PERFECT LASER

Large Format Engraving Machine

(Model:PE-DP-0812)

User Manual

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PERFECT LASER

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Chapter 1 Large Format Engraving Machine detailed information

1.1 Product profile

Perfect Laser is a company which commits in research, marketing, production, training and after-sales service. Large-format laser subsurface engraving machine we produced is specially designed for mass 3D crystal laser engraving with innovation design in the field of machining.

Large-format processing platform, high processing efficiency, 50% lower of carving time and full automatic batch processing procedures make it possible to carve 2D or 3D stereo exquisite patterns in large-format common glass, ultra white glass, artificial crystal inside. 3D photo crystal laser engraving machine accepts digital processing mode of production and this bring more environmental, energy saving , efficient, and safe production technology.

Perfect Laser has a professional R&D sales team that can accurately grasp the market dynamics. The crystal laser engraving machine it researches and develops receive a number of patents, winning the trust of hundreds of thousands of customers at home and abroad. The large-format 3D crystal laser engraving machine model PE-DP-0812 is a 3D engraving machine designed by Perfect Laser for innovative design and processing. The crystal laser engraving can batch process portraits, hands or footprints, trophies, buildings and landscape patterns, etc. The 3D crystal laser engraving machine is widely used in glass furniture decoration, large-format wedding photos and other industries.

1.2 Main product Features

1.Device adapted to wide processing forms, large processing format, high speed, suitable for mass processing.

2.The equipment can do deep emboss, cutting, punching, play sand, etc. Deep emboss effect and without any damages to glass.

3.Dazzle and colorful glass adornment effect, large-format glass can reflect plane, solid, the detail can reach level of pictorial, combined with electronic technology, lighting, rich variety and glamorous visual effect.

4.There isn't any pollution during product production process, no dust, no poison gas, no water and chemicals, true zero pollution.

5.In large industrial processing equipment, laser subsurface engraving technology belongs to minimum energy consumption, the power consumption is about 2 degrees per hour.

6.As a non-contact processing equipment, It has no contact with processed products. Only the device itself a small amount of friction in the process of movement, so the whole equipment loss is very low, a device can work for more than 10 years in a standard environment , low energy consumption, long lifetime.

7.Artificial cost is very low, depending on the size of the processed products.
one or two people can manage more than 5 devices at the same time, very easy for management.

8.Large-format laser engraving machine with gas floating device, it can easily and freely move various size of glass, not scratch glass surface at the same time, convenient operation.

9.The image processing technology keeps improving and make lifelike carving products and an unprecedented engraving effect.

10.Use imported lens, engrave glass within 800*1200*150mm range.

11.Automatic laser positioning system, light path without maintenance, high precision motion control system to ensure high quality engraving operation of finished product.

12.The 3D crystal laser engraving machine is equipped with "one-click" to control the function of the sculpture to complete all the work, to a great extent to avoid the loss caused by human error.

13.The equipment adopts modular equipment , easy to maintain.

14. There are no special installation requirements for the equipment, plug and play, easy to replace the workplace.

1.3 Product Application field

Suitable Materials: crystal, glass, acrylic, decoration materials and other apparent materials.

Applicable Industry: 3D photo crystal laser engraving machine is widely used in tourism, hotel, photographic studio, gallery and advertising and other consumption activities industry.

3D photo crystal laser engraving machine is applicable for advertising light box signs, enterprise culture show, glass decoration process, vitreous furniture decoration, personalized decorative glass, large-format wedding photos and religion crafts, etc. If accompanied by LED lighting, it will present a magical and elegant, new way of artistic expression to meet your individual needs.

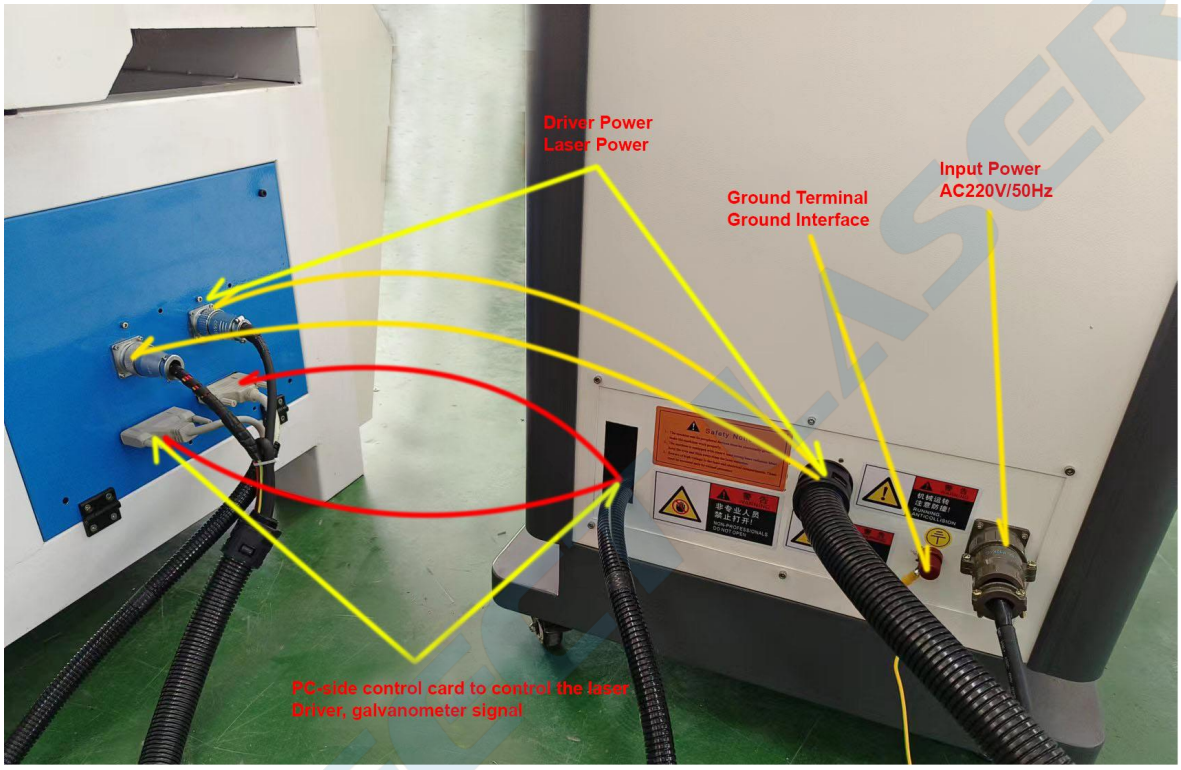
1.4 Product technical parameters

specifications	PE-DP-0812
Laser	Semiconductor pump , laser232mm
Semiconductor life	25000h
Maximum processing range	800*1200*150mm
Carving distance	0.07-0.12mm
Engraving range	40-80um
Fastest carving speed	4500dot/second
resolution	1500dpi
Batches processing	support
Three axis screw precision	0.02mm/300mm
Repeat positioning accuracy	<3um/300mm
Total power	1500W
Cooling type	Air cooling

Environmental temperature	15℃-30℃
Environmental humidity	<85%,non-condenate
air	Clean, no corrosive gas
Control system	Windows XP、win7 32bit
Voltage and current	100-240VAC,5A
Power grid volatility	<10%
Power frequency	50/60HZ

Chapter 2 Large Format Engraving Machine software introduction

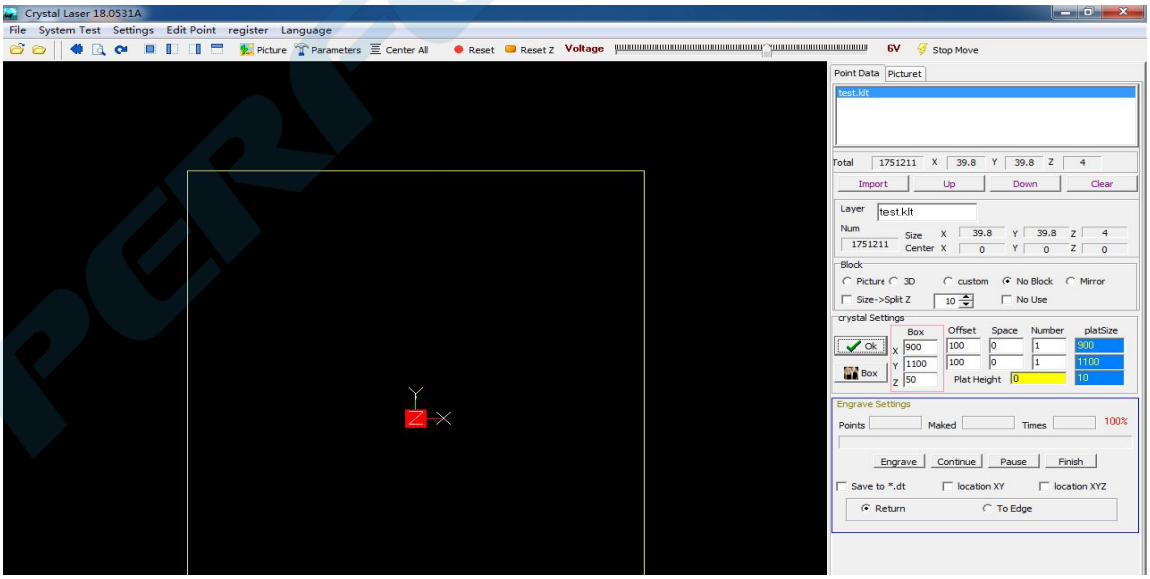
Description diagram of startup wiring



Boot order:PC--Laser--Actuated
Shutdown order:Laser--Actuated--PC

2.1 Main menu instructions

As shown in Figure S-001:

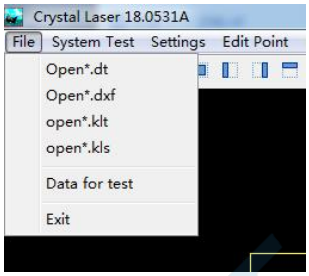


S-001

The software's main interface can be divided into several parts, first is the title bar, followed by the menu bar and work bar, the black area for the processing of files display interface. The specific description is as follows:

2.1.1 the main menu can be divided into files, system debugging, parameter settings, point cloud editing, registration, language

1.file menu is divided into open dt dxf KLT KLS, generate trial data, exit. Figure Diagram S-002;



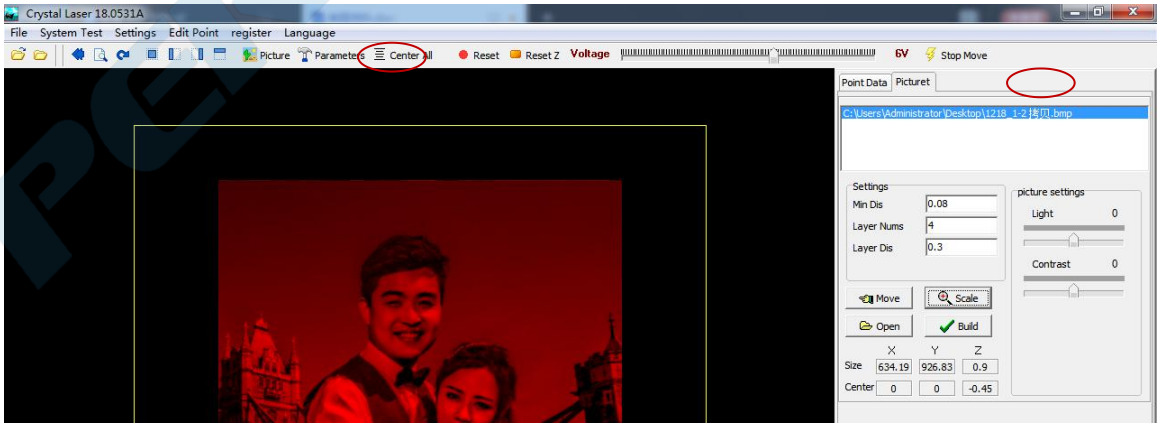
S-002

a. Open * dt: dt file means the saved processing file (including the parameters of the processing file, but the parameters can not be changed) .

b. Open * DXF KLT KLS file: means the saved processing file parameters can be modified. (note: the DXF file here must be the file that forms the point cloud) ,

c. the text of the photo corresponds to the icon. 

Open or click to change the interface. Figure S-003: (compare figure S-001;)

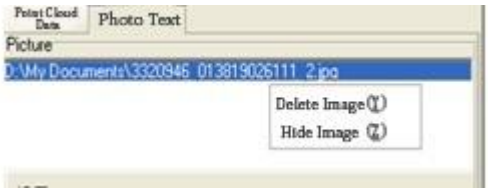


S-003

2.The right side of the interface has an icon (shown in figure S-003) , click to open the picture, open their own to process the picture. (figure S-003)

3.The photo catalog displays the location where the photo is opened and the name of the photo

(As shown in Figure S-004).



S-004

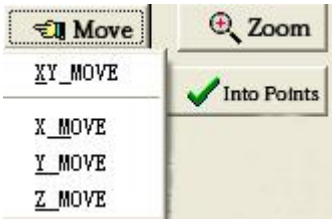
4. Click the right mouse button on the photo name to pop up the icon as shown in the figure above. Click Delete to delete the photo. Click to hide the image, the software will not show the black area of the image. Click on the photo name, that is, select the photo, you can edit the photo.

S-005

S-006

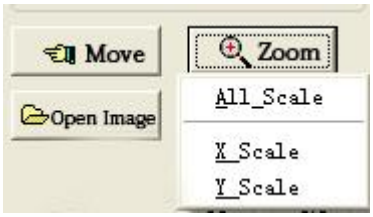
5. Click "Move" in the icon. You can move the photo in the X and Y direction. You can also move without any rules

As shown in Fig



S-007

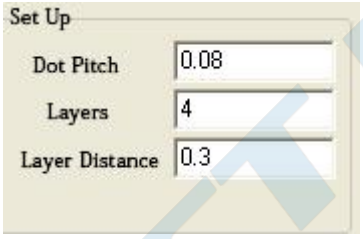
6.Click on“Zoom” and“Move” in the same way(S-008)



S-008

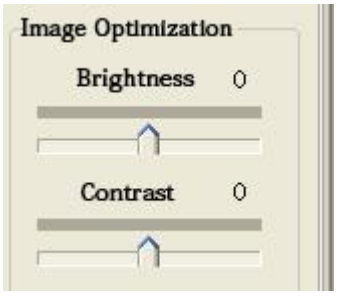
7. “Dot” means that the image is converted into a dot cloud file. (S-007 as shown in figure)

8. The photo parameter setting area is shown in figure(S-009)



S-009

The point distance represents the distance between points. The smaller the point spacing, the denser the point spacing (0.06-0.1, in mm) . The number of layers to process the number of layers, the greater the number of points more (3-7 layers) . Layer spacing represents the distance between layers. The larger the number of layers, the larger the spacing (0.4-0.6 mm) .



S-010

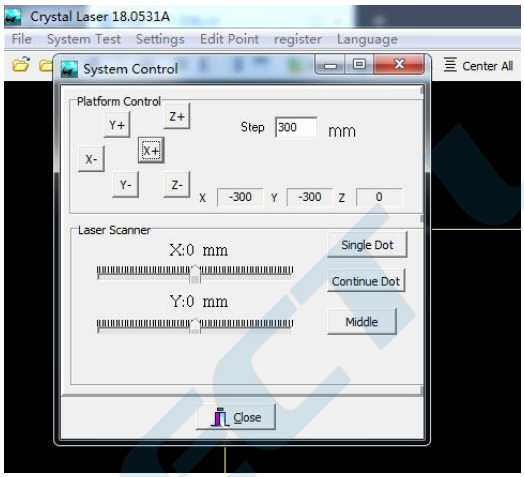
Image optimization means you can adjust the brightness and contrast of photos.

9. data for test（For engineer test machine)

Generate test data by setting the length and width of the rectangle and point spacing (control the density of points in the direction of length and width, that is, point spacing). Form a TEST data rectangle, this advantage is not required to read the point to generate beta data files, can be directly formed.

2.1.2 System Debugging Settings

1.System control is mainly for adjust and move the working table and the laser.click "system test " get another interface as follows (S-011)



S-011

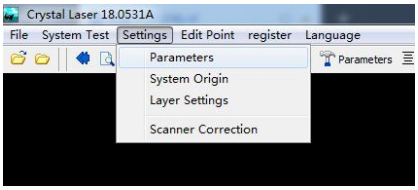
Click "  ",can move the working table in x axis ,Y axis ,z axis,.Click ,can move the work table exactly.(click one time ,then table move one step in "mm",for example .step :10mm,click  one time ,then table will move upside 10mm.

2. Galvanometer laser, point by point light represents the first point of engraving of the document to be processed. It can detect the location of machining files very well.

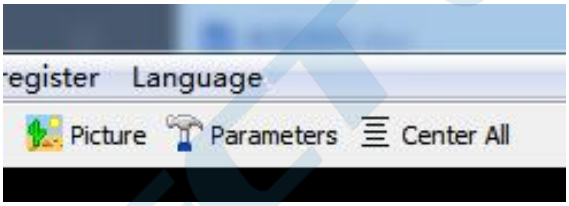
3. Click on the continuous light, the laser has been shown, can be a good detection of light bias and positive. It is convenient to correct the correctness of the light.

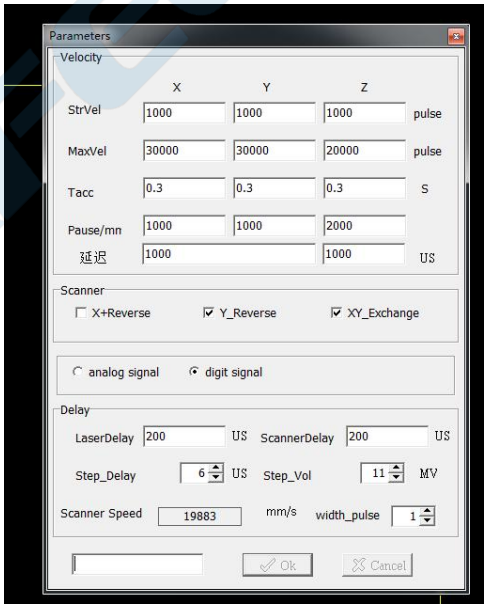
2.1.3 parameter setting

Parameter setting is divided into motion parameter \ origin setting \ block setting and galvanometer distortion correction



1. This parameter is the most important parameter setting of the inner carving point software. You can also directly click on the parameter setting in the control panel to achieve the same operation.





2. Speed control parameters: control the motion parameters of the three directions respectively. The unit of speed is pulse number/second, and the unit of acceleration is pulse number/square second.

The motion control mode is trapezoidal acceleration. For example, in the X direction in the figure, it starts with the speed of 1500 pulses/s (low speed), accelerates with the acceleration of 300 pulses/s squared, and reaches the speed of 6000 pulses/s (high speed). After running for a period, it slows down again, just to complete the required number of moving pulses at low speed.

In actual situation, due to the short moving distance, the speed starts to decrease before reaching the high speed, and the speed of platform movement is mainly determined by the low speed. Low speed is too large, impact is large and easy to process into burrs, but fast moving, fast processing.

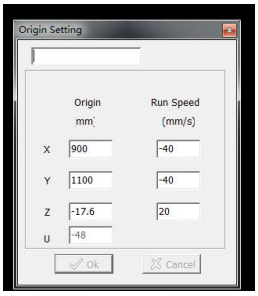
(Note: Pulse number /mm is the number of pulses required to set the X,Y, and Z directions to move one millimeter respectively, which is determined by the motor driver Settings and the lead screw.)

3. Galvanometer axial setting: It is graphic mirror adjustment.

Laser galvanometer delay adjustment; In order to better make the laser light and galvanometer motion synchronization

4.origin setting

System origin check: use limit (positioning) switch, automatically find the reference point.

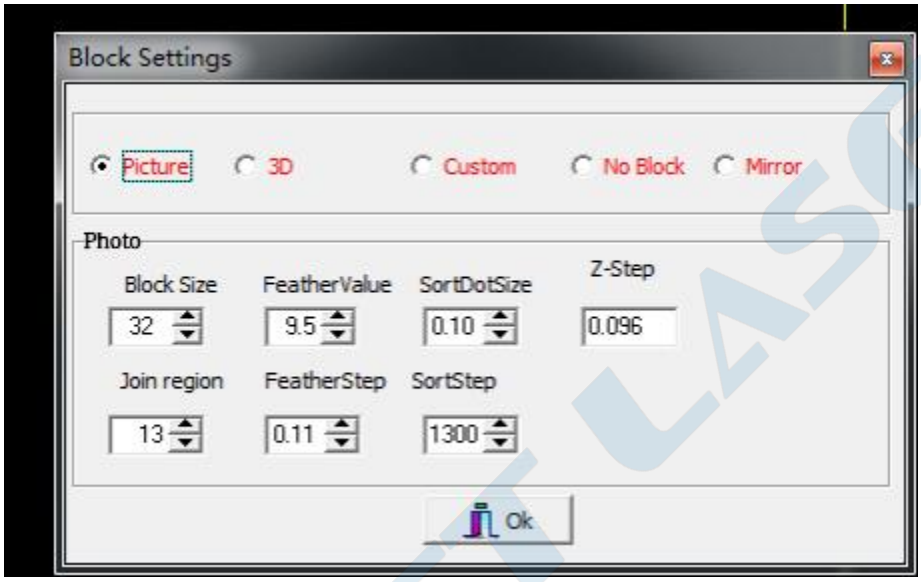


The left column controls the distance between the origin of the system (limit switch point) and the reference point.

The right column controls the direction and speed of return to the system origin.

These parameters need to be adjusted according to the system debugging, once determined do not modify. Just click OK and the reference point will be found automatically.

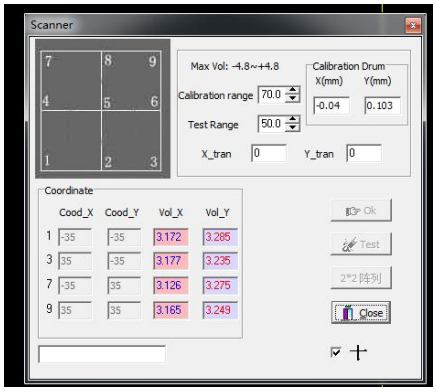
5. Block setting



The block setting indicates that the size of a drawing to be processed is relatively large and cannot be processed at one time (the galvanometer has the range of processing at one time, which varies according to the assembly needs). He has five choices. Photo, graphic model, custom, block and mirror. Block size represents the size of each block, the emergence value represents the detail value of the adjacent two pieces (ambiguity), the splicing area represents the block inside a bevel Angle (bevel range size), followed by the emergence step, sorting point width, sorting step. It's a way of running point clouds. No modification is required. The final undivided block means that the galvanometer can complete a single processing of the pattern.

Note: When choosing mirror engraving, do not pay attention to the parameter setting under the crystal size, and the offset center point parameter is set above 13.

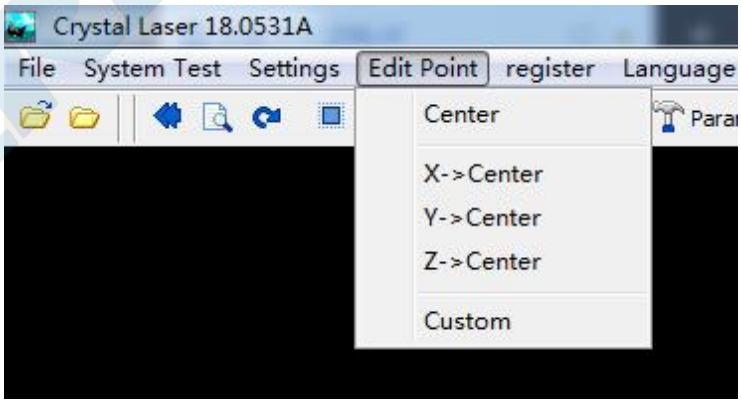
6.Scanner correction



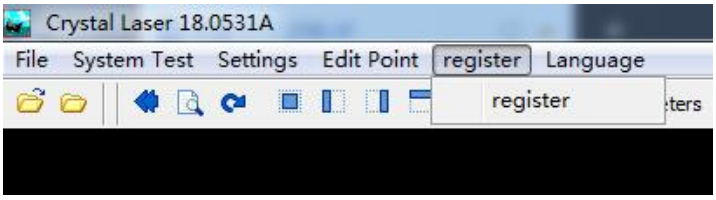
The calibration range is up to 70mm, which is the maximum size of nine digits. The test box is usually around 50mm. Adjust the voltage values of x and y at 1,3,7, and 9 basis points (the maximum voltage is 4.8 V) to coincide with the four basis points of the mechanical point. When carving a square, the four sides may not be straight lines, can be modified parameters to modify parameters must click to confirm the modification.

2.1.4 Point cloud editor

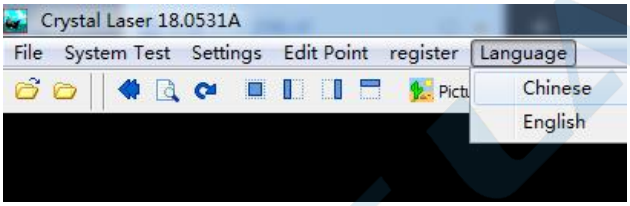
Middle / Move X \ Y \ Z / exact control



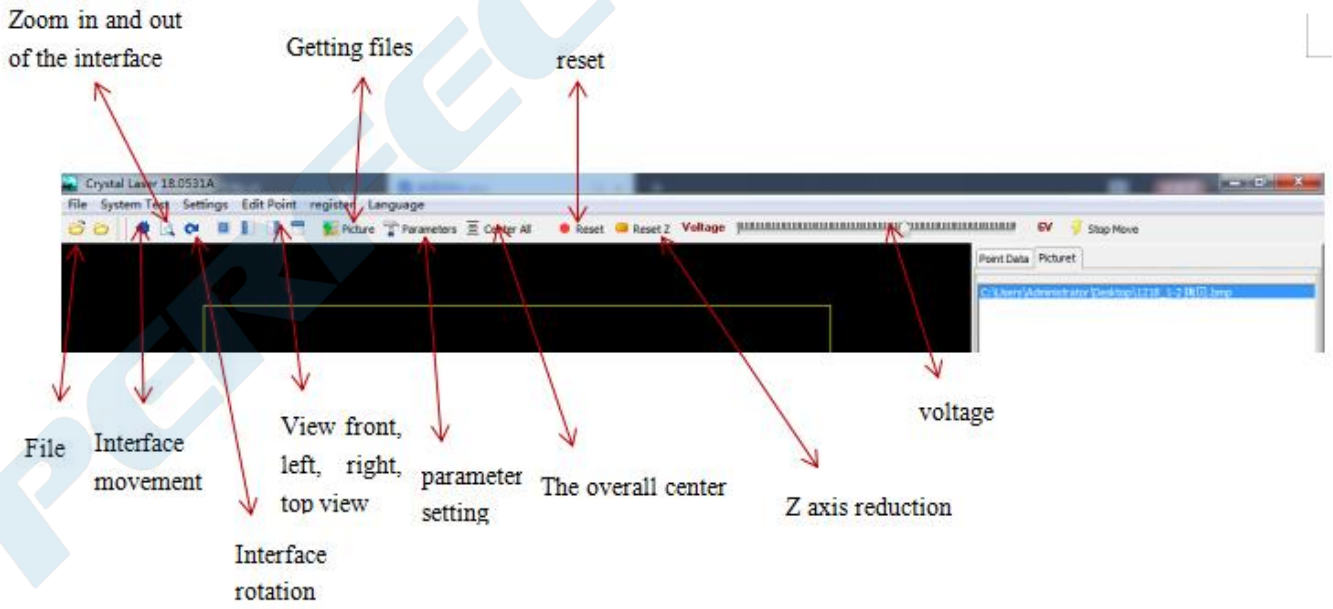
2.1.5 Register



2.1.6 Language



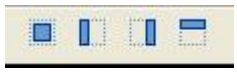
2.2 Introduction to the toolbar



Toolbar Functions

1.  Open the file, which corresponds to the file Settings on the menu bar

2.  Indicates that the selected file can be moved, scaled and rotated.

3.  Four views representing the processing file. From left to right, they are front view, left view and right view. Top view (the display interface can display only one view).

4. 

Corresponds to the photo text in the menu file

5. 

Corresponds to the motion parameter in the menu parameter Settings

6. 

Represents the point cloud file being processed to the center of the crystal to be processed

7. 

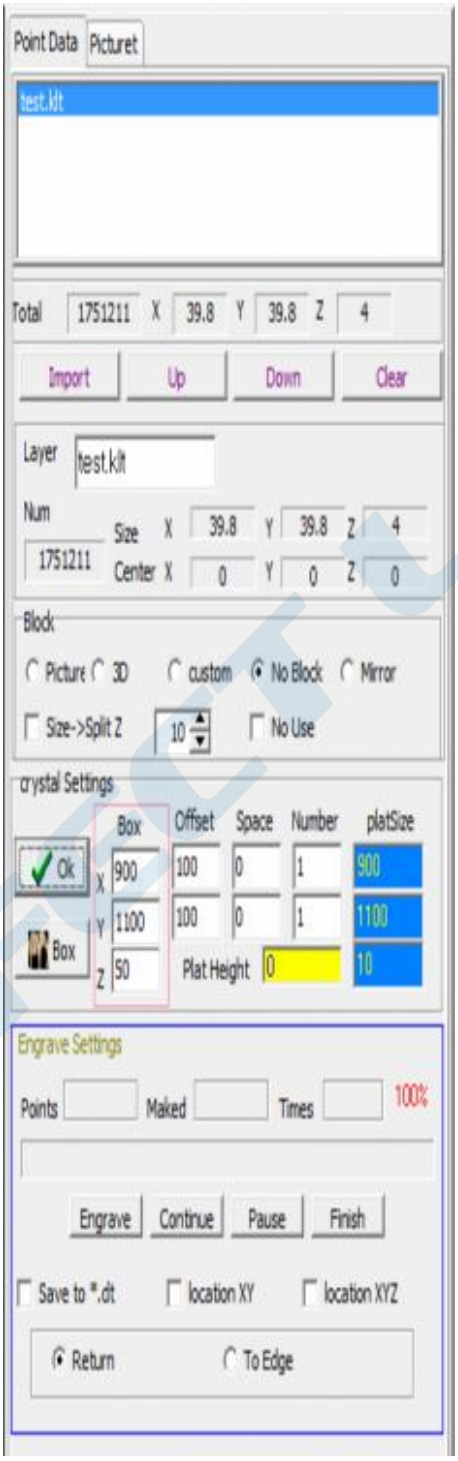
Precise display of point cloud files up and down. The left and right sides. The value of the distance from the crystal forward and backward. More intuitive display of whether point cloud files are in crystal center

8. 

click this one, software will find the origin again (note:every time when open machine .or if power shut up open computer or machine again ,then need to click this "reset "for find origin dots again .

9. Z reset, device z Axis reset

2.3 Status Bar



1. Blank box: File display

2. Detailed file data display: total points; X / Y / Z axis size display

3. Import the dxf \ klt \ kls file, move up / down in sequence in the blank box; empty the file data in the blank box.

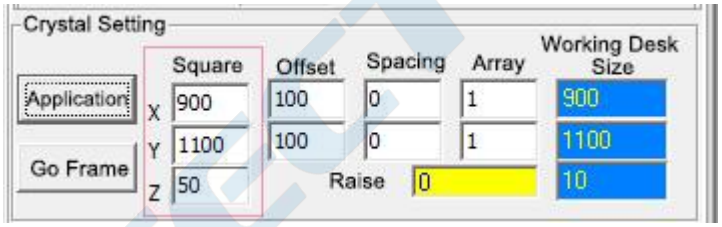
4. Layer name display

Click the layer name in the blank box to become blue, the pattern in the black display box becomes red letters, the layer name, the layer points, the size display.

5. block

Corresponding block setting

6. Crystal Settings



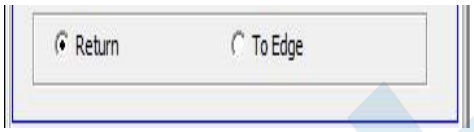
The X,Y,Z in the crystal Settings are the crystal sizes to be processed. Offset is the distance a crystal is away from the workbench, and spacing is the distance between neighboring crystals (mm). Cushion the height that expresses crystal and the place between workbench to put cushion board, can want to cushion tall according to actual need. The array is the number of things you're processing in the X-axis, the Y-axis. (Note: The parameter modification must be completed by clicking Apply. The table size indicates the maximum range of machining in both directions. The data generated by the array cannot exceed this range). After setting the crystal size, move the positioning frame on the platform (Note: the Z-axis parameter of the crystal size is generally set to 3 when moving the frame).

7. Carving control

Display the total number of pattern points, has been carved points, engraving time display, blank bar progress display

8. Carving, continue, pause, continue

9. Carving data save dt file \ temporary location XY \ temporary location XYZ



10. Back to the origin: all the data after the device automatically back to the origin.

Chapter 3 Point Cloud Document Specification

3.1 Basic system requirement

To operate this software need below specification for the computer system:

ITEM	CONTENT
CPU	1.6CHZ Pentium 4 or better
RAM	256MB or better
SYSTEM	Windows XP/win7
Graphics Card	256MB RAM or more;and Support Open GL
Disc space	300MBminimum

3.2 Installation

1. Content List

a.1 pc CD (with software installation program and manual)

b.1 PC USB DONGLE

2. Install dots cloud software

a. Open the CD and read.

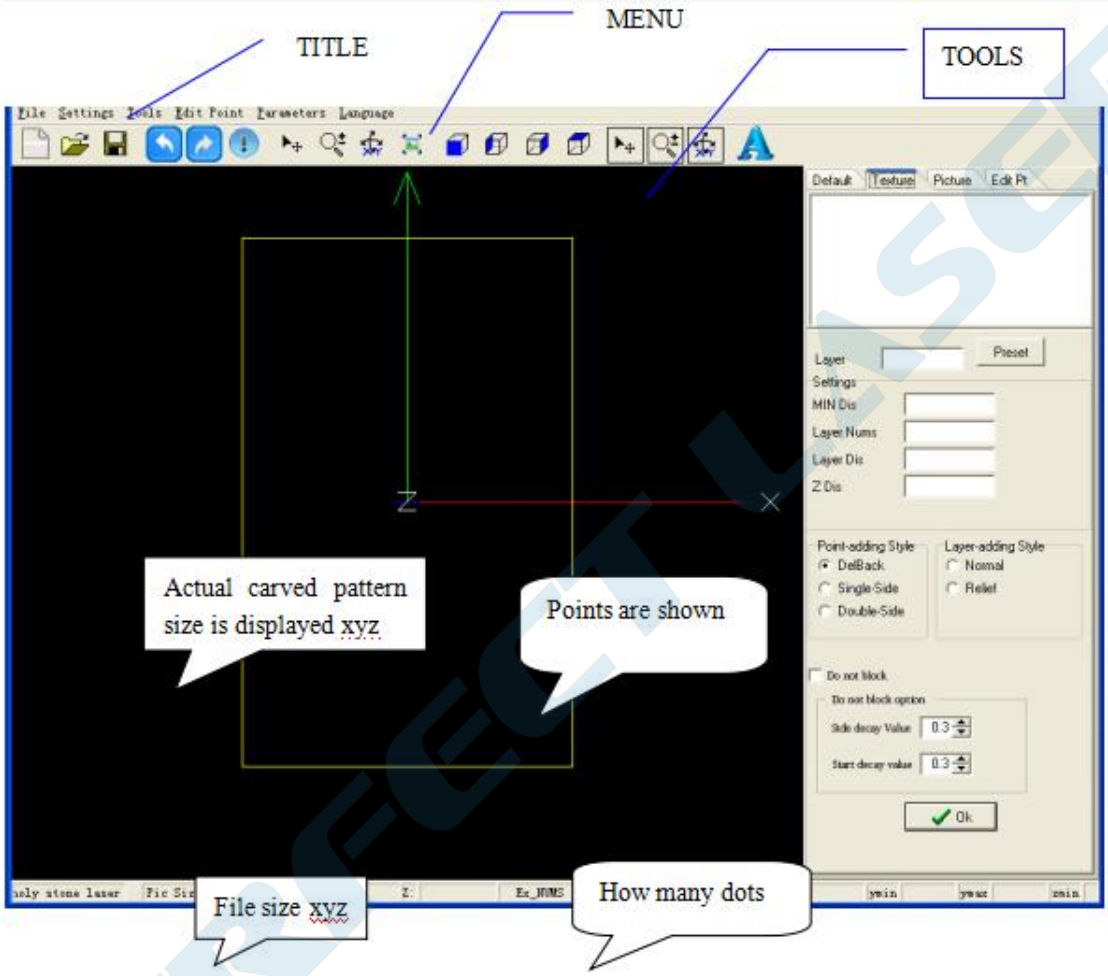
b. Copy the Dots Cloud program of CD to the computer

C. Put the DONGLE to the computer, then the green light of the dongle will lighted or shining.

3. Finish

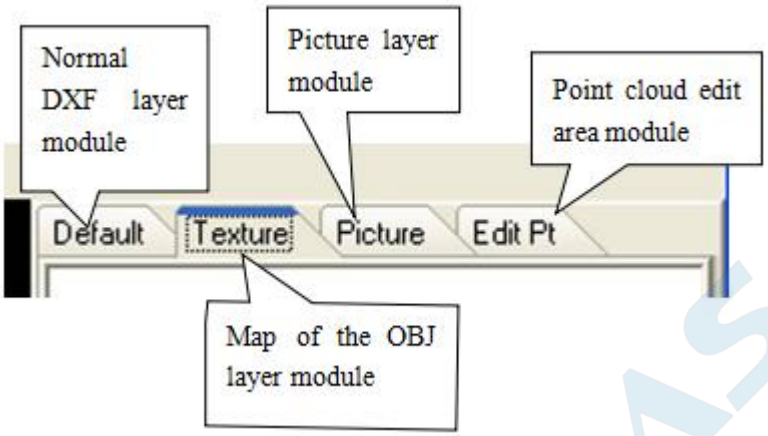
3.3 Program Function Declaration

MAIN FUNCTION WINDOW:



*The yellow line in the picture is the size of crystal, the red and green line is the XYZ, in the yellow line is the file.

*In the left part indicate the DXF, OBJ, JPG.MBP file. The date for them and edit function.(as below)

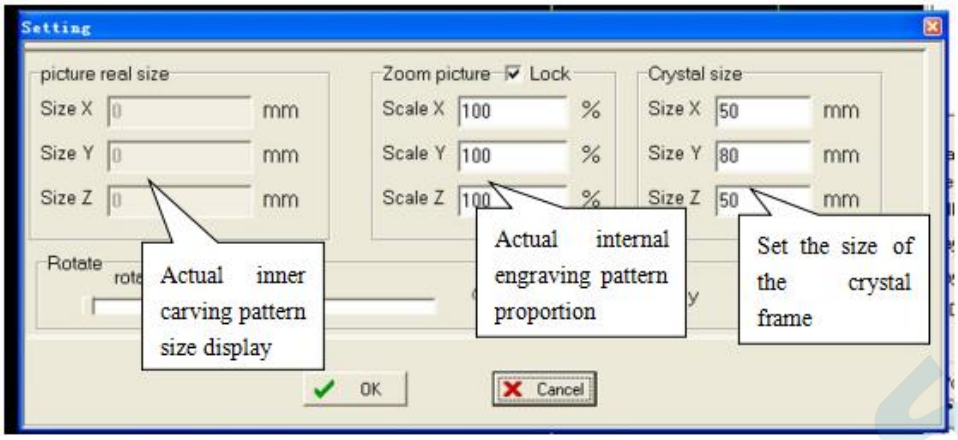


The title indicate the program and Authorized

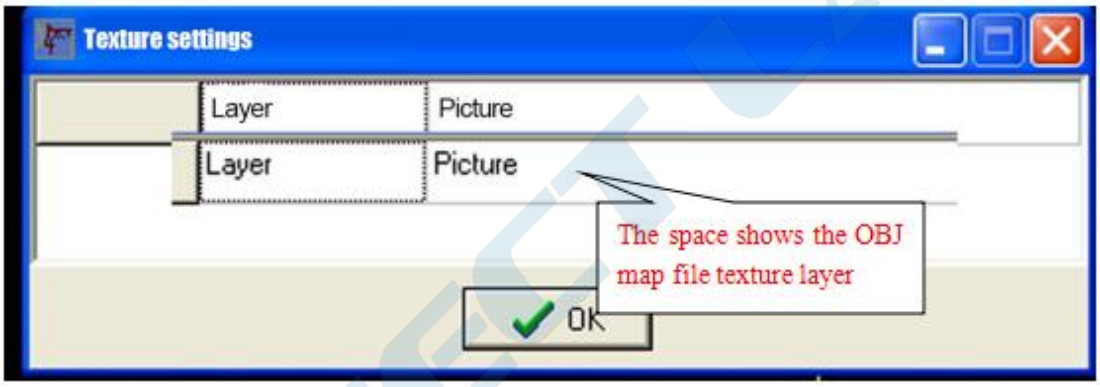
File

Settings

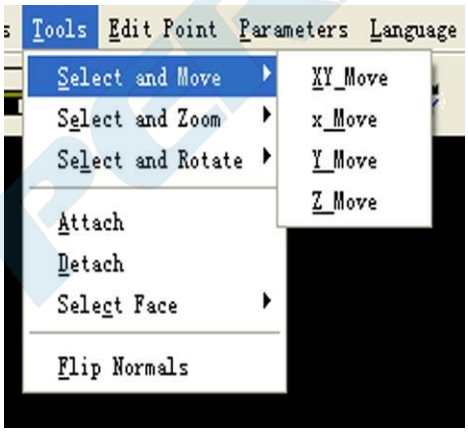
Option



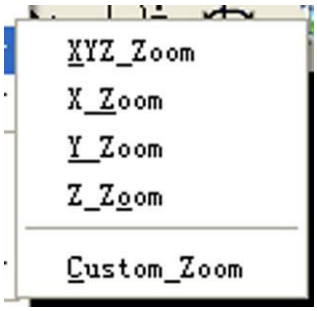
Texture



Tools



Select and Zoom



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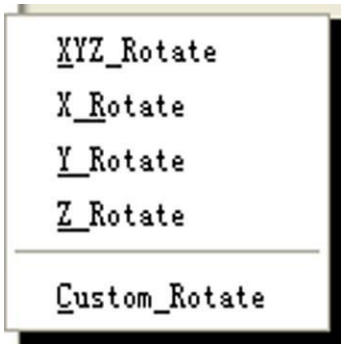
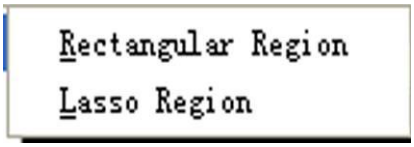
Select and Rotate

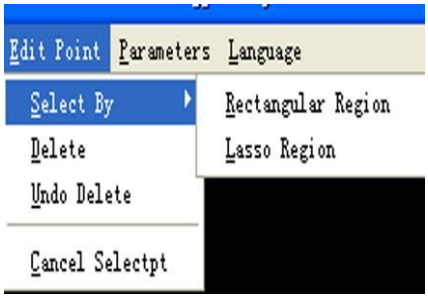


Select Face

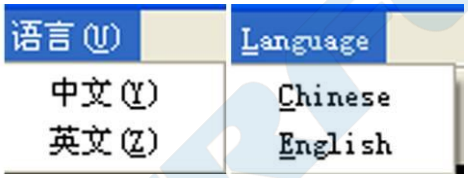


Edit point

Parameters



Language



tools bar


clear :Empty the work area


open file

 save in dots file

 Backward return

 Forward return

 making dots

 move the interface

 zoom the interface

 Rotate the interface

 double click the left mouse to center

 View display: face/ left/ right/ top

 moving the layer be choose

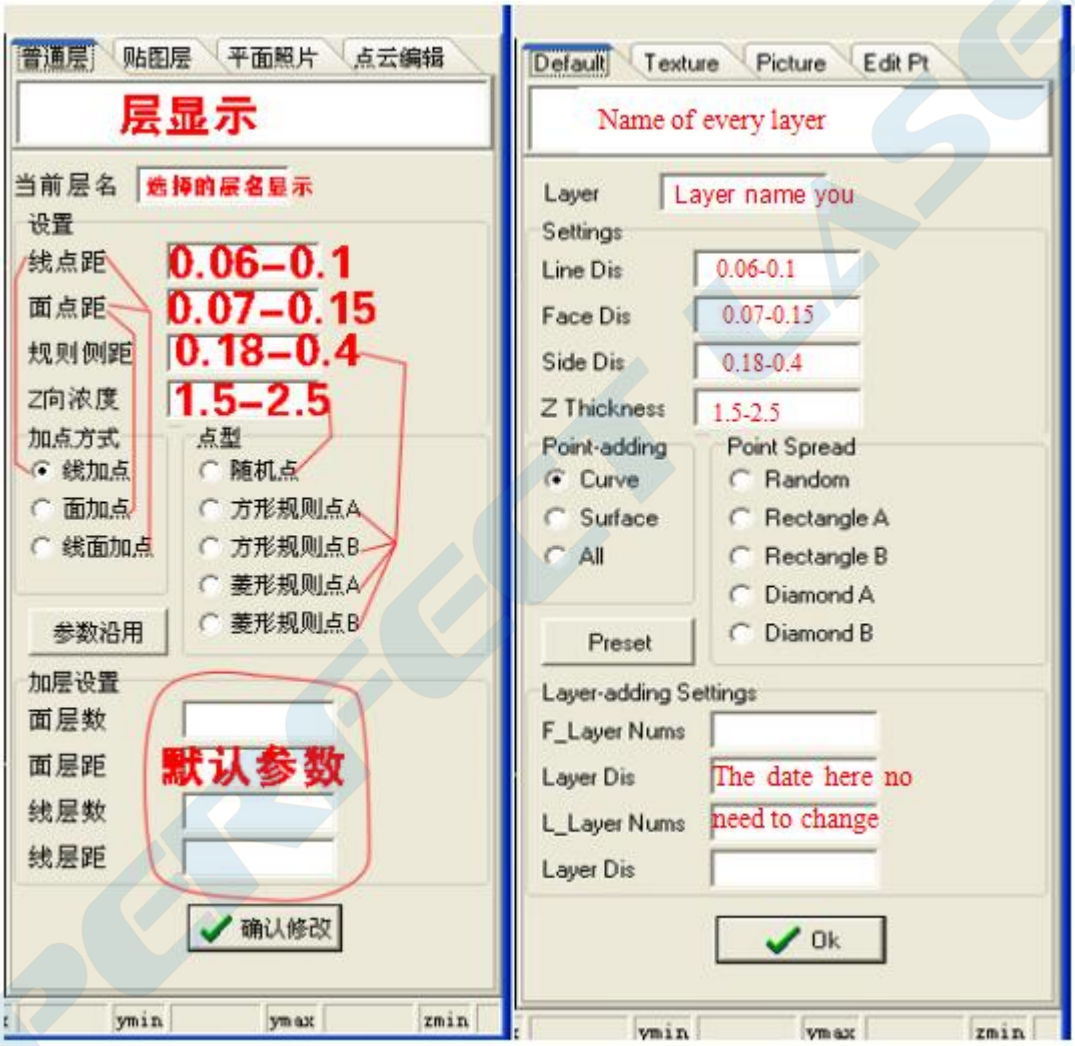
 Scale the selected layer; Control the size and proportion of the inner carving pattern

 Rotate the selected layer,Normally we don't use this, Use precision rotating tools

 enter text.

Module area

Normal DXF file mod



Choose layer from the Name of Layer; the Line Dis + Curve to change the date in Line dis; Face Dis + Surface to change the date in Face Dis; If you choose All in Point-adding, you have to make the date of Line Dis smaller, but the Face Dis bigger.

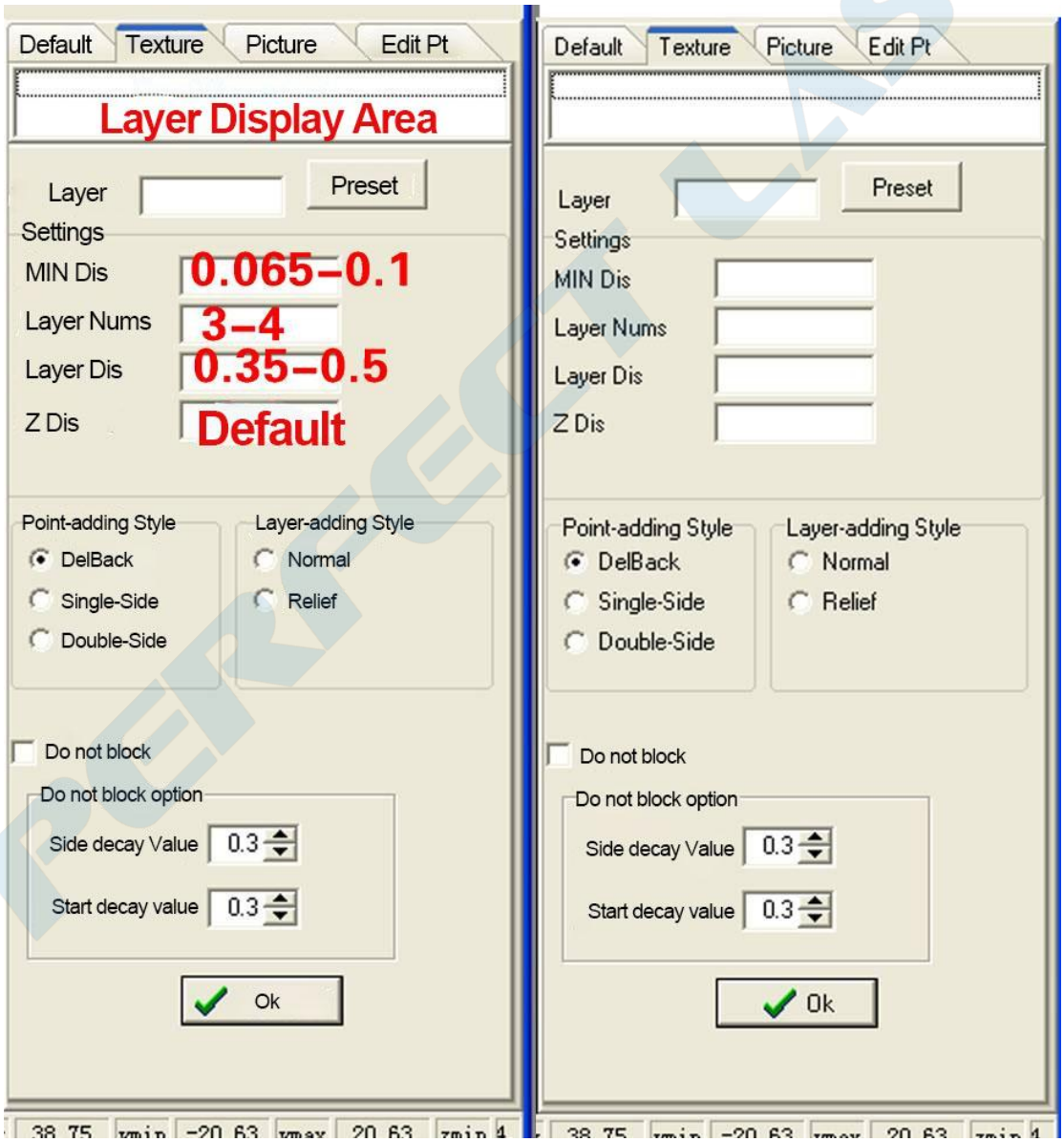
Z thickness control by the Random;(chose Rectangle A or Rectangle B or Diamond A or diamond B to change the Side Dis.) Every time just can choose one item.

The button PRESET is to use the same date for the new layer to make dots.

The Layer-adding setting button, no need to change.

Every time you entered the date you should click OK.

Map of the OBJ module



MIN Dis control the dots numbers of the file; Layer Dis is the distance of every layer.

Point-adding Style

1. Delback:180 degree make dots cloud
2. Single-Side:360 degree make dots cloud with 180 degree texture
3. Double-side:360 degree make dots cloud, front and back texture

Layer-adding Style:

The Normal and the Relief has the same effect.

Uncover:

for the shadow of the OBJ file, generally not choose this.

Photo JPG / BMP module

MIN Dis control the dots numbers of the file; Layer Dis is the distance of every layer.

Ratio: control the size of the file

Layer-adding Style: choose the Relief will better

Picture Setting: control by yourself

Edit Point

Import: import the in dots file, can import several file and attach them

Clear: clear the in dots file

XYZ/X/Y/Z move:move the imported in dots file

Single: Select one time

Multiple: multi-select

Rectangular Region: select in square

Lasso Region: Multi-edge select

Select Invert: select the not select part

Delete: Delete

Undelete: recover which you deleted before

3.4 How to using Dots Cloud software

Process to make dots cloud

1. For common 3D file

Open the file----Setting(center)----choose the name of file to make the file in blue;----then adjusting the date by line or face or all according the file;

Every layer you enter the date, pls. Make sure to choose *OK* to confirm.

If you will make the 2ed layer same date same setting with the 1st layer you can choose the *Preset* button, then *OK;*---last make dots and save the file in dots.

2. For the OBJ file

Open OBJ file---setting (texture setting)---center all---choose the name of file to make the file in blue---zoom the file to the size you wanted---setting date---MIN DIS.

from 0.065 to 0.1---layer 3 to 4---layer dis. 0.35 to 0.5--- Z thickness (no need change)---layer-adding setting---Normal---OK----MAKE DOTS---SAVE

Note:

If there are two or more OBJ file need to merge, you can after open the first OBJ file then import the other OBJ file, move the file where you want, then you can design them

3. For the picture

Open picture----Zoom in the right of the software in RATIO---setting(MIN DIS. 0.065 - 0.1, layer No. 3 - 7, layer dis. 0.35 - 0.7)-----Layer-adding setting(NORMAL--dark in front, white in back; RELIEF--dark in back, white in front)---PICTURE SETTING (adjusted by yourself)----make dots cloud---save in dots file.

PERFECT LASER

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This manual including all the function of our software, and how to operate it well in detail.

This document does not allow the remake without permission, duplicate, copy, or convert to electronic documents to issued.

The software ownership to Perfect Laser ; Reprint will investigate.

BRIEF

Dots Cloud software is researched by Perfect Laser for their series Crystal Laser Sub-surface Engraving Machine to make dots;

This software is with high stability, easy to operate; It is the leader in the crystal inner engraving area because of its good function and easy operation。

Can be easy operate by the customer for engraving and marking area.

Please use the machine with caution, if it's man-made damage, it will not be covered by the warranty, and the cost will be borne by the customer

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