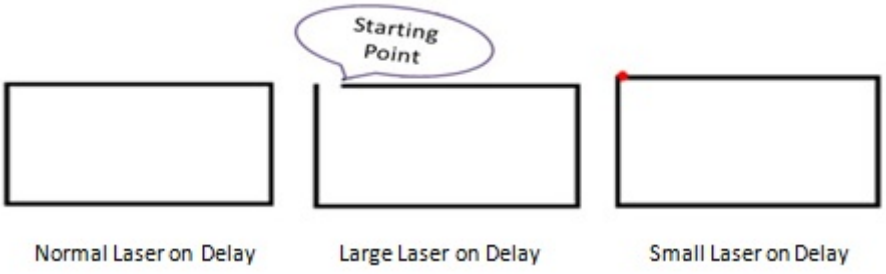


Figure 2-7-17 Laser On Delay Setting Sample Demo

The value of the Laser on delay can be positive or negative. When it is a negative value, advance opening the laser in marking, can be applied to some kind of slow Laser light, to avoid phenomenon that laser is on for a long time but still not get the light; can also be used for cutting, for cutting starting point requires a large energy. When it is a positive value, means laser on after the setting value.

Polygon delay: A stroke made an end instruction, the next stroke start instruction, intermediate with free strokes, at this time due to galvanometer hysteresis, needing to take a period of time to reach the designated position. If the parameter is too large, galvanometer has fully turned to, at this time laser had been not stop the light, meanwhile the inflection point will make a high-energy point and increase the marking time. If the parameter is too small, the galvanometer has not yet fully turned to, and starts to mark the next segment, at the corner will appear circular arc. As Figure 2-7-18:



Figure 2-7-18 Polygon Delay Setting Sample Demo

Laser off delay: when processing last stroke, due to galvanometer hysteresis, galvanometer needs to take a period of time to reach the designated position. If Laser off Delay is in large value, galvanometer has fully turned to, laser does not close, at the ending point will increase the marking time and high-energy. The marking time will be longer. If Laser off Delay is in small value, the galvanometer still has not fully turned to, laser is closed, the end of the stroke will not be long enough, resulting in lack of stroke. As Figure 2-7-19.

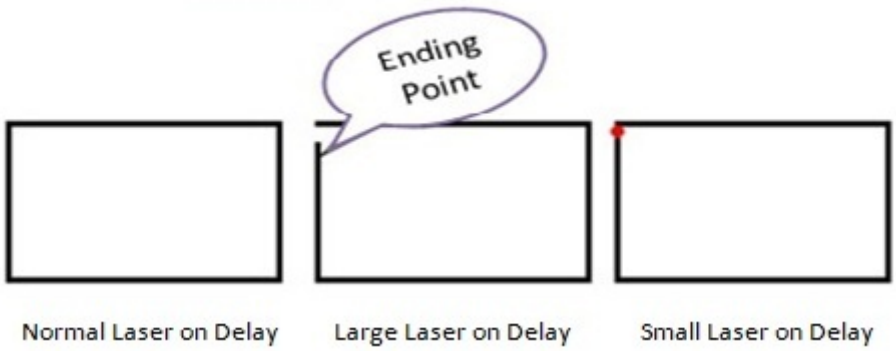


Figure 2-7-19 Laser Off Delay Setting Sample Demo

Note: laser off Delay must be greater than Laser on Delay (vector quantity).

Bitmap mark: this parameter is about bitmap function, only check this in bitmap marking.

DPI: the number of points in per inch, 1 inch = 25.4 mm. DPI value larger, the point denser, higher image accuracy, and also the processing time is longer.

Enable wobble: it can be achieved screw motion along the outline of the vector diagram at a certain frequency and amplitude. As Figure2-7-20:

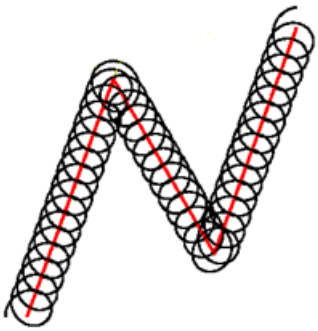


Figure 2-7-20 enable wobble sample

Check Enable wobble will activate this feature and the parameter setting, on the screen will pop up a dialog box. As FIgure2-7-21.

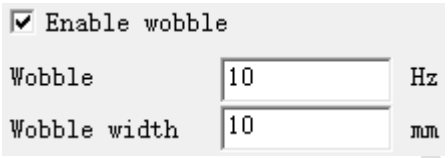


Figure2-7-21 enable wobble setting interface

Frequency: screw line frequency. The higher frequency, the smaller distance between the screw lines. (Unit: Hertz)

Wobble Width: screw line amplitude. The greater amplitude, the greater distance between the screw lines. (Unit: mm)

The parameter settings in Laser on/off Delay

It will directly affect the quality of marking. To further illustrate its importance, the following will make marking the letters "T L" an example to show the different delay parameter settings produce different effects on marking.

a) Small Laser on Delay

If Laser on Delay is in small value, the galvanometer has not timely adjusted to the proper direction of the marking operation, meanwhile the laser has been opened, at the starting point will increase the marking time and high-energy. As Figure 2-7-22

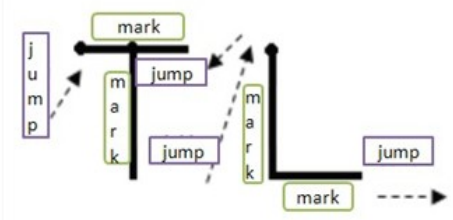


Figure 2-7-22 Small Laser on Delay Demo

b) Large Laser on Delay

If Laser on Delay is in large value, the galvanometer has run to operate. At this time the laser is just turned on, will cause less stroke phenomenon. As Figure 2-7-23

LenMark

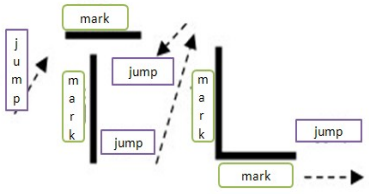


Figure 2-7-23 Large Laser on Delay Demo

c) Small Laser off Delay

If Laser off delay is in small value, the galvanometer has not yet fully turned to the ending of stroke, at this time laser is turned off, will cause less stroke phenomenon. As Figure 2-7-24

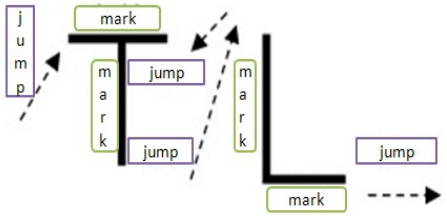


Figure 2-7-24 Small Laser off Delay Demo

d) Large Laser off Delay

If Laser off Delay is in large value, the galvanometer has fully turned to the ending stroke, but the laser is not turned off, at the ending point will increase the marking time and high-energy. As Figure 2-7-25:

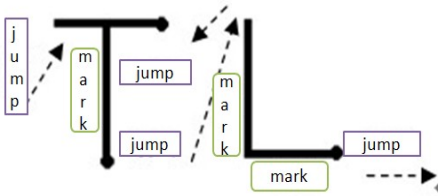


Figure 2-7-25 Large Laser off Delay Demo

e) Large Jump Delay

If Jump Delay is in large value, the galvanometer has fully turned to the appropriate marking position and stay for a period of time before marking. Although it has no significant effect on marking, the marking time is longer.

f) Small Polygon Delay

If Polygon delay is in small value, the galvanometer has not fully turned to the inflection point and start to mark the next line segment, in the inflection point place will appear an arc. As figure 2-7-26:

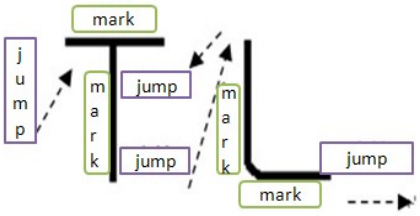


Figure 2-7-26 Small Polygon Delay Demo

g) Large Polygon Delay

If Polygon delay is in large value, the galvanometer has fully turned to the inflection point, but the laser is still lighting, at the inflection point will increase the marking time and high-energy. As Figure 2-7-27:

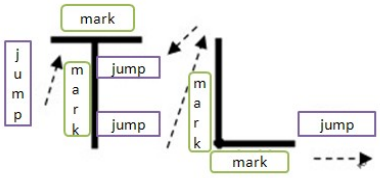


Figure 2-7-27 Large Polygon Delay Demo

During these marking parameters, there is interaction between the two pairs of parameters: Jump Speed and Jump Delay; Polygon Delay and Polygon Kill.

Jump Speed and Jump Delay is designed for prevent strokes connected in jumping processing. Both mutual influenced can avoid marking a long time and strokes connected phenomena.

In inflection point place, it may occur to fillet phenomenon when time is too short, but increase Polygon delay will increase the marking time and high-energy. So it's hard to control the time. Polygon kill can inhibit this situation, so that we can make larger value in Polygon Delay and through Polygon kill to achieve the harmony.

3) Parameters library

The interface is as Figure 2-7-28:



Figure 2-7-28 Parameters library

The parameters are as follows:

Using Default: check Using default will apply the data set as default parameters.

Apply: if do not use the default marking parameters, after changing all kinds of marking parameters, don't forget to click Apply. After this the system will admit the parameters.

Parameters library: system parameter library is built in the default path, to save the set parameters for the next marking directly. The parameters are invoked by all parameter files which are saved in the database drop-down keys for user to navigate through parameters.

Save as: for convenience, if the modified parameters will be used next time, user can save them to the parameter library. Click "Save As", on the screen will pop up a dialog box, enter the parameters' user self-defined name, and click "OK", the system will automatically add this program stored in the parameter library. As Figure2-7-29:



Figure 2-7-29 Parameter library-save as

Cancel: existing program parameters can be selected from the drop-down list to remove it from the parameter library.

Set as default: the current marking parameters can be set as the default parameters to be applied directly in the next use.

4) Execute Mark

Marking parameter settings are finished, user can start marking. As Figure2-7-30:

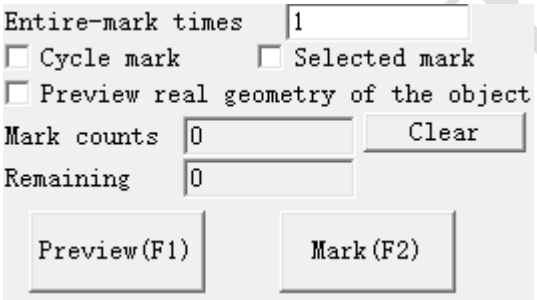


Figure 2-7-30 marking interface

Parameter Specification：

Entire-mark times: setting the number of marking times for the graphics.

Cycle mark: repeat marking the selected object until user stops marking.

Selected mark: only mark the selected object.

Preview real geometry of the object: preview according the actual path of the marking object;

Mark counts: display the counted number of marking.

Clear: marking count can be cleared, start counting again.

Preview: marked the outline of the selected graphics, user can position the object easily. this function is used with red indication light laser. Shortcut: F1.

Mark: start to mark. Shortcut: F2.

Stop: click "Stop" in marking prompt window can stop marking processing at any time. Shortcut: ESC on the keyboard.

5) Bitmap Property

Input a Bitmap, and select it， click Property-Bitmap, will appear a dialog box on the screen. As Figure 2-7-31:

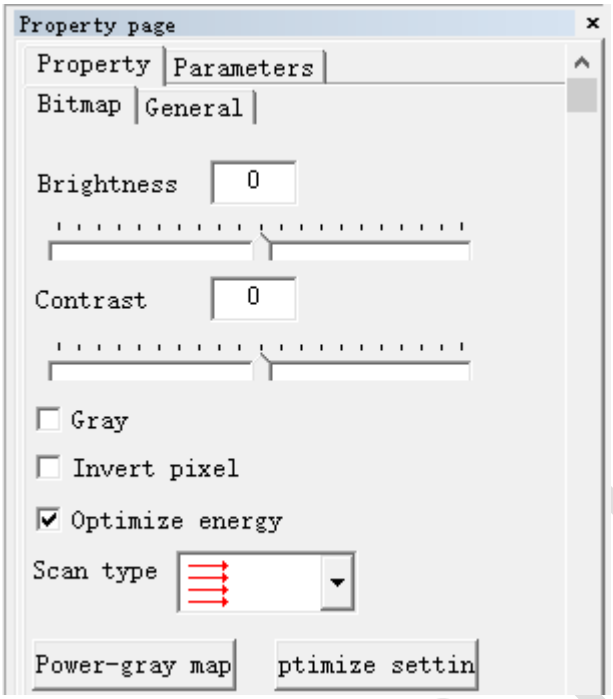


Figure 2-7-31 bitmap property interface

Its parameters are as follows:

Brightness: adjust the brightness of the image, the greater of numerical, the greater of the marking brightness.

Contrast: adjusting the contrast of the current image, the adjustment range is between -100 ~ 100, the greater value, the greater contrast.

Gray: the color images can be converted to 256 gray scaled.

Invert pixel: color value of each point in the image is inverted;

Bitmap Effect after Treatment, as Figure 2-7-32:

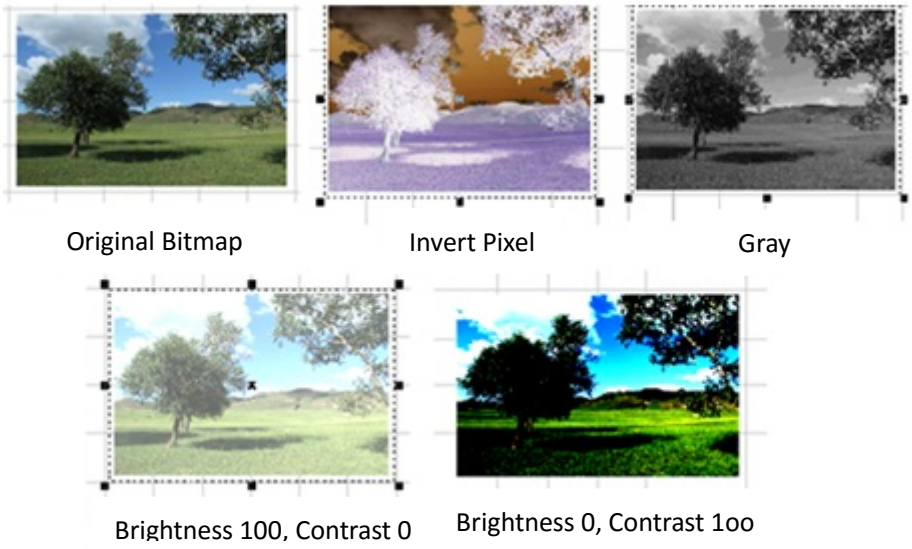


Figure 2-7-32 Bitmap Effect after Treatment

Marking method:

Check to marking from left to right in one direction;

Check to marking from right to left in one direction;

Check to marking from bottom to top in one direction;

Check to marking from top to bottom in one direction;

Check to marking in accordance with the bottom to top, and then from the top to the right in a cycle of 2 direction marking;

Check to marking in accordance with the top to bottom, and then from the top to left in a cycle of 2 direction marking;

Check to marking from left to right upwardly;

Check to marking from left to right downwardly;

Power-gray map: set the bitmap gray value corresponding to different energy values, as Figure 2-7-33:

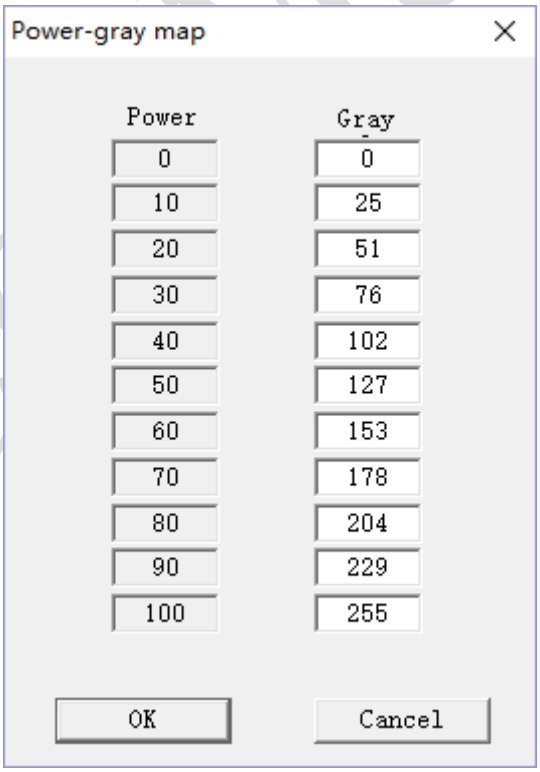


Figure 2-7-33 power-gray map

Optimize bitmap: click the "Optimize bitmap" button, the system pops up as shown in Figure 2-7-35 a dialog box (only available when the fill mode is "bidirectional"):

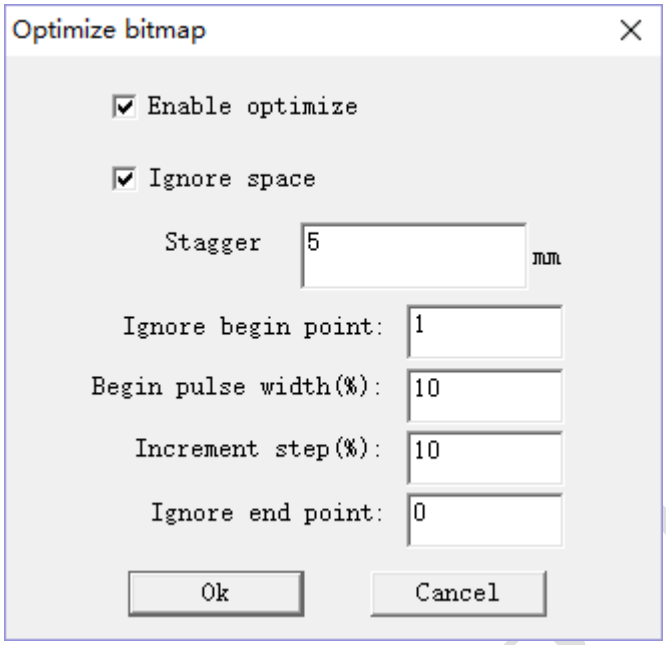


Figure 2-7-34 Bitmap Effect after Treatment

The parameters are described as follows:

Enable optimize: enable bitmap engraving optimization function;

Ignore space: select, directly skip the blank area in the bitmap to reduce the waiting time;

Stagger: set the distance when the mark is biased dislocation;

Ignore begin point: the number ignored spots of light;

Begin pulse width: set the starting point energy;

Increment Step: control the energy at starting point;

Ignore end point: the number of points ignored when the light is being off;

2.7.10 Home Toolbar

Shortcuts as following:



X Zero-return / Y Zero-return / R Zero-return

2.7.11 Preview Mark toolbar

Shortcuts as following:



Preview / Mark

2.7.12 Scale Strokes Toolbar

Offset toolbar can be scaling outward and inward on a single closed object; click "Tool (T)- Scale strokes Toolbar". As Figure 2-7-35



Figure 2-7-35 Scale Strokes Toolbar

Offset: set the scaling object with line spacing;

Delete origin: after check, not display the original object; if not check, maintain the original object;

Outward / Inward: set the direction of scaling;

Apply: click Apply after selecting the object, perform operations;

2.7.13 Quick-layer toolbar

In the Quick-layer toolbar, including Layer button and layer number, the interface is as Figure 2-7-36:



Figure 2-7-36 Quick-layer toolbar

Select object, choose to click on a layer button, the selected object layer will change for the button shown in the layer, the layer number will also be changed.

2.7.14 Special Tools

Including the following common shortcut commands:



Split marking, rotary marking, multi-document marking

2.8. Auto

2.8.1 Overview

Key Features:

Delay : Insert delay command;

Input port : Insert input port command;

Output port : Insert output port command;

R Rotate : Insert R Rotate command;

Lenmark

XY linkage step : Insert XY linkage step command;
Z step : Insert Z step command;

2.8.2 Delay

This function can make the selected object perform to current Delay, the system waits for the specified time and then continue to run. The delay time can be set arbitrarily.
Tool Bar:
Use this function , click "Auto-Delay", or choose icons like in the tool bar. When choose Delay, will pop up a dialog box on the screen. As Figure 2-8-1

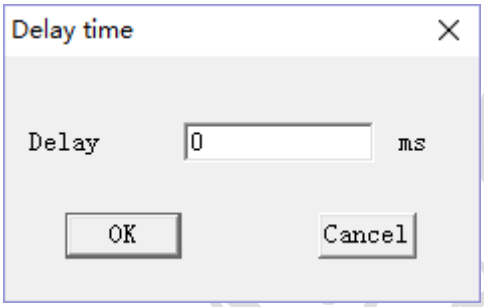


Figure 2-8-1 Delay setting dialog

Delay time: system will not continue to run after the implementation of the marking before waiting for the specified delay time that user self-defined.

2.8.3 Input port

With this function, user can enter the input port to control objects.
Tool bar:
Use this function, click "Auto -Input port", or choose icons like in the tool bar, meanwhile, will pop up a dialog box on the screen. As Figure 2-8-2:

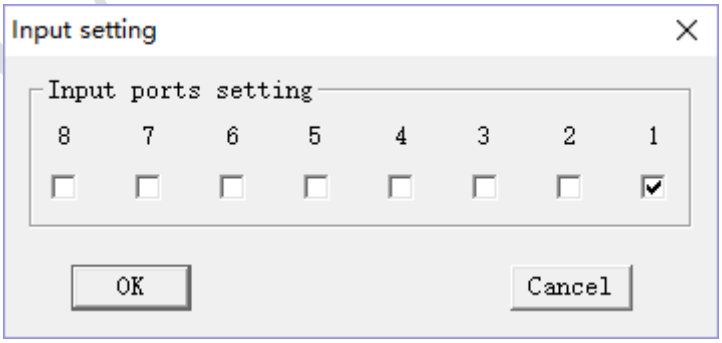


Figure 2-8-2 input setting dialog

IN Controlled conditions：when marking execution operates to the current input port, the system automatically detects the input port state, if level is high, the system continues to run down; otherwise will wait for re-tested until detected high level.
Effective port, system accepts the high level in the input port.

Ineffective port, the system does not accept the high level in the input port.

2.8.4 Output port

With this function, user can enter the output port to control objects.

Tool Bar:

Use this function, click "Auto-Output port", or choose icons like in the tool bar, meanwhile, will pop up a dialog box on the screen. As Figure 2-8-3:

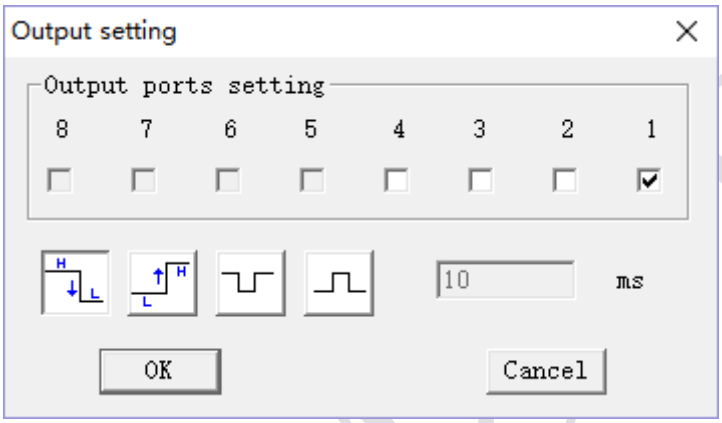


Figure 2-8-3 outputting dialog

OUT Control conditions：

When processing execution to the current output port, system will output low level to the effective port.

When processing execution to the current output port, system will output high level to the effective port.

When processing execution to the current output port ,system will output low pulse with specified width to the effective port.

When processing execution to the current output port, system will output high pulse with specified widthed to the effective port.

Effective port， system will output specified electrical level to this port.

Ineffective port， system does not do any output to this port.

This current port is unavailable。

To modify the existing output port setting parameters, double-click the name of output port listed in the object window, system will pop up the above dialog box and user can reset the parameters.

2.8.5 R Rotate

In the marking process, insert external control shaft rotation, through rotate command, can control external control shaft at the time needed as set angle.

Tool Bar：

Click "Auto-R rotate" or choose the icon like in the Tool bar, on the screen will pop up a dialog box automatically. As Figure 2-8-4:

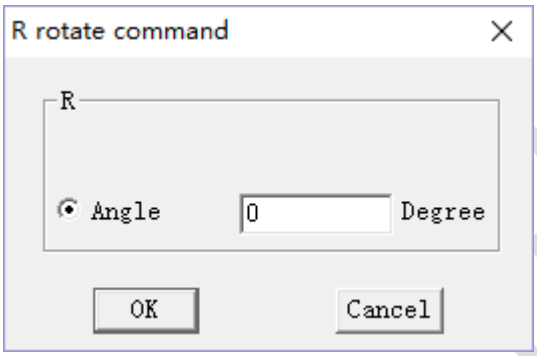


Figure 2-8-4 R rotate command setting

Rotate angle (degree): the external control shaft's rotation angle.

After rotation angle is set up, click "OK", the relative rotation object will appear in the Object List. As Figure 2-8-5:

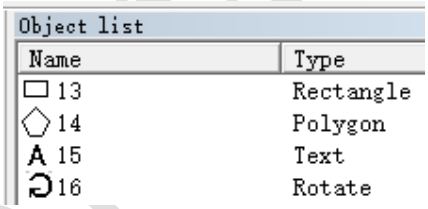


Figure 2-8-5 rotate command demo

If want to change the existing rotate command setting, double-click the displayed rotation command name in Object List window, will pop up the dialog box as Figure 2-8-5, meanwhile user can do resetting.

2.8.6 XY Linkage Step

Tool Bar：

Choose "Auto-XY Linkage step", or click icon like in the tool bar, on the screen will pop up a dialog box. As Figure 2-8-6:

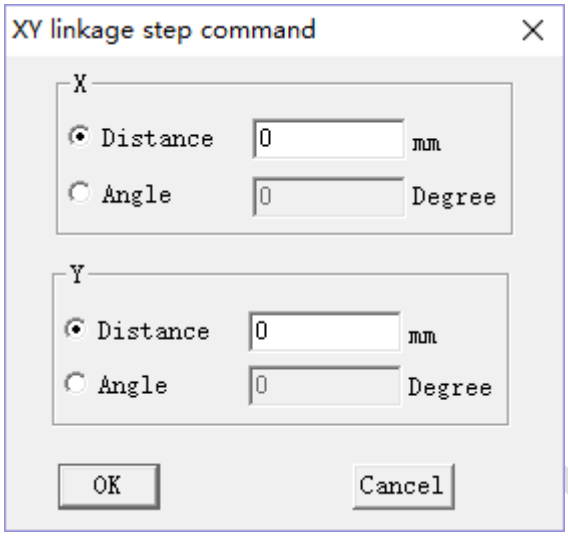


Figure 2-8-6 XY linkage step command interface

User can set the worktable moving distance in X and Y axis, rotation angle, then click OK, meanwhile this command will appear in Object List window. As Figure 2-8-7:

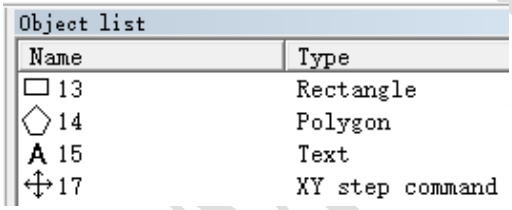


Figure 2-8-7 XY linkage setting interface

To modify the existed XY linkage command, double-click the displayed object list name, system will pop up the same window as Figure 2-8-7 to reset the parameters.

2.8.7 Z Step

Choose "Auto - Z step", on the screen will pop up a dialog box. As Figure 2-8-8:

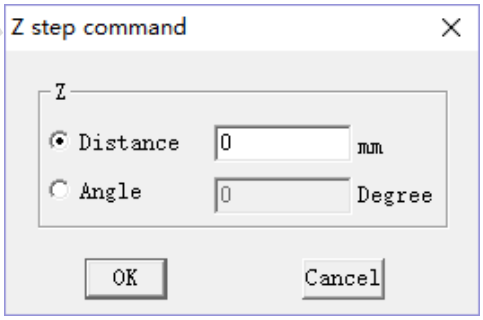
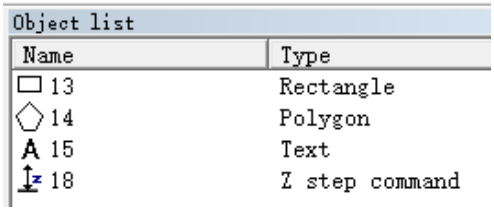


Figure 2-8-8 Z step command setting interface

With this dialog box, user can set the moving distance of working table, rotation angle, then click OK, will appear the Object List. As Figure 2-8-9:



2-8-9 Z step command setting sample

If want to change the existed rotate command settings, double-click the displayed rotation command name in Object List window, will pop up the dialog box, meanwhile user can reset.

2.9. Window

2.9.1 Overview

Key Feature:

New Window: add a same window as the current file, to view the same document.

Cascade Windows: re-display the windows overlap.

Tile Windows: re-display the windows in a horizontal row.

Arrange icons: rearrange already opened window icons.

Close all: shut all already opened window icons.

2.9.2 New Window

Use this function to open a new window, its content and the active window is exactly the same. Can open multiple windows of the same file at the same time and meanwhile view each different part of this document. If modify any of the contents in one window, all the other windows will reflect the modifications. Use this feature to create a new window, this window will be the role window and display on top.

2.9.3 Cascade Windows

Use this function, can re-arrange multi windows overlap. As Figure 2-9-1：

LenMark

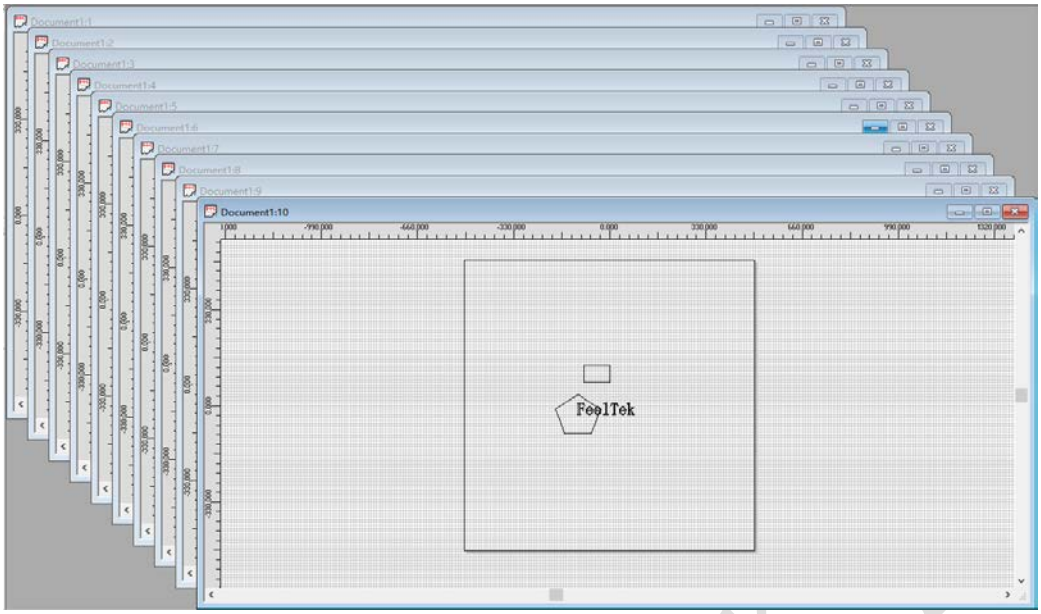


Figure 2-9-1 demo

2.9.4 Tile Windows

Use this function, can re-rearrange multi windows in a horizontal row. As Figure 2-9-2：

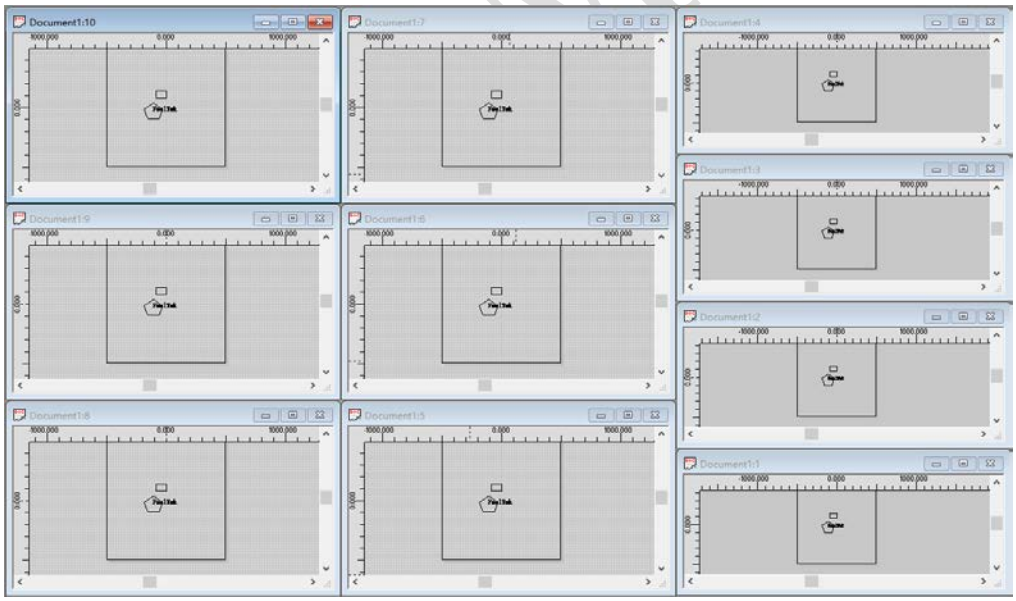


Figure 2-9-2 demo

2.9.5 Arrange icons

Use this function, the miniaturization windows in the main window will be re-ranked at the bottom of the window. As Figure 2-9-3：



Figure 2-9-3 demo

2.9.6 Close all

Use this function, can shut all already opened windows.

2.10 Setting

2.10.1 Overview

Key Feature：
Laser Setting :laser type selection.
Mark zone setting: marking range, correction files selection.
System parameters setting: routine parameters set.
Stepper motor setting: XYZR four-axis motors parameter settings.
User level management: software operate privileges for different users.
Authorization time setting: can set the license time of board;
Dynamic axis fine-tuning: can use this function to fine-tune the focal length;
Automation I / O settings: set input and output ports;
Day to set: the software log storage setting.

2.10.2 Laser setting

Click "Setting-Laser setting", will pop up a dialog box on the screen, user can choose laser types according to the actual use.

YAG Laser
The parameters are as Figure 2-10-1:

Lenmark

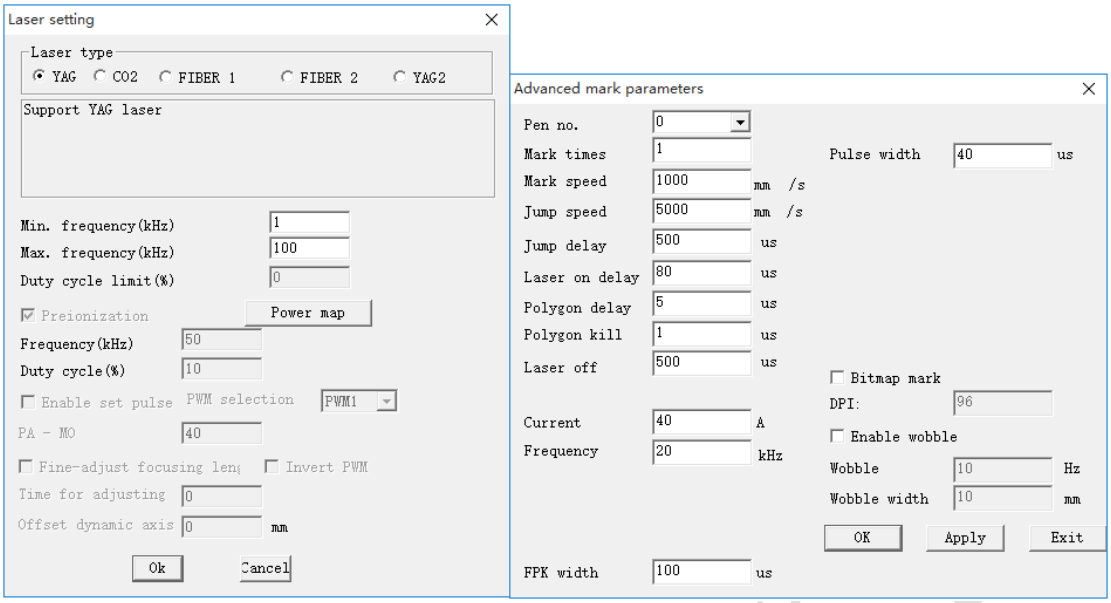


Figure 2-10-1 YAG laser setting dialog

Key Feature:

Min. frequency (kHz): define the minimum frequency of YAG laser, the minimum out optical frequency, controlled by Q-switch. Equal the lower limit value in Property-Parameters- Frequency.

Max. frequency (kHz): define the maximum frequency of YAG laser, the maximum out optical frequency, controlled by Q-switch. Equal the upper limit in Property-Parameters- Frequency.

Power map： reflect the relationship between Laser power percentage of laser and Current. As figure 2-10-2:

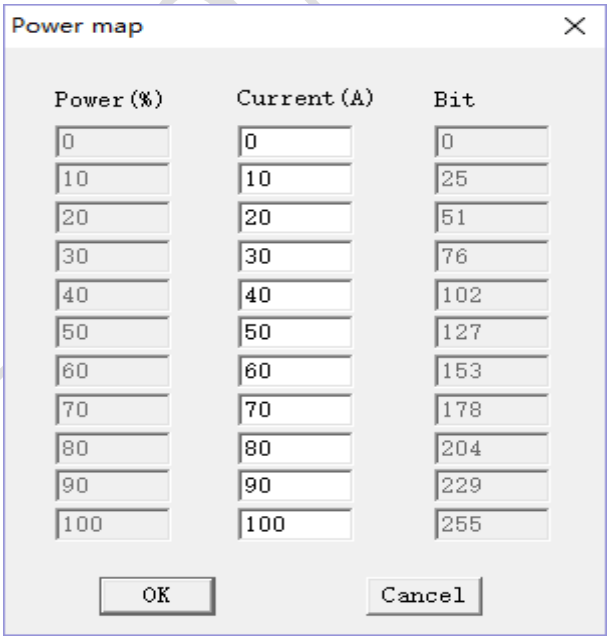


Figure 2-10-2 power map

Current: the output current of laser power supply;

Pulse width: the pulse duration of the effective levels;

First pulse suppression width: the pulse width of the first pulse.

CO2 Laser

The parameters are as Figure 2-10-3:

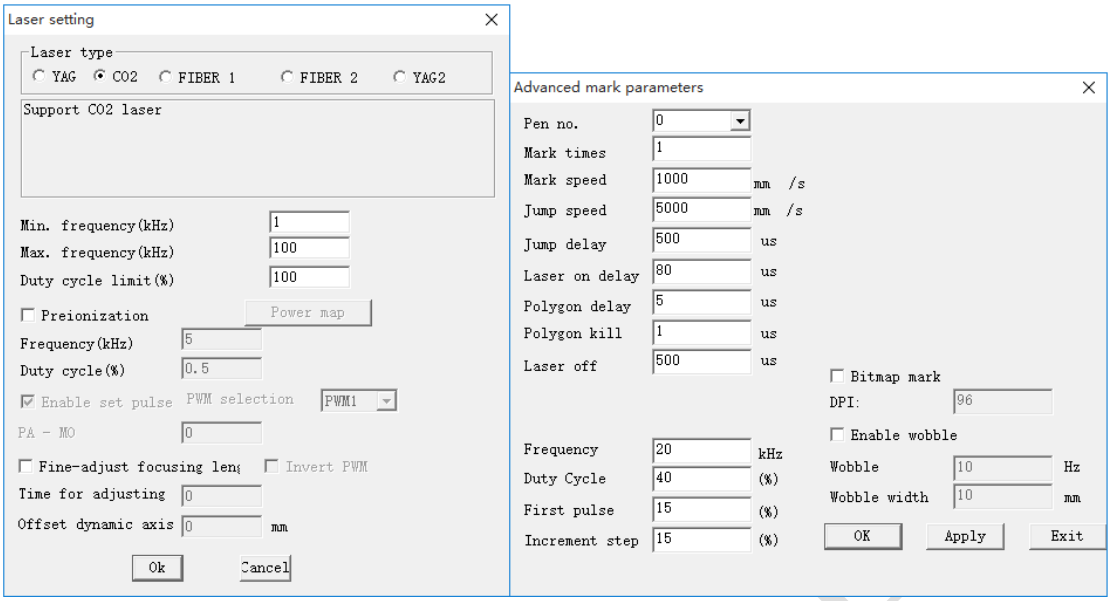


Figure 2-10-3 CO2 laser setting dialog

Min. Frequency (kHz): define the minimum frequency of CO2 laser. Equal the lower limit value in Property-Parameters- Frequency;

Max. Frequency (kHz): define the maximum frequency of CO2 laser. Equal the upper value limit in Property-Parameters- Frequency;

Duty cycle limit (%): define maximum duty cycle value;

First pulse: the duration time of the first pulse. In the CO2 laser mode, it is essentially the duty cycle of the first pulse;

Increment step: the amplitude of the first pulse width increases;

Preionization: when the preionization function is required, when the laser is not lighted, there will be a wave form output with a frequency of 5K and a duty cycle of 0.5% (1μs pulse width);

Frequency (kHz): laser out optical frequency;

Duty cycle (%): the duty cycle is the ratio between the pulse width and the overall cycle time;

Polygon kill: suppresses the energy at the inflection point. Due to the delay at inflection point, over mark happens at inflection point, appropriate value setting can avoid this problem. The greater the value is, the more energy is suppressed;

FIBER-Ⅰ

FIBER-I Suitable for fiber lasers with DB25 connector, such as the IPG, Quantel, Nufern, Raycus, Max photonics. As Figure 2-10-4:

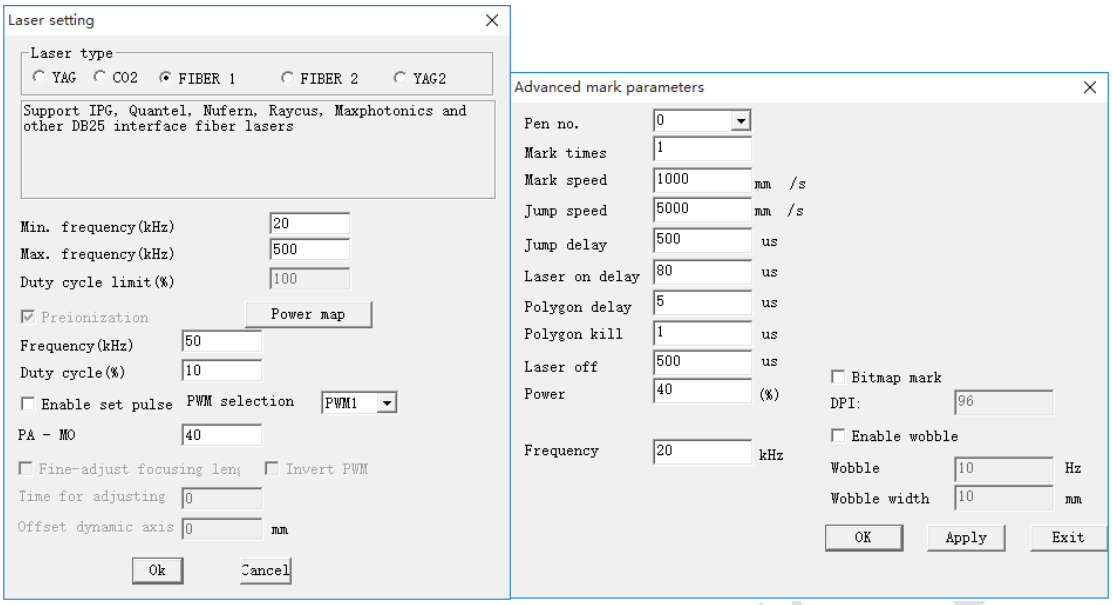


Figure 2-10-4 fiber-I laser setting

Min. Frequency (kHz): define the minimum frequency of FIBER-I laser. Equal the lower limit value in Property-Parameters- Frequency;

Max. Frequency (kHz): define the maximum frequency of FIBER-I laser. Equal the upper limit value in Property-Parameters- Frequency;

Frequency: laser output frequency;

Enable set pulse: start pulse width parameter setting function after selected;

Pulse width: the pulse duration of the effective levels;

Duty cycle (%): the laser energy output percentage;

Power map: reflect the relationship between Laser power percentage and Current;

Pre-ionization: to use the pre-ionization function, after choosing, when the laser tube doesn't fire, there is frequency signal creating an output waveform according to the set value of frequency and the duty cycle;

PA-MO Delay (ms): when using Fiber-I laser, the PA (Power Amplification) delay MO (Main Oscillator) time;

PWM selection: select signal according to request.

FIBER - Ⅱ

FIBER -II suitable for fiber lasers with SPI. As Figure 2-10-5:

LenMar

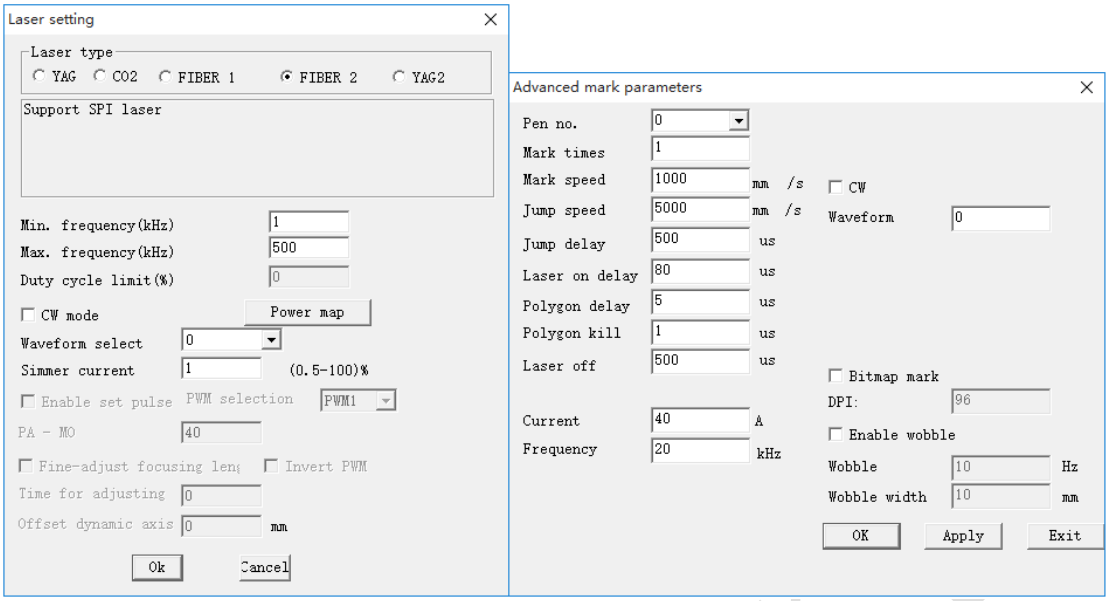


Figure 2-10-5 fiber-II laser setting

Min. Frequency (kHz): define the minimum frequency of FIBER-II laser. Equal the lower limit value in Property-Parameters- Frequency.

Max. Frequency (kHz): define the maximum frequency of FIBER-II laser. Equal the upper limit value in Property-Parameters- Frequency.

Power map: reflect the relationship between Laser power percentage and Current.

CW mode: enable this option, G3 laser will work in CW mode.

Waveform select: provide a total of 32 kinds of waveforms from 0-31.

Simmer current: preset electric current settings, can adjust G3 laser *first point effect*.

Note: When using SPI laser, please make sure supply power before opening software, otherwise there will be no light during the mark.

Yag2

YAG2 is suit for UV, Green laser, the laser setting interface is show in pic 2-10-6.

LenMar

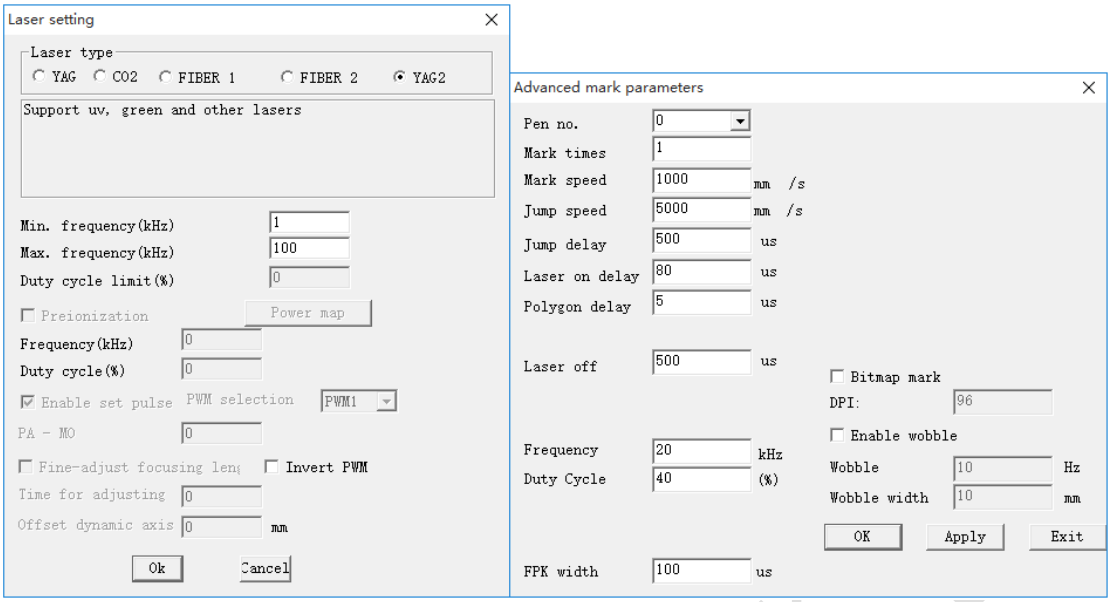


Figure 2-10-6 fiber-II laser setting

Parameters instruction:

Minimum frequency: limit the minimum frequency for YAG2 laser.

Maximum frequency: limit the maximum frequency for YAS2 laser.

Invert PWM: invert electrical lever under this mode. (Note: High electrical lever is valid for UV laser, low electrical lever is valid for Green laser)

Note: for detailed lasers functions, please see the laser manufacturer's instructions.

2.10.3 Mark Zone Setting

Select different correction modes with different parameter settings in Mark Zone Setting, LENMARK provides user with two Correction Modes: Formula and Table correction. Combining with different Mark Zone Settings, will introduce the following two ways.

Formula correction

Which is a fast image field correction method, namely quickly correct marking graphics proportion range, barrel distortion and pincushion distortion. Now it is applied only in Lenmark-3Ds.

Foe detailed operation way, see "3D surface engraving operation manual".

Table correction

It is suitable for the accurate correction of the graph.

Click in "Setting (S) - System parameters setting - Correction mode - Table", on the screen will pop- up a dialog box. As Figure2-10-7:

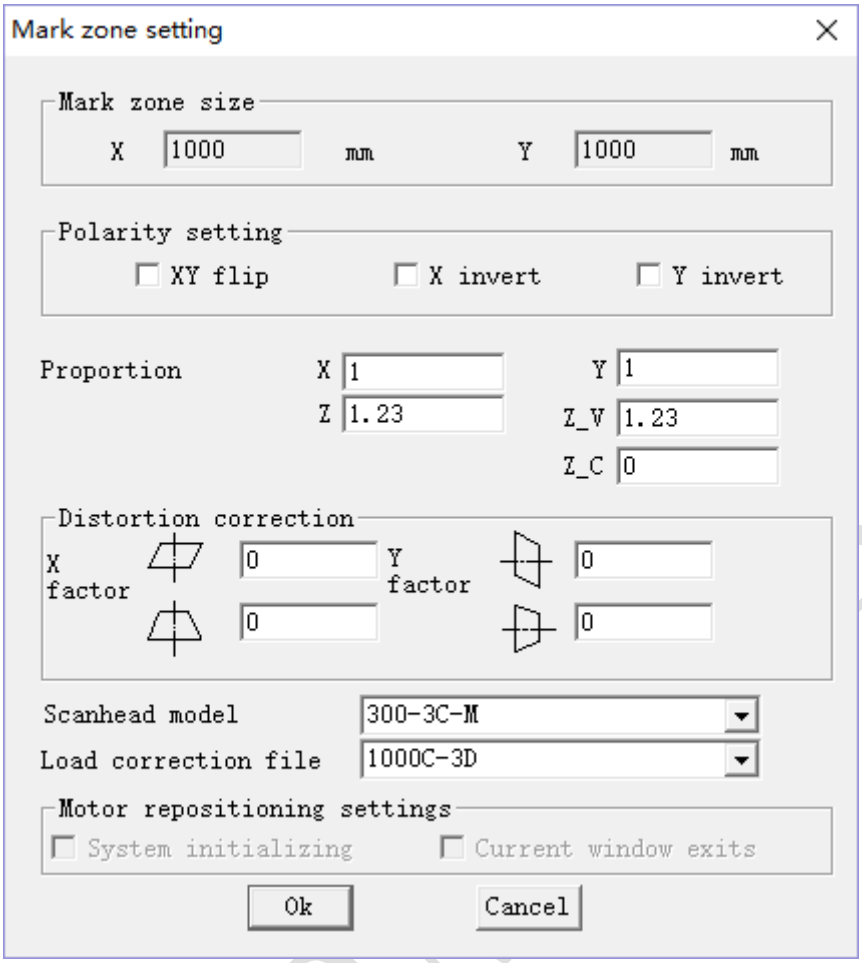


Figure 2-10-7 Table correction marking zone setting

Basic parameters:

Marking zone size: in the use of the table correction, the marking zone is based and set according to the scope of the correction file chosen by user, you cannot manually modify;

Polarity setting: during the actual marking processing, according to the standing position of the staff to set;

Proportion: when there is micro adjustment within the focus range on marking facet, may lead to marking graphics scope changes, such as: the original 100*100, may be 101*101, then there is no need to change the database, through adjusting the ratio range can correct the current parameter to original 100*100;

Distortion correction: adjust the distortion of graphs;

Scan model: different mirror type corresponds to the different correction library, as shown in Figure 2-10-8:

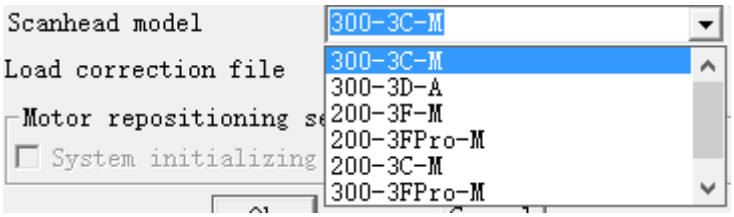


Figure 2-10-8 scan head correction library

Load correction file: use the saved file corrected by correction table, user can select the saved file

in the drop-down menu.

Correction software- Correct_3D： it is suitable for the accurate correction of the graph, and it is recommended to use the correction table in case that the formula cannot meet the requirement of the precision of the marking.
For detailed information, see "correction software manual".

2.10.4 System Parameters Setting

Chick the "setting" and find "System parameters setting", system will pop up a dialog box as Figure2-10-9:

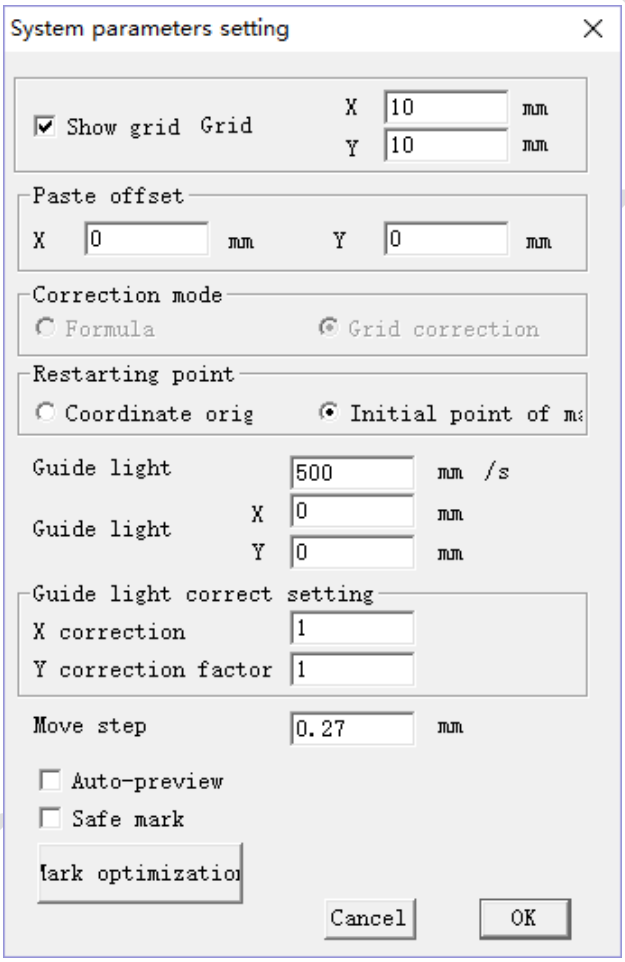


Figure 2-10-9 System Parameters Setting

Key Feature：
Show Grid: checked, the grid displayed in the Graphics area.
Grid: spacing of Grid in Graphics area.
Paste offset: offset Value between the location of the copied object and the original object coordinates (X, Y).
Correction Mode: the function is unavailable now, default selection is Table Correction.

Restarting Point: select the scanning galvanometer residence position upon completion of marking, can choose back to the origin coordinate position or the start point position of marking object.

Guide Light Speed: when previewing, the light moving speed.

Guide Light Offset: when the guide light and laser are in different shaft, can through parameter fine tuning to make the center consistent.

Guide Light correct Setting: due to the lens different refraction coefficient between guide light and laser, lead to the result that preview box and marking object frame are off size, but can achieve consistence by adjusting the ratio.

Move Step: each time hitting the arrow keys on the keyboard, the distance of the selected object to move as the hit direction.

Auto-Preview: check Auto-Preview, enable preview automatically, start to preview, at this time user can mark; When marking is completed, the preview light will be always in a preview state and pop up a warn "The preview light is on".

Safe Mark: the default setting is without checking Safe Mark, click Start Mark, it directly marking (as Figure2-10-10). Check Safe Mark, and click Mark button, on the screen will pop up a dialog box, meanwhile user needs to hit Mark button again to start marking. As figure 2-10-11.

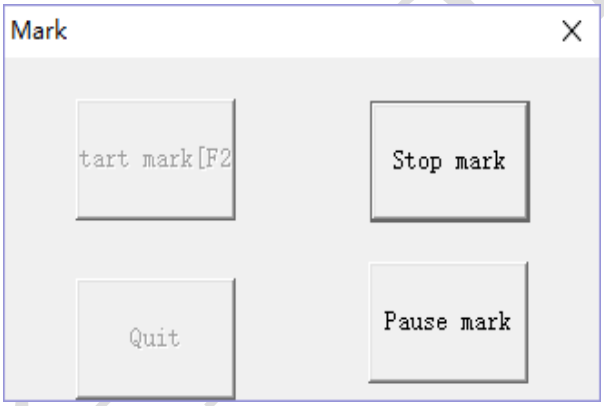


Figure 2-10-10 without click

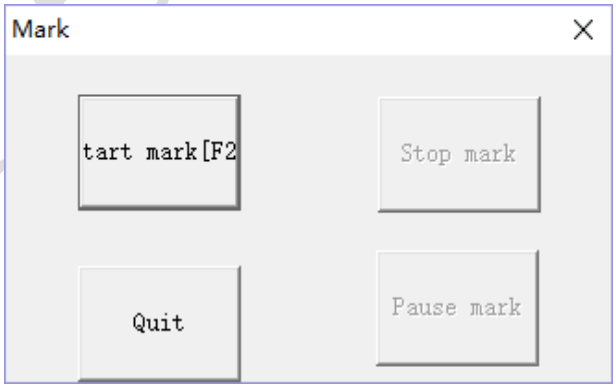


Figure 2-10-11 with click

Optimize Energy: click and pop up a dialog box. As Figure 2-10-12:

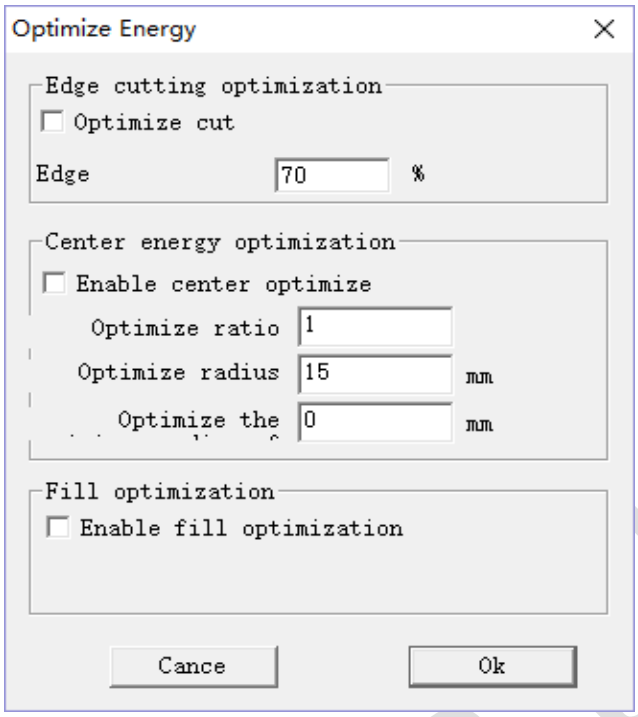


Figure 2-10-12 Optimize cutting dialog

2.10.5 Stepper Motor Setting

Click “Setting- Stepper Motor Setting”, on the screen will pop up a dialog box. As Figure 2-10-13:

LenMark

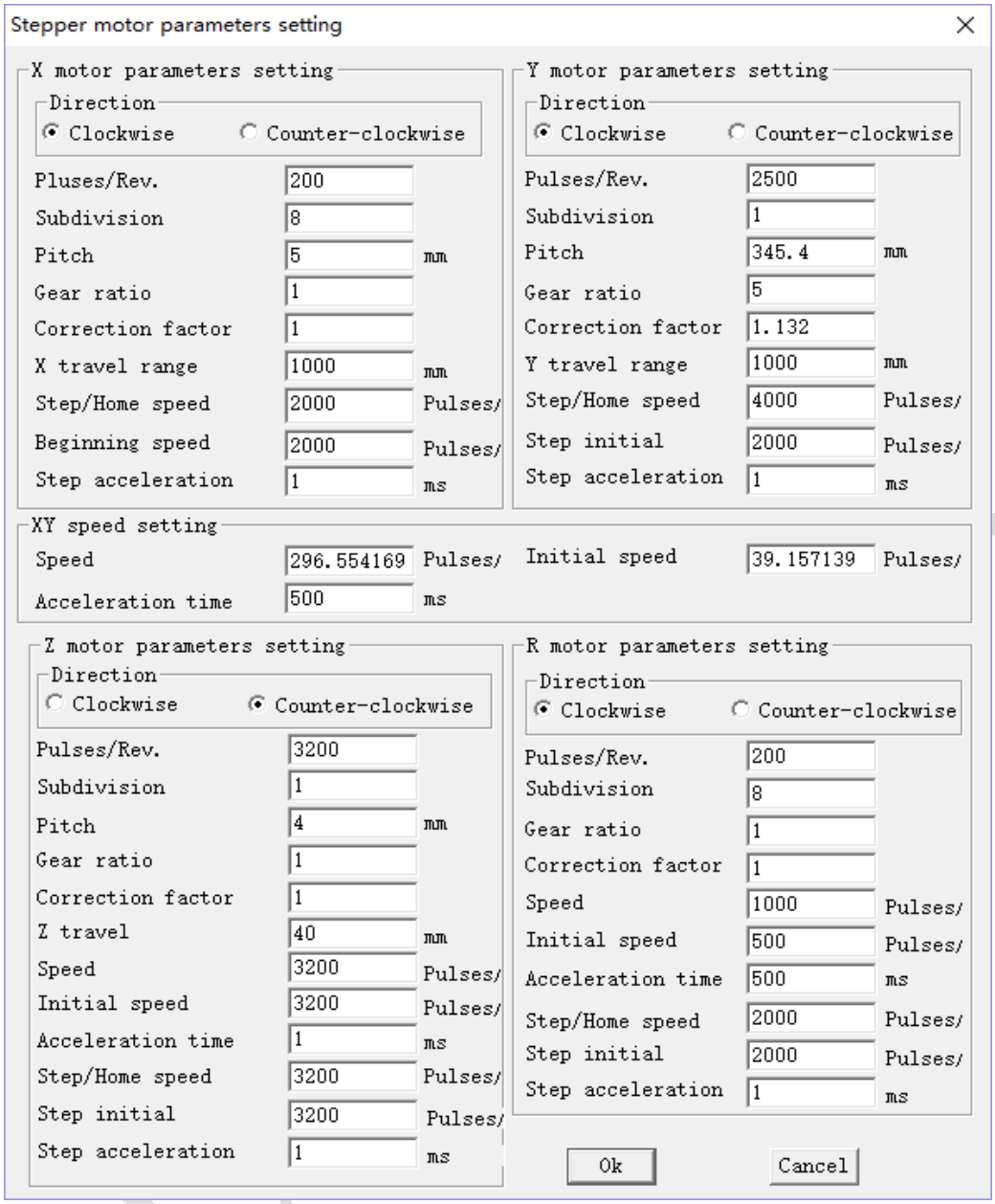


Figure 2-10-13 Stepper Motor Setting

Key Feature:

Direction: the direction of movement of the motor;

Clockwise: motor moves in the clockwise direction;

Counter-Clockwise: motor moves in the counter-clockwise direction;

Pluses/Rev.: the number of pulses which in motor's Per-rotation;

Subdivision: the subdivision of motor driver (Note: preferably about 64 or less);

Pitch: distance between the adjacent two points on the thread;

Gear ratio: rotational speed ratio which is in Input Terminal and Output Terminal;

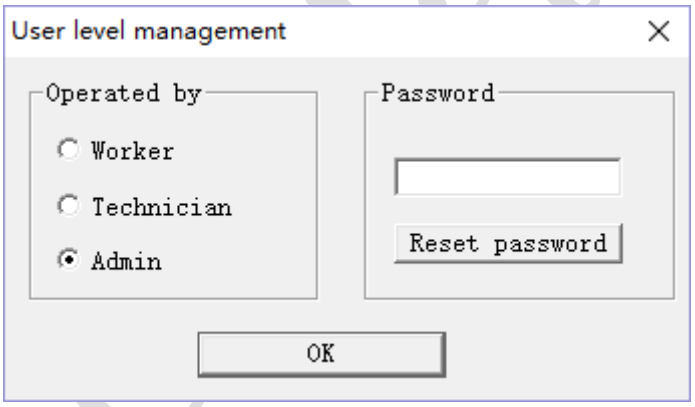
Correction factor: used to compensate for the error between the stepper motor and the lead screw;

Travel range: the maximum extent of the worktable movement;

The above parameters are separate parameters for each axis settings, the following parameter settings for the triaxial common parameters:
Speed: the speed of the motor in normal working;
Initial speed: the start-up speed of the motor;
Acceleration time: the time required by the speed when the motor is accelerated from a startup speed to normal working;
Step / home speed: set speed of X, Y, Z, R axis motor back to zero;
Step initial: set the initial speed of X, Y, Z, R axis motor;
Step acceleration: set the time required for X, Y, Z, R axis motor from initial speed to normal marking speed;

2.10.6 User Level Management

User Level Management function defines the software operating range between different users, to avoid losses by wrong operation.
Click "Setting - User Level Management", on the screen will pop up a dialog box. As Figure 2-10-14:



2-10-14 user level management dialog

Key Feature:
Administrator: advanced user who has right to use all the features setting.
Technician: intermediate user who is allowed to use the function in addition to the "Laser setting", "mark zone setting", "System parameters setting", "Authorized duration setting".
Worker: primary user, who can only preview, mark the saved files.
Note: landing as system administrator calls for the code. System administrator can change the password set by technician without entering the original password. Technician can set and change his own password.

2.10.7Authorized duration setting

Click "Setting-Authorized duration setting", will pop- up a dialog box. As Figure2-10-15:



Figure 2-10-15 Authorized duration setting

Valid: display the expiration date of the current board;

License number: if the software license expires, user can manually enter the new authorization number for getting a new authorization;

Import: after the expiration of the license to the software, user can import the new authorization code, for getting a new authorization;

Apply: import authorization document or enter the authorization number, click the Apply button, you will be prompted to successfully authorized, the invalid authorization number will be prompted to authorize the invalid;

Exit: exit from Authorized duration setting.

2.10.8 Dynamic axis fine-tuning

This function is only used when the machine is equipped with an automatic head.

Click on the "Settings" menu under the "dynamic axis fine tuning" command, the system pops up as shown in Figure 2-10-16:

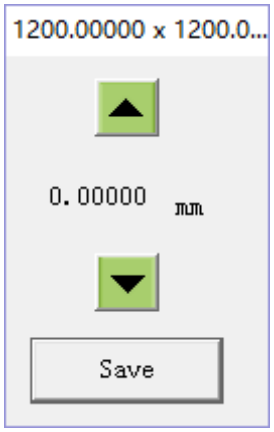


Figure 2-10-16 Dynamic axis fine-tuning

2.10.9 Automation I/O set

Click the "Settings" menu under the "automation I/O set" command, the system pops up as

LenMark

shown in Figure 2-10-17:

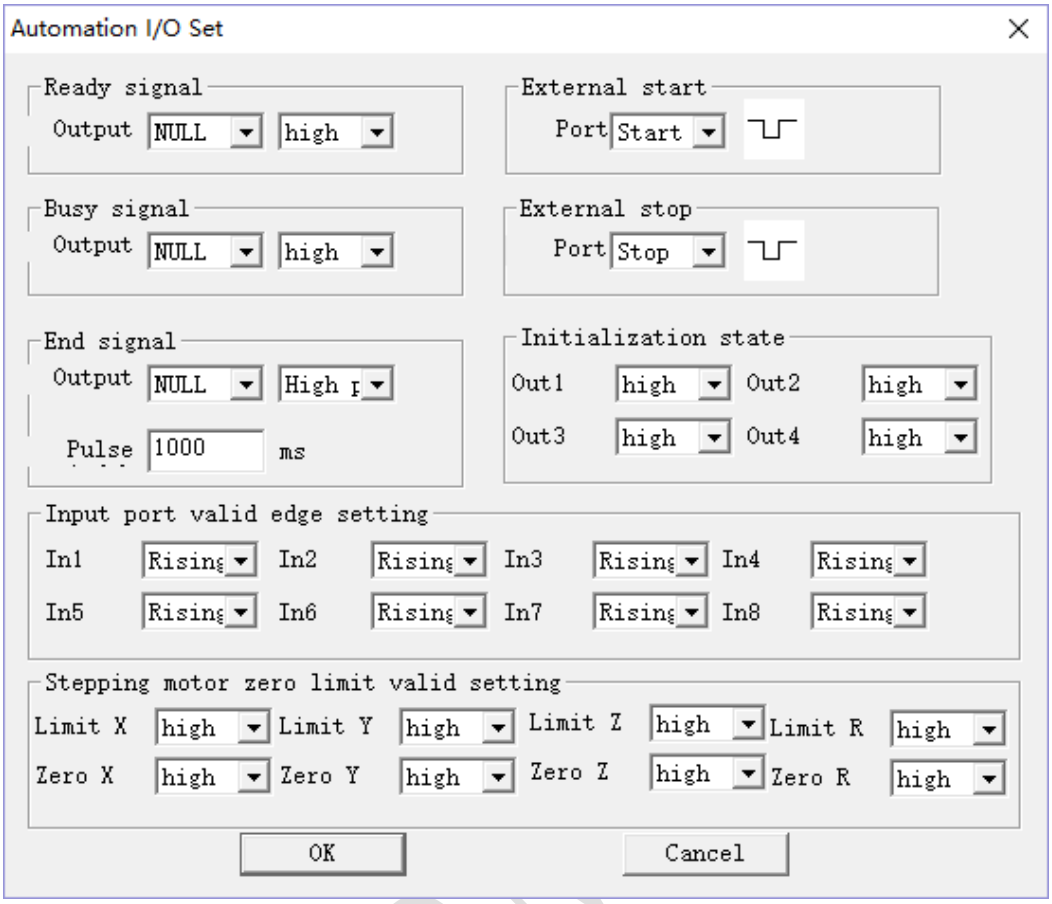


Figure 2-10-17 Automate I / O settings

The parameters are described as follows:

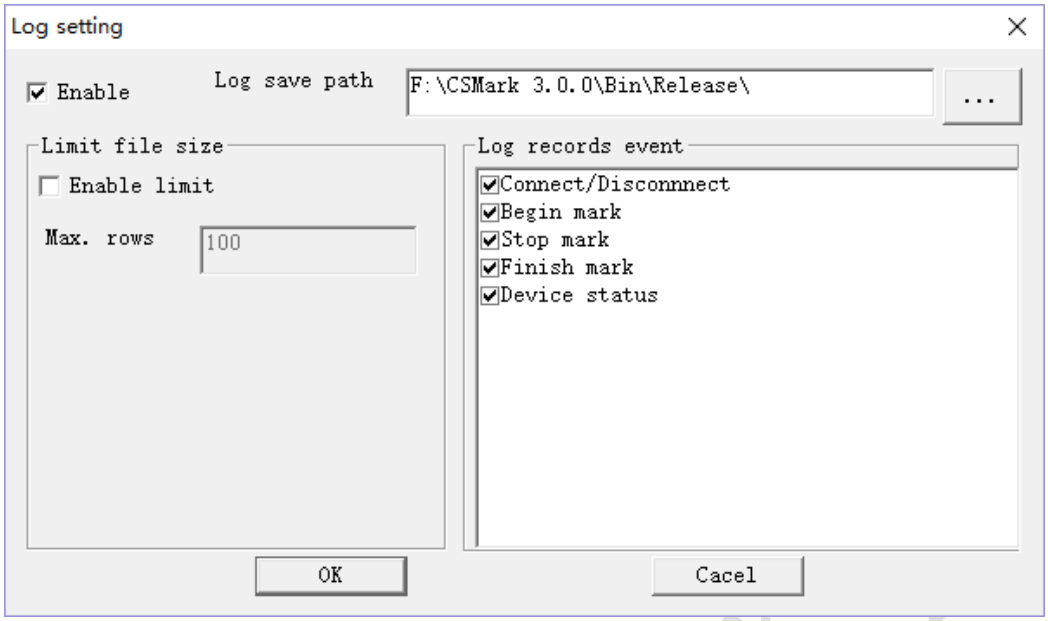
Output: set the output port of the signal;

Pulse: the pulse duration of the effective levels;

Out: set the port status;

2.10.10 Log setting

Click the "Setting" command and find "Log Setting". The system pops up as shown in Figure 2-10-18:



2-10-18 log setting

The parameters are described as follows:

Enable: select, open the logging function;

Log save path: select the log storage path;

Limit file size: set the size of the stored file;

Log records Events: select the contents of the log;

2.11. Execute

2.11.1 Overview

Laser on

Preview

Mark

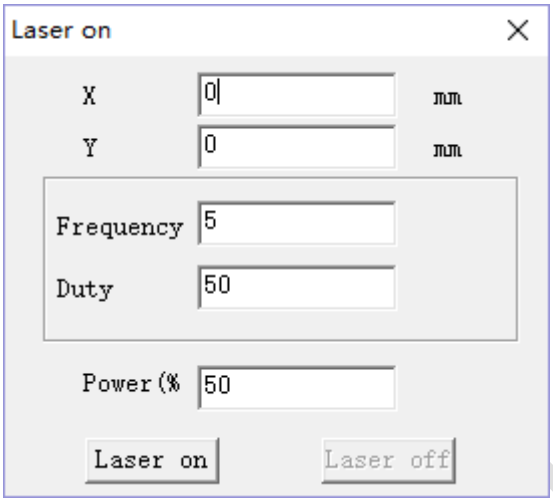
2.11.2 Laser on

Mainly used for the installation and commissioning of the system and the fixed-point opening.

Tool bar:

Click the icon like in tool bar, on the screen will pop up a dialog box. As Figure 2-11-1:

LenMar



2-11-1 laser on setting dialog

In X, Y area, user can enter the specified coordinate points, precisely control the location of the position of the light, the default (0,0) is light origin. Laser-On function is divided into Level and PWM two control modes, the specific choice depends on the control mode of the laser:
Level: if the laser is level control mode, select level. Active-low, means low level opening; Active-high means high level opening. The board J5 can effectively control the level;
PWM: if the laser is PWM control mode, select the PWM control mode. Means that by changing the frequency and duty cycle, can control the energy of laser. The Card J6 can effectively control the level.

After X Y coordinate positioned, click Laser-on, will have a long-time lighting in the position of the coordinate position, until user click Laser-off, the light stops.

2.11.3 Preview

Display the maximum frame of the marking graphics, for user to position the object in processing. This function is used with red indication light laser only.
Tool bar：
Shortcut: F1

2.11.4 Mark

Start to mark.
Tool bar：
Shortcut: F2

LenMark

2.12. Help

2.12.1 About us

Show application, version number, and Copyright information

Appendix

Shortcuts

File

Ctrl + N New File
Ctrl + O Open the file
Ctrl + S Save the file
Ctrl + I Import file
Ctrl + F4 Close the current document. Will pop up a dialog box on the screen prompts user to save the file
Ctrl + F6 Switching to another currently open document

Edit

Ctrl +Z Un-do the last step operation
Ctrl +Y Re-do the un-do
Ctrl +X Cut the current selected object
Ctrl +C Copy the current selected object
Ctrl +V Paste the object on the clipboard
Ctrl +A Select all objects in the work area
DEL Delete the current selected object

Alignment

Ctrl + K Combine
Ctrl + B Un-combine
Ctrl + M Group
Ctrl + Q Un-group
Ctrl + U Convert to curve
Ctrl + L Vertical mirror
Ctrl + H Horizontal mirror
Ctrl + E Fill in the path
Ctrl + D Separate

Executive marking function

F1 Red light Preview
F2 Single document marking
ESC Quit from marking mode

LenMark

F3 Under the table adjustment module cyclically marking the focus box

F4 Show the work area

F5 Center

Mouse

Mouse wheel forward: The current view narrows

Mouse wheel backward: The current view zooms

Mouse double-click the object:

On the object will appear the following icons.

 Click Left on mouse and drag up and down to tilt stretch.

 Click Left on mouse and drag left and right tilt stretch.

 Click Left on mouse and drag can rotate 360 degrees.

LenMark