EZCAD3.0

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Catalog

1 Software Overview

1.1 Software Installation

EzCad3 software requires the computer with dual-core CPU, 2G or more of memory, 10G or more hard disks, and more than 2 USB ports, and it is suitable for WIN7 64-bit, and WIN10 64-bit. (the software could run on win8-64 bit system also, but need to install many others program, so don't suggestion win8)

EzCad3 software is an installation-free version. Users only need to copy the file on the installation CD to computer directly. Then run the EzCad3.exe program to use it.

If you do not install the Licenses, you cannot open the software.

1.2 Software features

This software has the following main functions:

Edit the graphic pattern

Supports TrueType fonts, single line fonts (JSF), dot matrix fonts (DMF), one-dimensional barcodes, and two-dimensional barcodes such as DataMatrix.

Dynamic text processing. EZCAD3 can change the text real-time during processing, can read and write text files and Excel files directly.

Powerful node and graphic editing function for curve welding, clipping and intersection calculation;

Support up to 256 layouts. Set different process parameters for different objects

Support general bitmap formats (bmp, jpg, gif, tga, png, tif, etc.)

Support general vector file (Ai, Dxf, dst, plt, etc.)

Support Stl format 3D models file;

Support general image processing (bitmap-grayscale conversion, black-white bitmap inversion, grid-dot processing, etc.), can perform 256 grayscale bitmap processing;

Support different hatch type;

A variety of control objects, users can freely control system interaction with external devices.

Project the top view of a 3D model to mark. Support 3D model layer marking

1.3 Interface description

Start View：

Fig 1-1 Start View

Main View：

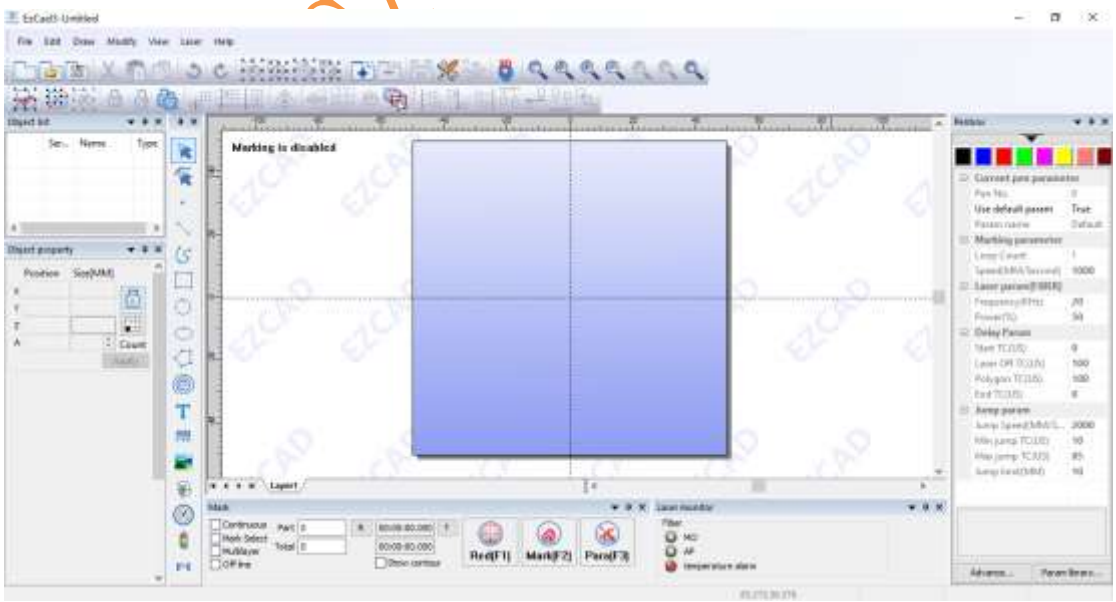


Fig 1-2 Main View

2 File Menu

File Menu: Achieve general file operations, such as new, open, save files and other functions.

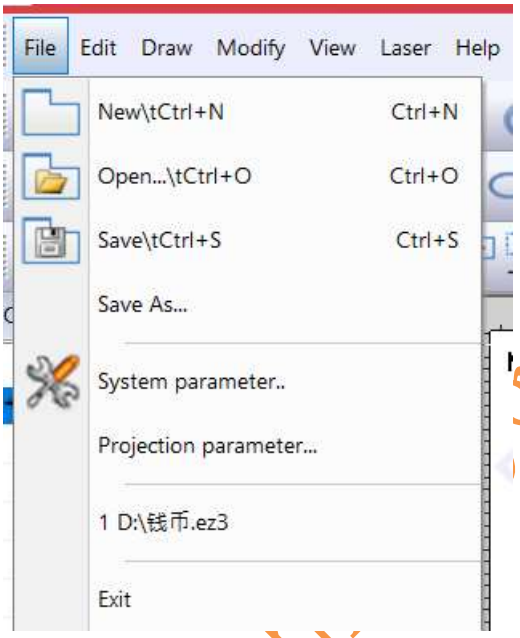


Fig 2-1 File Menu

2.1 NEW (N)

Create a new workspace view, the hot-key is“Ctrl+N”, the Shortcut icon is .

2.2 OPEN (O)

Open an .ez3 file operator saved. The hot-key is Ctrl+O,the shortcut is .

2.3 SAVE(S), SAVE AS(A)

SAVE file .the hot-key is Ctrl+S, the shortcut is .

2.4 System Parameter

Set field size, auto save, language, unit, and password, Etc. the shortcut is .

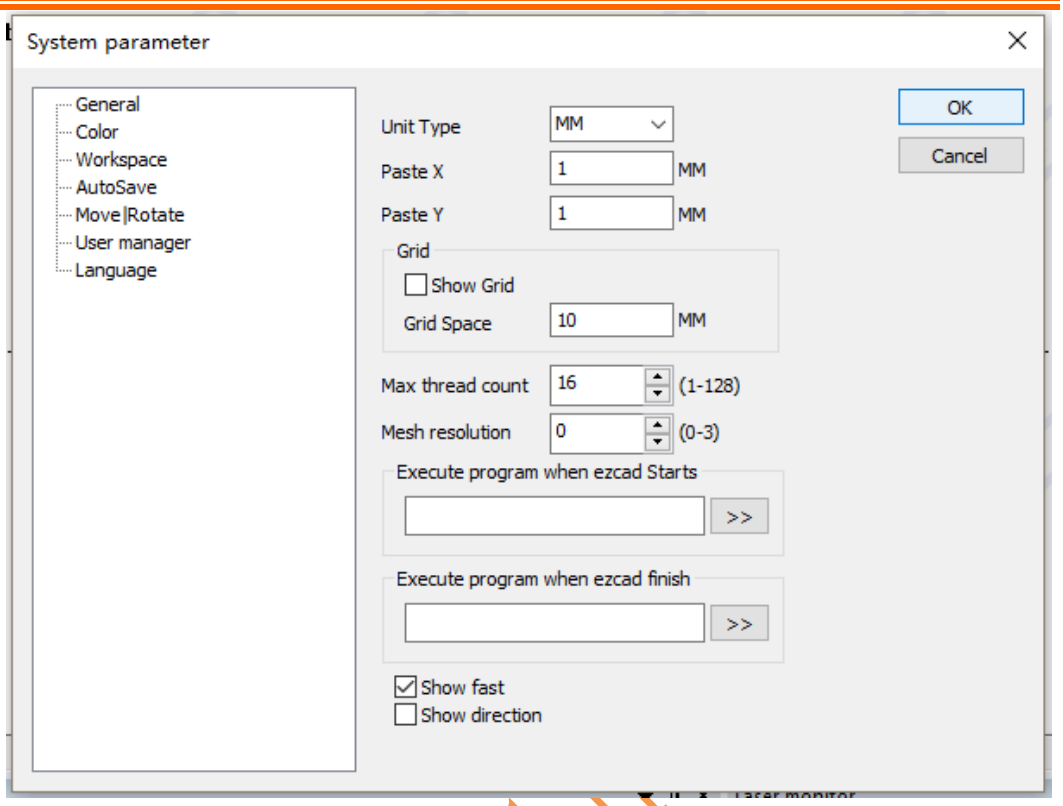


Fig 2-4 System Parameter

2.4.1 General

In the general parameters, some common parameters are set.

Unit type： Refers to the type of unit used by the software to display data such as coordinates and distances. Options are mm and inches. Modification of the unit type requires restart of the software to take effect on the changes.

Paste X /paste Y： Specifies the offset of the newly generated object (the object being pasted) relative to its original position when you use the copy/paste function.

Grid ： Whether to display the view grid in the work area.

Grid space： The distance between grid lines.

Enable markup murexes（EZCAD3MUTEX_MARKING）： If this option is used, EzCad3 will create a kernel mutex object EZCAD3MUTEX_MARKING. When marking is started, EzCad3 waits for the third-party program to change the murex to the “signaled” state to start marking; after the marking is completed, EzCad3 changes the mutex to the “no signal” state. This function is used to synchronize EzCad3 with other programs.

Execute program when EZCAD start/finish： When Ezcad3 is started or closed, a set of executable programs provided by a third party is opened at the same time for realizing some related operations.

Show fast： In the software, zoom the display when marking content.

Show direction： Displays the curve laser marking path. As shown in Figure 2-5, the machining direction will be displayed on the object to be marked.

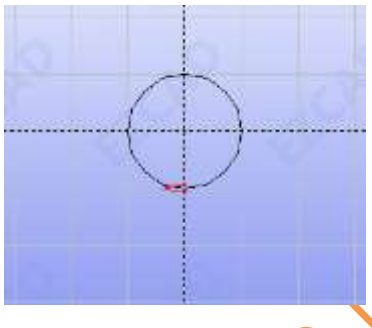


Fig 2-5 Show curve direction

2.4.2 Color

Background, workspaces, guides, grids display colors in software. As shown in Figure 2-6.

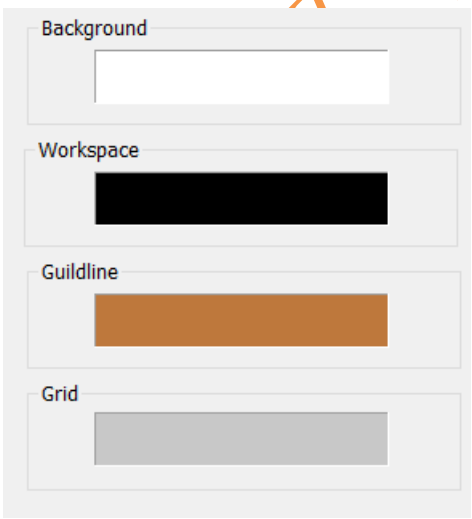
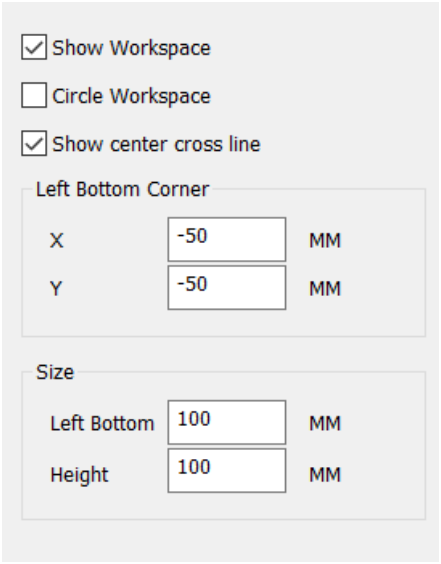


Fig 2-6 Color



2-7 Workspace setting

2.4.3 Workspace

Set the properties of the workspace, including the size and location of the workspace. As shown in Figure 2-7.

Workspace refers to the rectangular frame section in the main interface. The rectangular box corresponds to the effective working area of the actual equipment. All the graphics drawn in the rectangular box will be processed during actual processing. The figure outside the rectangular frame may not be processed due to the actual processing size of the galvanometer.

2.4.4 AutoSave

Set the time interval for AutoSaved of Ezcad software. Take 1 minute as the basic unit. Autosaved files are saved in the AutoSave.Ezd file in main directory. As shown in Figure 2-8.

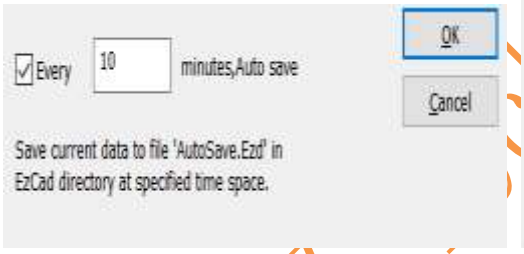


Fig 2-8 Autosave dialog

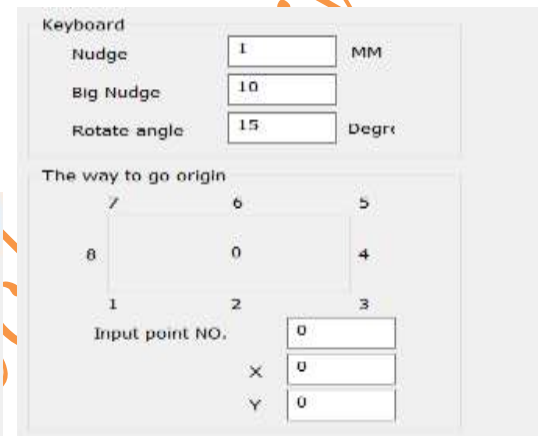


Fig2-9 move and rotate setting

2.4.5 Move and Rotate

As shown in Figure 2-9

Nudge：The distance that the object moved when pressing direction keys each time.

Big nudge：indicates the number the user wants to time the Nudge distance so as to achieve further each time when synchronously press direction keys and “shift” key together

Rotate angle: the angle the object rotates each time when press direction keys and “ctrl” key together

The way to go origin：When use “Put to origin” function, which point of the object should be put on the origin.

Input point NO：Zero reference point. When the setting is as shown in Figure 2-10, the object is selected. Click go center in software, the object is centered on the zero coordinate (20, 0) at coordinate 1.

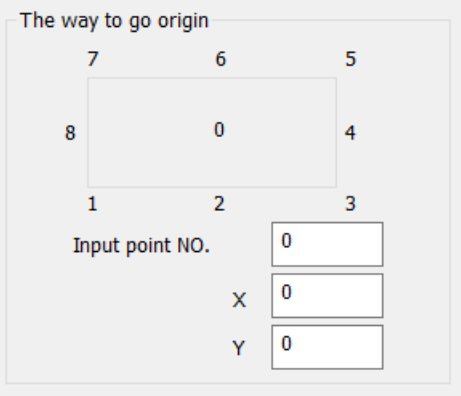


Fig 2-10 move and rotate setting

2.4.6 Language

Shows the language packs that are currently installed on LANG folder. You can modify the interface language in Ezcad software here. The choices made here do not take effect until the next time you start the software. As shown in Figure 2-11.

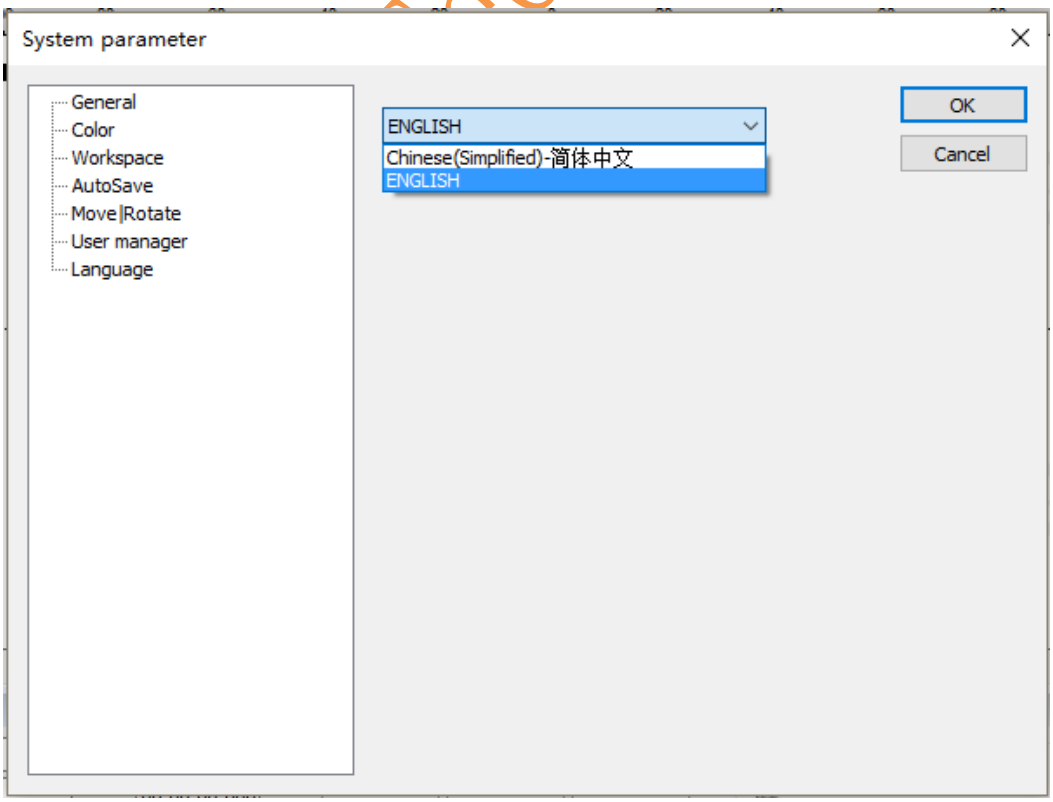


Fig 2-11 Language setting

2.5 Projection Parameter

Connect the external projection device. Keep the direction both scanner and projection same. Enable the project watch and click F4 to preview.

When using, the direction of projection of the projector needs to be the same as that of the galvanometer. After enabling projection observation, click F4 to preview the marked content with the projector.

Width：Marks the width of the grid. Used for projector size and distortion correction.

Height：Mark the height of the grid. Used for projector size and distortion correction.

Row, Col：Mark the number of correction grid rows and columns.

Start correction：Start to calibrate the position of each grid point.

Test projection correction：Project the actual effect of the calibration, if the projection of the calibrate grid and the actual marking of the grid coincide, the correction is valid, otherwise need to re-calibration.

Offset：Adjust the overall X and Y position of the projected content.

Projector calibration procedure

In Figure 2-12, fill in the calibration area size, the number of rows and columns, and click on the marking projector to calibrate the grid lines.

Click "start calibration", remove the "select all points" check, use Ctrl+ direction selection, adjust each point of the projected grid by up, down, left, right, and make the grid of the projection and the actual laser marking grid point completely Coincidence, click OK to save the projector calibration data.

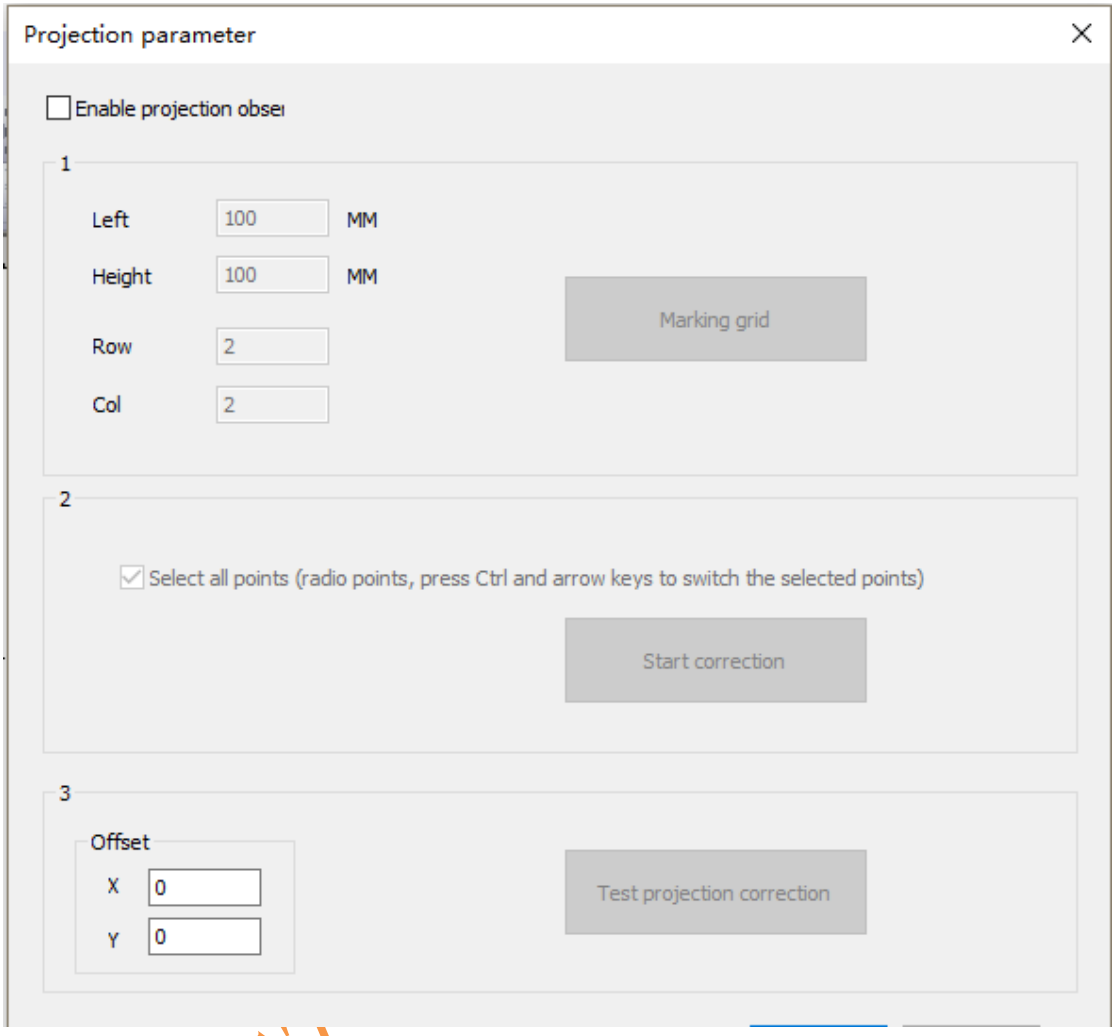


Fig 2-12 Projection

2.6 Recent documents

After the "System Parameters" menu, the files recently opened by the user are listed. The maximum number of listed files is 4. If the software has never opened/saved any ezd file, no file is listed and the menu item is not available.

2.7 Exit(X)

Exit Ezcad software. If you have unsaved files, you will be prompted to save them.

2.8 Object list

On the left side of Ezcad is object list, as shown in Figure 2-13. When processing, the system executes the objects in the list in order. User can select the object to directly drag the arrangement order in the list. User can also rename the

object by double-clicking the object name in the object list.

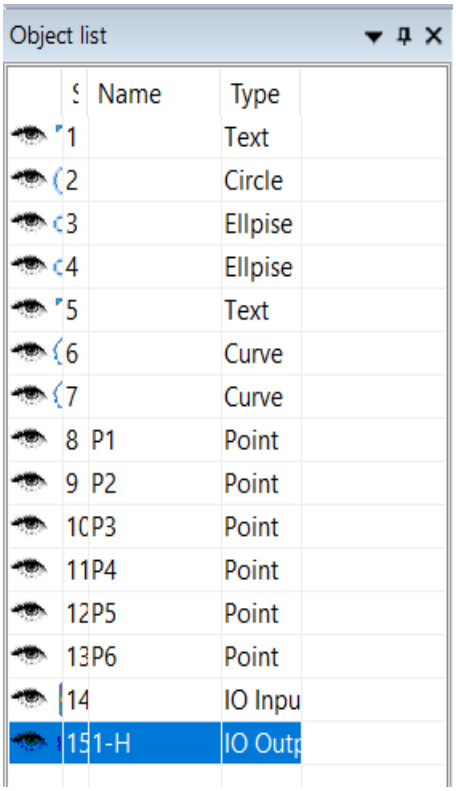


Fig 2-13 Object list

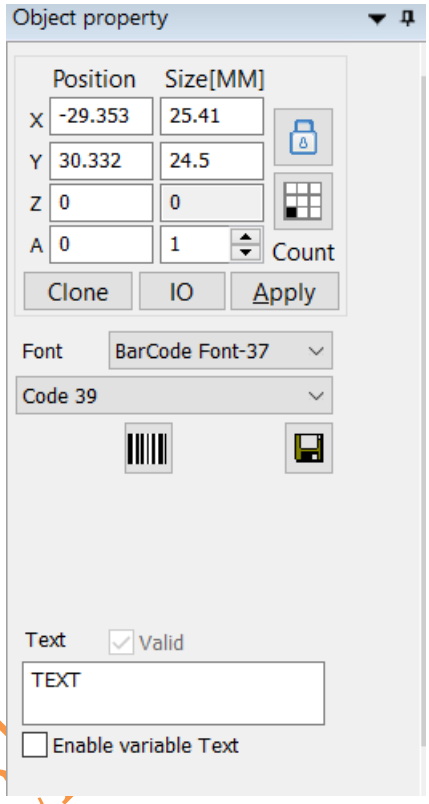


Fig 2-14 Object property

2.9 object property

On the left of Ezcad is the object parameter, as shown in Figure 2-14.

Position X： Indicates the X coordinate of the currently selected object. The coordinates can be specified as the coordinates of the lower left corner of the object, or as the coordinates of the center of the object. Use the coordinate information button to set the specific meaning of the position coordinates. Figure 2-14 shows the X coordinate of the lower left corner of the selected object.

Position Y： Indicates the Y coordinate of the currently selected object. The coordinates can be specified as the coordinates of the lower left corner of the object, or as the coordinates of the center of the object. Use the coordinate information button to set the specific meaning of the position coordinates. Figure 2-14 shows the X coordinate of the lower left corner of the selected object.

Position Z: Indicates the Z coordinate of the currently selected object.

Size X: Indicates the width of the currently selected object.

Size Y: Indicates the height of the currently selected object.

 : Indicates that the current aspect ratio is locked. If the user changes the XY size, the system ensures that the aspect ratio of the new size does not change.

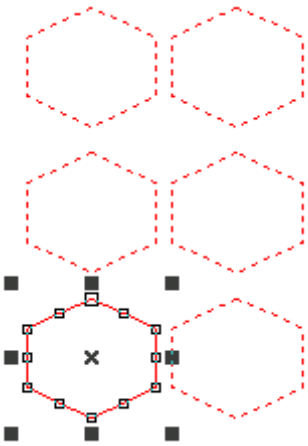


fig 2-15 X=3 Y=2 clone

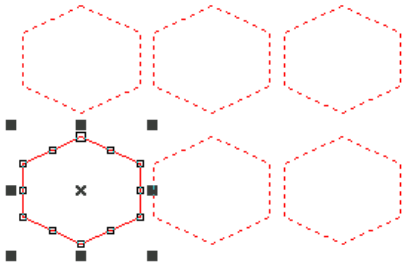


fig 2-16 X=2 Y=3 clone

 : coordinates information, position X and the position Y correspond to the coordinates of the points of the object. After clicking the button, the user can select the object reference position coordinates.

Clone： Copy the current object to the specified position.

Figure 2-15 shows the object of clone number X=3, Y=2.

Figure 2-16 shows the object of clone number X=3, Y=2.

Increment： Refers to the row spacing and column spacing specified by the user.

 Array direction as a horizontal row priority

 Array direction is vertical priority

 Array in single directional array

 Arrays are dual directional arrays

3 Edit

The "Edit" menu implements the editing operation of the graphics. See Figure 3-1.

Fig 3-1 Edit

3.1 Undo Modify/Redo

In a graphical edit operation, if the current operation is not satisfied, the "undo" can be used to cancel the current operation and return to the state of the previous operation; after the current operation is revoked, the "redo" function can be used to restore the canceled operation. This is one of the most common functions of editing.

 corresponding to “undo”,  corresponding to “redo”.These two operations have shortcut keys Ctrl+Z and Ctrl+Y.

3.2 Cut (T)/Copy(C)/Paste (P)

"Cut" deletes the selected graphic objects and copies them into the system clipboard, and then copies the graphic objects in the clipboard to the current figure with the "paste" function. “Copy" copies the selected graphic objects to the system clipboard while preserving the original graphics object.

The corresponding keys of "cut", "copy" and "paste" are respectively Ctrl+X，Ctrl+C，Ctrl+V.

3.3 Combine/Uncombined

The "combine" removes all the curves of the selected objects and combines them together as a new curve combination. This combined graphical object can be selected, copied, pasted, and set object properties as well as other graphic objects. For example, the original figure is round or rectangular, and the figure after "combine" is handled according to the curve, and it will be converted into a curve after being treated as "Uncombine".

The "Uncombine" reduces the combined object into a single curve object.

 corresponding to "combine",  corresponding to "Uncombine".

3.4 Group/ungroup

The "group" preserves the original attributes of the selected graphic objects and combines them as a new graphical object. This combined graphical object can be selected, copied, pasted, and set object properties as well as other graphic objects. The "unGroup" reverts the objects of the group to the state before the assembly.

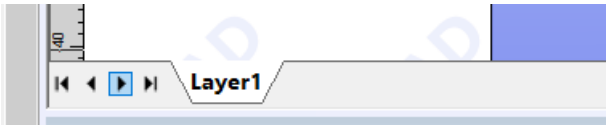
 corresponding to "group",  corresponding to 'ungroup'.

3.5 Ungroup text

Text is separated into groups by character, and the object name of the group is the character name.

3.6 Add layer/delete layer

'add layer'adding multiple layers for the software, can edit and process the content and process in the new layer. Each layer can be controlled by double click of the left mouse button to change the IO port. Double click 'Layer1'



Then can set IO in layer1 as fig 3-2.

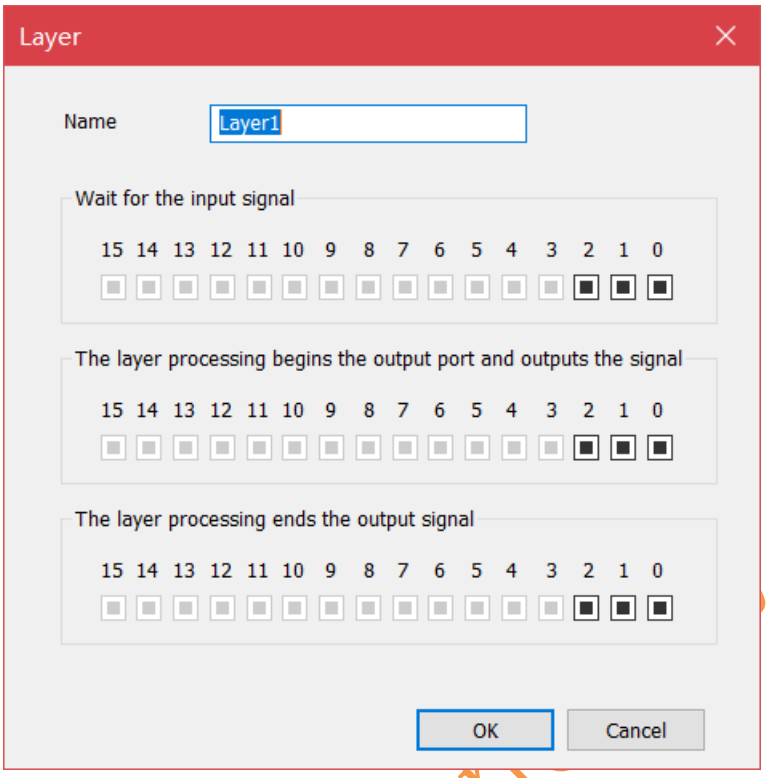


Fig 3-2

'delet layer' for delet current layer.

 corresponding to 'add layer',  corresponding to 'delet layer'.

3.7 Select

 select all object: select all the objects in the current workspace

 select all the unselected：select all the unselected objects in current workspace.

 delete selected object：Delete current selected objects.

 lock picked object：It means that you can't edit any of the current objects, and there will be some lock icons around the object. 。

 Unlock picked object ：Release the locked object that is currently selected

 unlock all object：Remove all locked objects

 put to origin：Indicates that the selected object is placed at the original

point

 the x center is placed on the Y axis：The center coordinates of the X direction representing the selected objects are placed on the Y axis.

 the y center is placed on the X axis：The center coordinates of the Y direction representing the selected objects are placed on the X axis.

 Mirror X：Represents the vertical centerline image of the currently selected object.

 Mirror Y：Represents the horizontal centerline image of the currently selected object.

 Rotate（as fig 3-3）

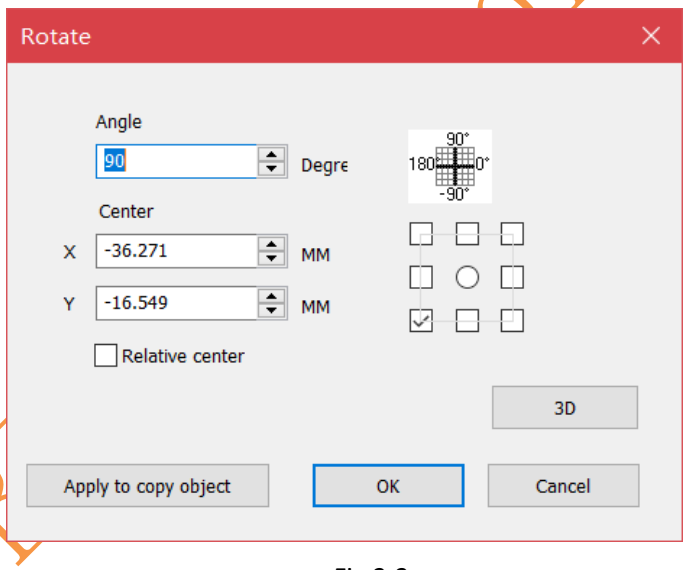


Fig 3-3

angle：Indicates the angle at which the currently selected object is to be rotated.

center： Indicates the center point of the currently selected object to be rotated.

Relative center： Click it, rotate center is object center.

Apply to copy object：Copy the current selection and rotate it to a new location.

3D：Current selected object rotate relative to axis x, y, z, click 3D pop up window in fig 3-3. As follow fig 3-4 show.

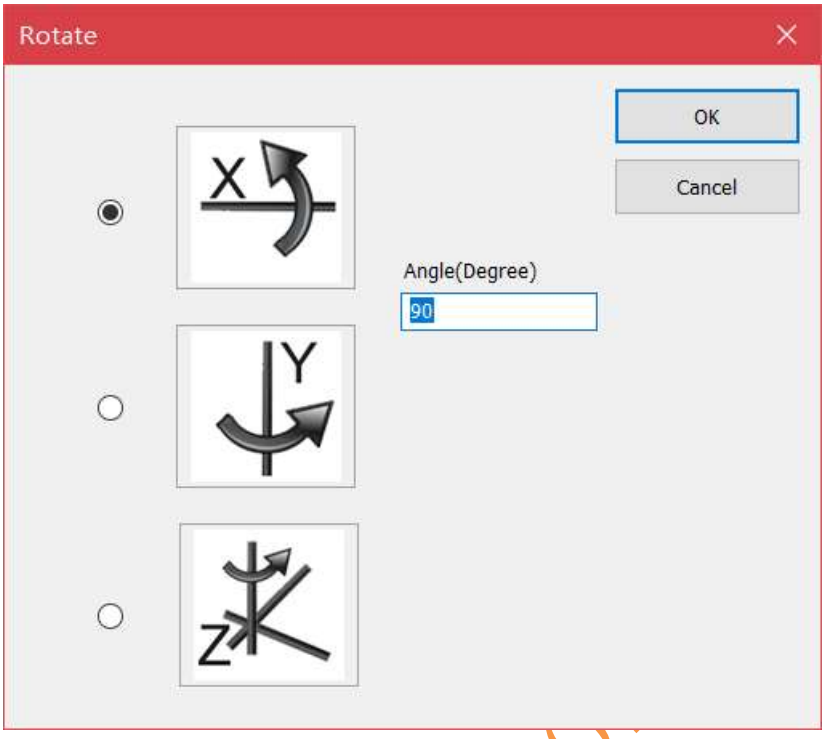


Fig 3-4

3.8 Node

The graphics drawn by EzCad3 software are all vector graphics. Therefore, you can modify the characteristics of the graphics to adjust the shape of the graphics.

If you want to use node editing features, select the icon in the drawing toolbar. With a mouse click on an object in the workspace, the object shows all its nodes. The nodes are represented by boxes, with the larger one indicating the starting point of the curve. At the same time, the node editing toolbar will appear. As shown in Figure 3-5(A).

Fig 3-5（A）

Fig 3-5（B）

 : The mouse clicks on any non-node position on the curve where a solid black circle dot appears. Select the "Add node" command to add a node at this point.

 : Click any node on the curve, the node is painted black, select "Delete node "command, the node is deleted

 : When two nodes are close, drag the two nodes and select the "unite node" command, the two nodes are merged into one node.

 : Clicks on any node on the curve. The node is painted black. Select the "separate node" command and the node is split into two separate nodes.

 : Click any point between two adjacent nodes on the curve and select the "convert to Line" command. The curve (which may be a straight line, arc or curve) between these two nodes is converted into a straight line.

 : Click any point between two adjacent nodes on the curve, and select the "convert to arc" command, then the curve between these two nodes turns into an arc.

 : The mouse clicks any point between two adjacent nodes on the curve and selects the "convert to curve" command. The curve between these two nodes is converted to a curve.

 : Click any node on the curve and select the "transition sharply" command, the node becomes a sharp point, and the curve turns more.

 : Click any node on the curve and select the "transition smoothly" command, the node will become a smooth curve and the curve will have a small turn.

 : Click a node with the mouse and select the "transition symmetrically" command, then the curve around the node is symmetrized.

 : Select the "change curve Direction" command, the start and end of the curve are exchanged and the direction of the curve is changed.

 : Select the command and the curve will close automatically.

 : Drag and drop more than two nodes and select the command. The Alignment dialog box appears. You can select the alignment of these nodes and align them with the top, bottom, left, or right sides.

Note: Text objects and padding objects cannot edit nodes; but path text can edit the node of a path.

3.9 Draw menu

Draw the normal objects.

(a)

(b)

Fig3-6 Draw

3.10 Hatch

Support fills the specified graphics. The filled figure must be a closed curve. If you select more than one object to fill in, then these objects can be nested within each other, or are not related to each other, but any two objects cannot have intersecting parts.

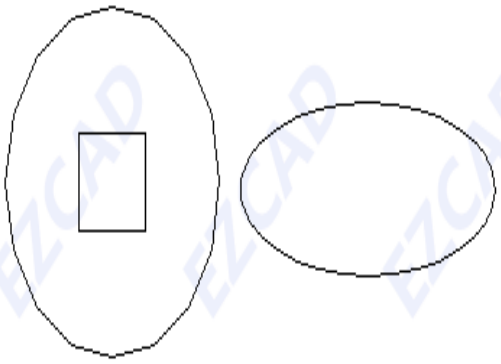


Fig 3-7 Hatch Item

Fig 3-8 Hatch

Hatch one by one：After checking, when multiple objects are filled together, the number of objects does not change, which is the same as the effect of single independent filling for each object. Otherwise, multiple objects will be combined into a single padding object.。

Mark contour：Indicates whether to display and mark the outline of the original graphic. That is, whether the filled figure retains its original outline。

Contour priority： mark contour first .

Hatch1,2,3,4,5,6,7,8： It means that there can be eight sets of padding parameters that are not related to each other for padding operations. Cross-filling can be done at any angle and each fill can support machining with six different fill types (four fill types include: one-way, two-way, circular, optimized bidirectional, and background fill. Below)

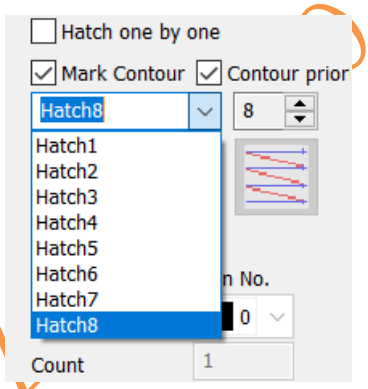


Fig 3-9

Enable：Whether to allow the current fill parameter is valid。

All calc：It is an option for multiple objects to be filled with one optimization at the same time. If this option is selected, all non-contained objects will be calculated as a whole when performing padding calculation. In some cases, the processing speed will be increased. (If you select this option, it may cause the computer to slow down.) Otherwise, each separate area will be calculated separately.

For example: draw three rectangles, line distance is 1mm, angle is 0.

Do not click 'All Calc', system will mark as the order in object list, mark hatch line in the first rectangle then mark hatch line in the second rectangle, and so on.

Click 'All Calc', mark all the hatch line at one time, mark all the hatch that on the same line.

Marking result as follow fig 3-4:

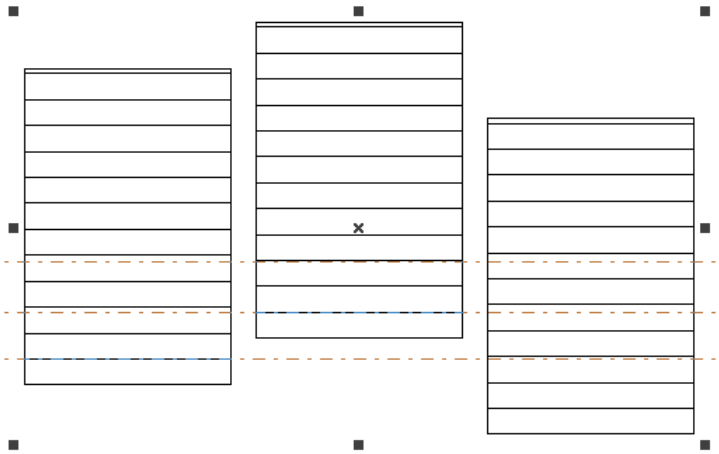


Fig 3-4(a) do not click 'All Calc', the hatch line are not in the same line

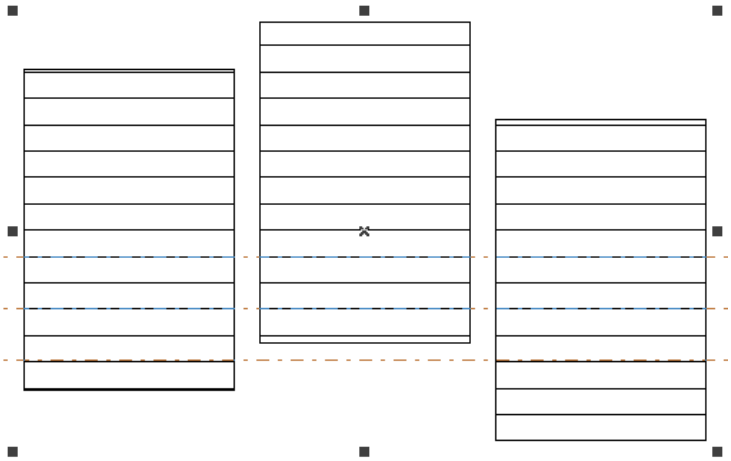


Fig 3-4(b) click 'All Calc', hatch line is in the same line

Type of Hatch: (Figure 3-5)

Hatch type

 **Unidirectional hatch:** The hatch lines will be marked from left to right.

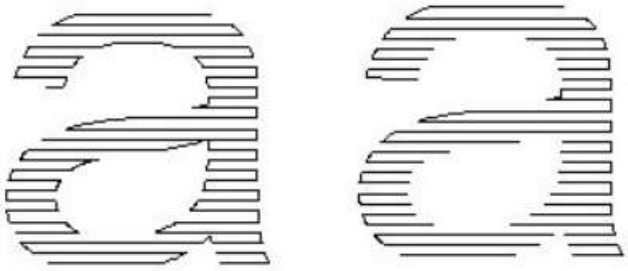
 **Bidirectional hatch:** The hatch lines will be marked from left to right first, and then from right to left.

 **Ring-like hatch:** fills objects from the outside to the inside like a ring.

 **Optimization two-way hatch**: similar with bidirectional hatch, but the end of each end connects.

 **Optimization Gong type hatch:** similar with Gong, will jump in null place.

(The left object is being filled by Unidirectional Hatch or Bidirectional Hatch, the middle object by Ring-like hatch, and the right one is Optimization two-way Hatch)



Gong type hatch　　Optimization Gong type hath

background： Fill in the curve of the object that can be arbitrarily chosen, and convert the curve into the fill line of the filled object after the curve is taken as background. (Contact JCZ for this function)For example, the following steps are taken to place the spiral as the background of "JCZ":

（1）Draw "JCZ" and helix, move "JCZ" to the helix, as shown in Figure 3-12.

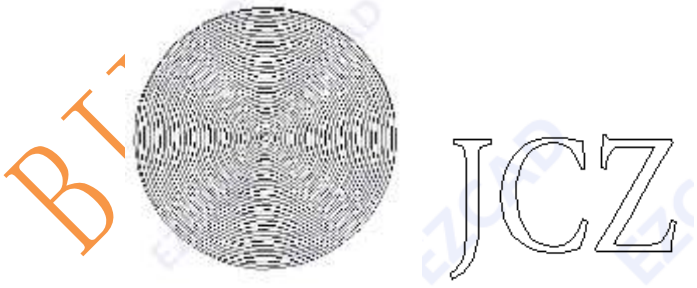


Fig 3-12（A）

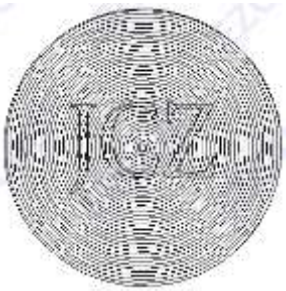


Fig 3-12（B）

（2）Select "JCZ", fill in the background filler, click ackgrour on the 3-12 (C) dialog box,

Select the helix, click OK.

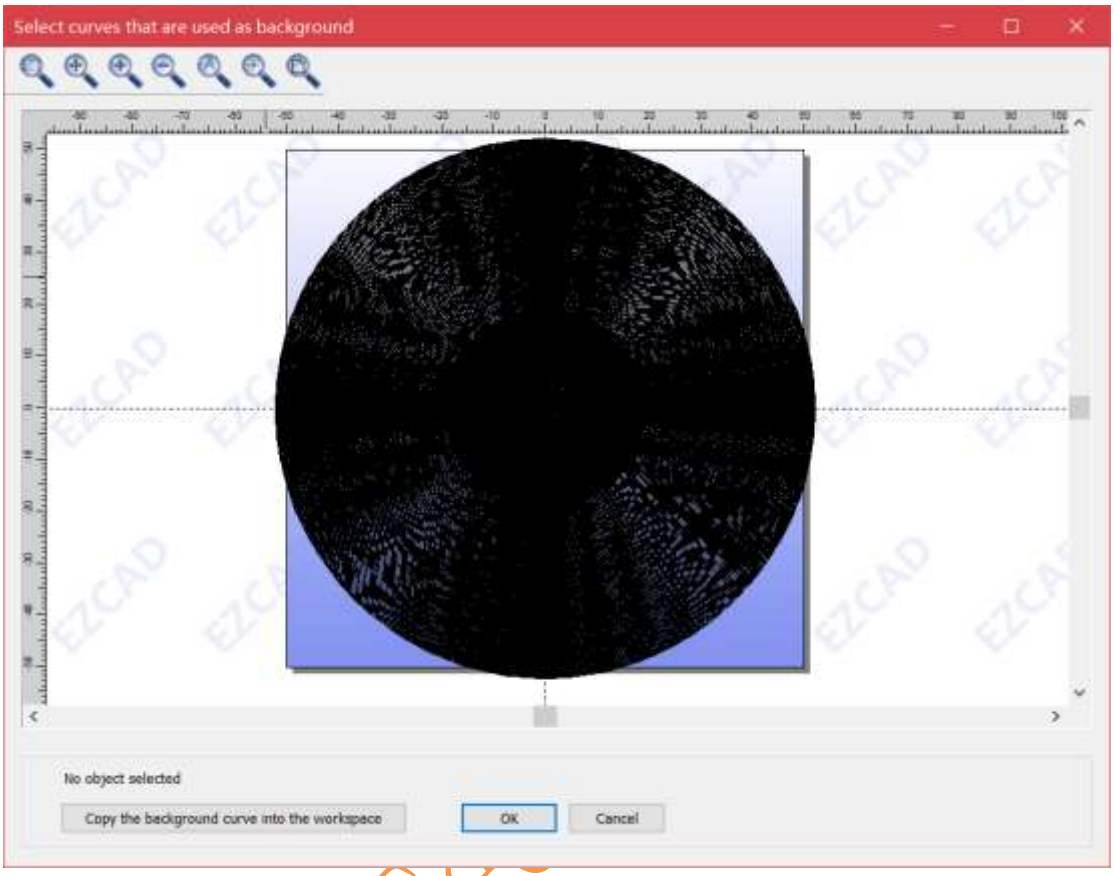


Fig 3-12（C）

（3）actual background filling, as shown in 3-12 (D)

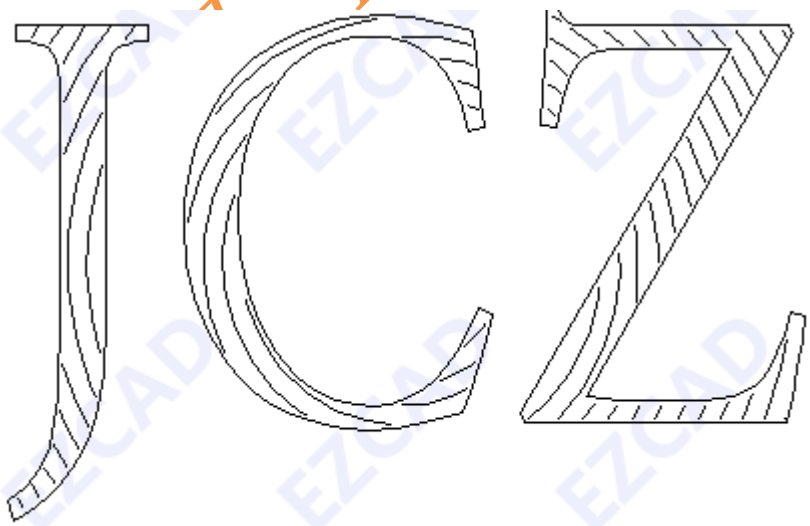


Fig 3-12（D）

4 Draw Menu

4.1 Draw Menu-Select

Select cursor is used to select and edit objects within your project and can move or re-size objects.

4.2 Draw Menu-Node

Node cursor is used to select and edit curved objects. Clicking once places a temporary node on the object, which can change the shape of the object.

4.3 Draw Menu-Point

Drawing a point in the workspace is the simplest drawing operation. Select the "Point" command and the mouse will change to a cross shape. Click the left mouse button in the appropriate place in the workspace to draw a point at that position. When drawing is complete, click the right mouse button, you can select to stop drawing, or click "input coordinates" to draw a point, after drawing; you need to right click to select "end".

4.4 DrawMenu-Line（L）

To draw a straight line, select the "Line" cursor in the drawing menu or click the  icon. The mouse changes to a cross shape. Click the left mouse button in the appropriate place in the workspace. This is the starting point of the line. Drag The mouse, you can see a straight line from the starting point, to the appropriate position and then a single mouse left button, here is the end of the line, and then a single right click, select this as the end, it will end the painting.

Under the draw curve command, click the right mouse button to select the coordinate position can directly input the coordinate value of the point.

There are three ways to represent the coordinates of a point:

Absolute coordinate position:

If "100,100" is entered, the actual absolute coordinate position of the target point is (100,100), and the input coordinate is to switch the input method to English.

4.5 DrawMenu-Curve（R）

To draw a curve, select the Curve command or click  icon.

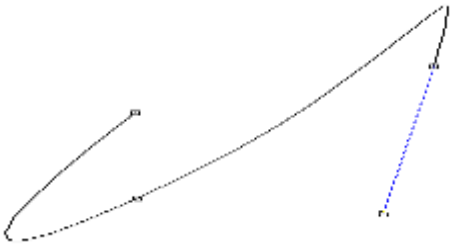


Figure 4-2 Draw Curve

Under the draw curve command, click the left mouse button to place the node. At the end, press the right mouse button to end the draw directly or select close end.

4.6 DrawMenu-Rect

To draw a rectangle, select the Rect cursorin the drawing menu or click the  icon.

Under the drawing rectangle, hold down the left mouse button and drag to draw a rectangle.

Under the drawing rectangle, hold down the left mouse button while holding down the CTRL key on the keyboard and dragging can draw a square.

After selecting the rect, the rectangle property shown in Figure 4-3 will be displayed in the property toolbar.

Figure 4-3 Rectangle property

Roundness: The degree of smoothness of each corner of the rectangle. If the degree of smoothness is 100%, the rectangle becomes a circle.

All Corner Circles: When this function is enabled, when the user changes the roundness of a certain corner, the remaining three corners will increase the corresponding roundness.

Note: After modifying the parameters in the property, be sure to click the "Apply" button to make the modified parameters take effect. The same applies below will not be repeated.

4.7 DrawMenu-Circle（C）

To draw a circle, select the circle command in the drawing menu or click the  icon. Under the draw circle command, press the left mouse button and drag to draw a circle.

After the circle is selected, the circle property shown in Figure 4-4 will be displayed in the property toolbar.

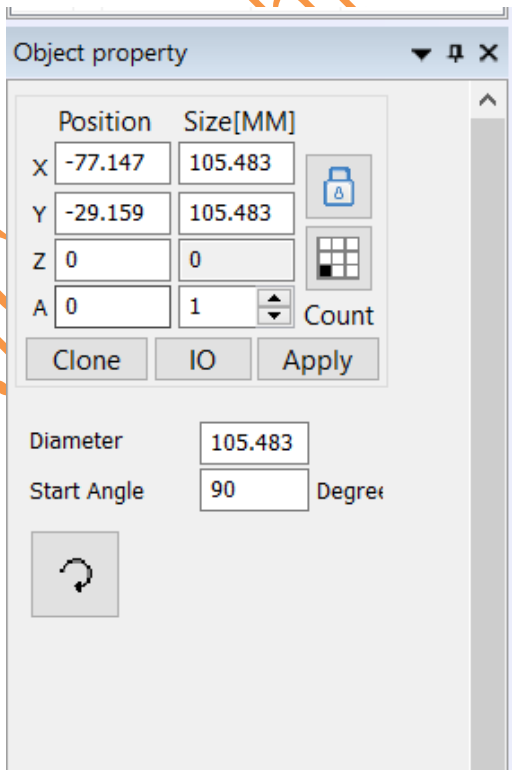


Figure 4-4 Circle property

Diameter: refers to the diameter of the circle.

Starting angle: refers to the angle of the starting point of the circle with respect

to the center of the circle.

 Indicates that the current circle's machining direction is clockwise.

 Indicates that the machining direction of the current circle is counterclockwise

4.8 DrawMenu-Ellpise

To draw an ellipse, select the Ellipse command from the Draw menu or click the  icon.

Under the draw ellipse command, press the left mouse button and drag to draw the ellipse.

Under the draw ellipse command, press the left mouse button while holding down the CTRL key and drag to draw a circle.

After selecting the ellipse, the ellipse property shown in Figure 4-5 appears on the Properties toolbar.

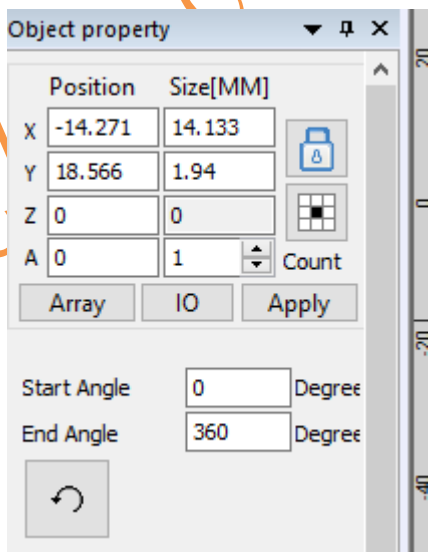


Figure 4-5 Ellipse property

Starting angle: refers to the angle of the starting point of the ellipse with respect to the center of the circle.

End angle: refers to the angle of the ending point of the ellipse with respect to the center of the circle

 Indicates that the direction of the current ellipse is clockwise.

 Indicates that the direction of the current ellipse is counterclockwise

4.9 DrawMenu-Polygon

To draw a polygon, select the "Polygon" command in the drawing menu or click the  icon.

Under Draw Polygon, hold down the left mouse button and drag to draw the polygon.

After selecting the polygon, the property of the polygon shown in Figure 4-6 are displayed in the Properties toolbar.

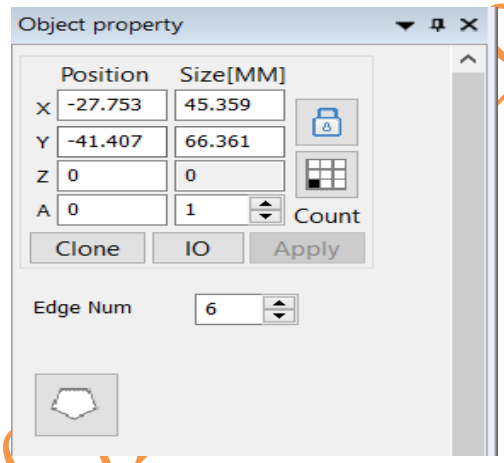


Figure 4-6 Polygon property

Edge Num: refers to the number of edges of the polygon, the minimum is 3. Generally, the number of edges selected is within 10, and the excess number of edges will make the drawn polygon more like a circle.

 :Indicates that the current polygon is an outer polygon.

4.10 DrawMenu-Text

Ezcad software supports direct input of text in the workspace. The fonts of the text include all fonts installed by the system, multiple fonts provided by EzCad, and JSF fonts created by users themselves. If you want to enter text, select the "Text" command in the drawing menu or click the  icon.

Under the draw text command, press the left mouse button to create a text object.

4.10.1 Text font parameter

After the text is selected, the text attributes shown in Figure 4-7 appear on the Properties toolbar.

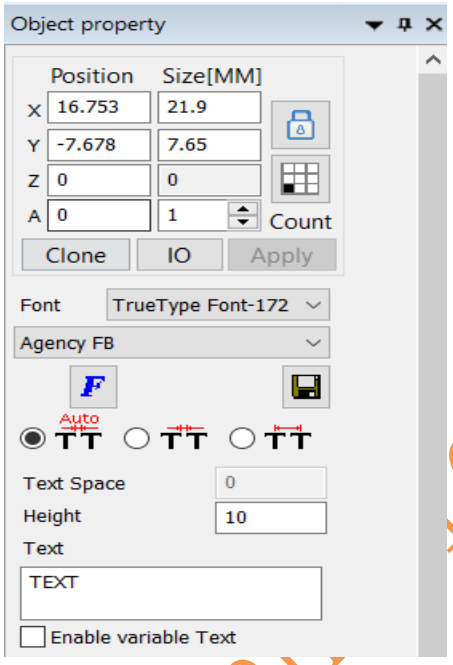


Figure 4-7 Text Property

If you need to modify the entered text, you can directly modify it in the text edit box.

Ezcad supports five types of fonts, after selecting the font type, the font list will list all fonts of the current type accordingly, as shown in Figure 4-9.

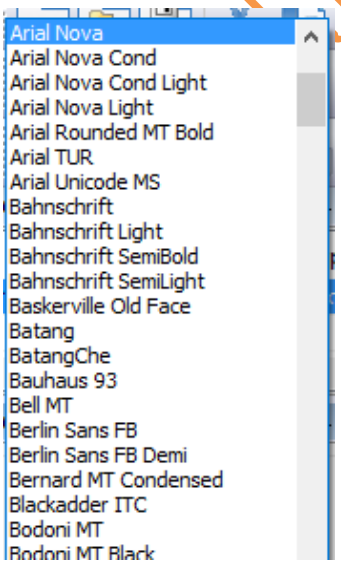


Figure 4-9 TrueType font list

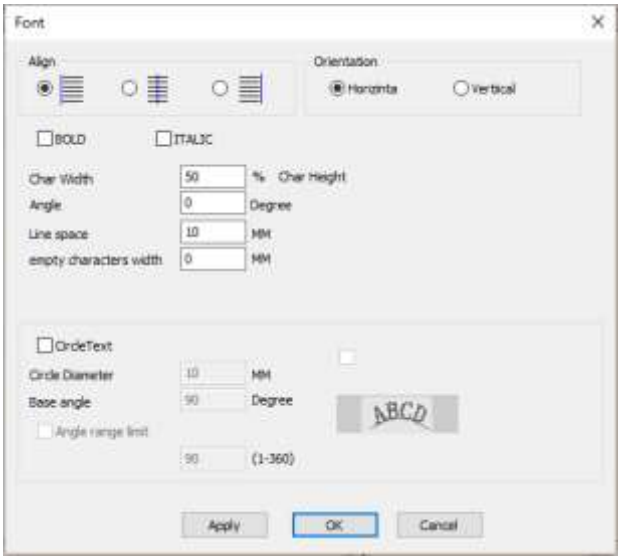


Figure 4-10 font parameter

After clicking  , the dialog box as shown in Figure 4-10 will pop up.

 The arrangement of the current text is left-aligned;

 The arrangement of the current text is centered;

 The arrangement of the current text is right-aligned;

Font width: The average width of the font.

Angle: Refers to the angle of the font.

Character spacing: Refers to the distance between characters.

Line spacing: Refers to the distance between two lines of characters.

Arc text: Ezcad supports circular text. The text is arranged along the arc track, as shown in Figure 4-11.

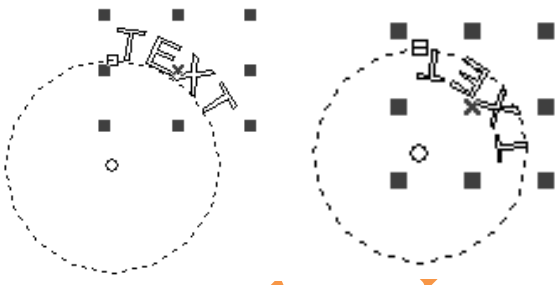


Figure 4-11 Arc text

 : Change the top or bottom of all text to coincide with the curve.

Circle diameter: refers to the circle diameter of the text alignment.

Reference Angle: The angle between the baseline of the text and the X axis.

Angle Range Limit: If this parameter is enabled, the system will shrink the text within the limited angle no matter how much text is input.

4.10.2 Bar Code Font Parameters

When the barcode font  is selected, the system will pop up a dialog box as shown in Figure 4-12.

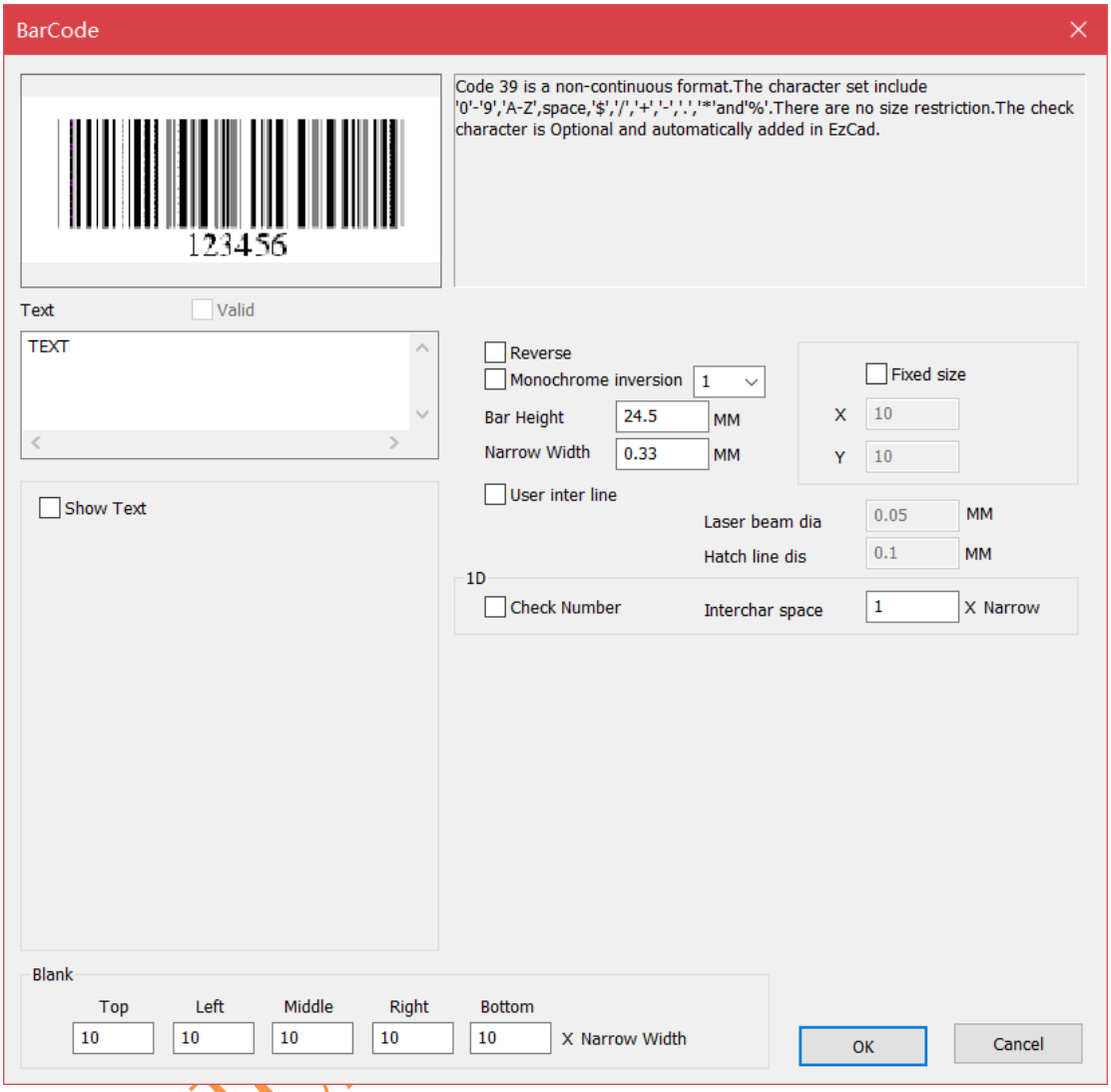


Figure 4-12 Barcode font parameter property

1 Barcode example

The bar code example picture shows the appearance picture of the bar code corresponding to the current bar code type.

2. Barcode description

The bar code description shows some format descriptions of the current bar code. If the format of the current bar code type is not clear to the user, please read the bar code description carefully to find out what type of text should be entered is legal.

3. Text

The current text to be displayed, if displayed, means that the current text can

now generate a valid barcode.

4. Display text

Whether to display text that can be recognized by people under the bar code, check the attribute of the displayed text after checking.

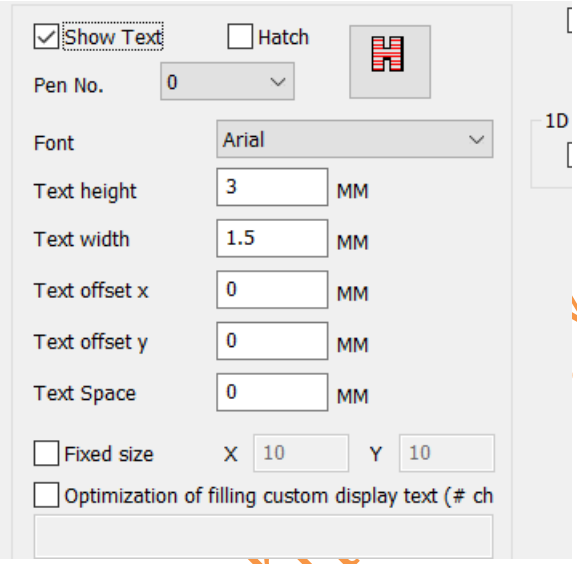


Figure 4-13

Font: The font currently displaying the text

Text Height: Character Frame Height

Text width: character width

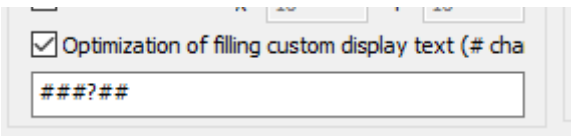
Text X Offset: The X offset of the text

Text Y Offset: Y offset coordinates of the text

Text spacing: spacing between text characters

Fixed size: Check to set the text width and height. After the setting, when the text content changes, the text width X and text height Y values can remain unchanged.

Custom display text: After checking, the user can customize the font of the currently displayed text. # is the display character,? Delete characters, add % check digits. For example, the content of the QR code is "JCZ123". If the content "JCZ23" needs to be displayed, the character "1" is deleted, the custom text is filled in as "###?##".



5. Blank

When the bar code is reversed, the size of the blank area around the bar code can be specified.

One-dimensional bar code:

This bar code is composed of one by one "bar" and "empty" arrangement, the bar code information is transmitted by different widths and positions of bars and spaces. The size of the information is determined by the width and accuracy of the bar code, wider bar code can tolerant more bars and spaces, more information. This bar code technology can only store information in one direction through the arrangement of "bars" and "empty", so it is called "one-dimensional bar code".

Figure 4-14 is the parameter setting in the interface when you select a 1D barcode.

Check code: It indicates whether the current bar code needs the check code. Some bar codes can be selected by the user to check whether the check code is required. Therefore, the user can choose whether to use the check code.

Reverse: refers to whether inversion processing, after laser marking some material is light, so that when this switch must be chosen.

Barcode height: refers to the height of the bar code.

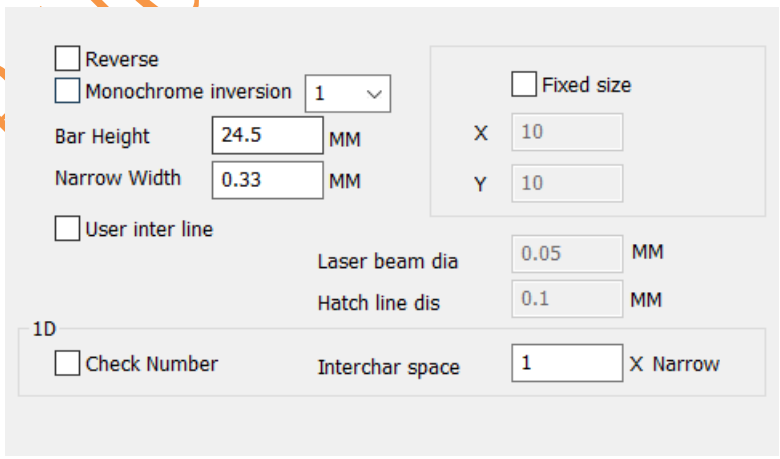


Figure 4-14 One-dimensional bar code parameter

Inter-character spacing: Individual barcodes specify a certain distance between characters and characters (for example, Code39).This parameter is used to set this value,

1. **Two-dimensional bar code:**

PDF417 barcode

Figure 4-16 PDF417 barcode

Figure 4-17 Compressing PDF417 barcode

PDF is the abbreviation of the first three letters of the English word Portable Data File, which means "portable data file. “Figure 4-16 is an example of a PDF417 code and Figure 4-17 is an example of a compressed PDF417 code.

Figure 4-18 shows the corresponding parameter settings for the PDF417 barcode.

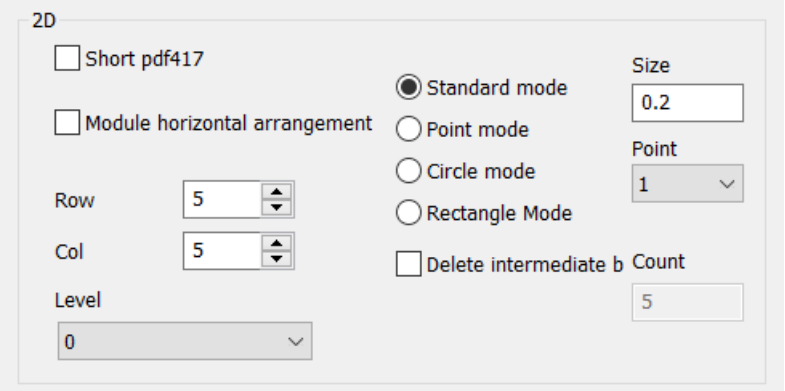


Fig 4-18

Error correction level: PDF417 error correction level, PDF417 error correction level is are 9 levels, from 0 to 8.

ank: Refers to the number of rows and columns of the PDF417 barcode. The bar code shown in Figure 4-17 is 4 rows and 4 columns.

Delete the middle block: delete the middle block, you can add some LOGO.

2. DataMatrix barcode

DataMatrix is a matrix type 2D barcode and currently has two types of Ecc000-140 and Ecc200. At present EzCad only supports Ecc200.

Figure 4-19 shows the corresponding parameter settings for the DataMatrix barcode.

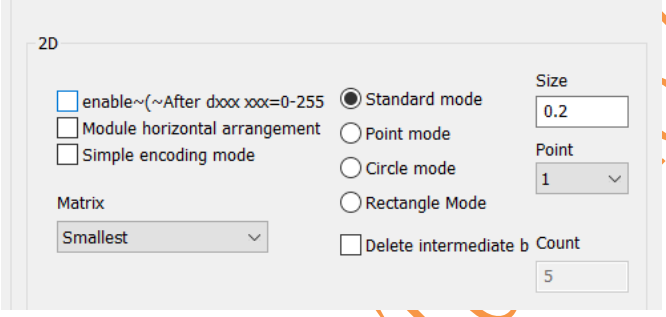


Figure 4-19 DataMatrix barcode parameters

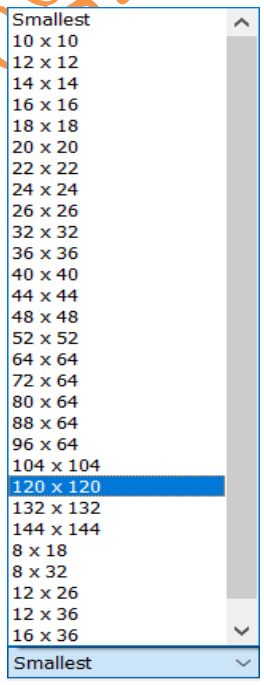


Figure 4-21 DataMatrix Barcode Module Width

Figure 4-20 DataMatrix barcode size

DataMatrix has many different fixed sizes that you can choose based on your needs. If the minimum size is selected, the system automatically selects the minimum size that can accommodate all the texts according to the text entered by the user.

4.10.3 Variable text

Click to enable the variable text. The variable text means that the text can be dynamically changed according to user-defined rules during processing.

Variable text type：Currently EzCad supports 9 types of variable text, as shown in Figure 4-22:

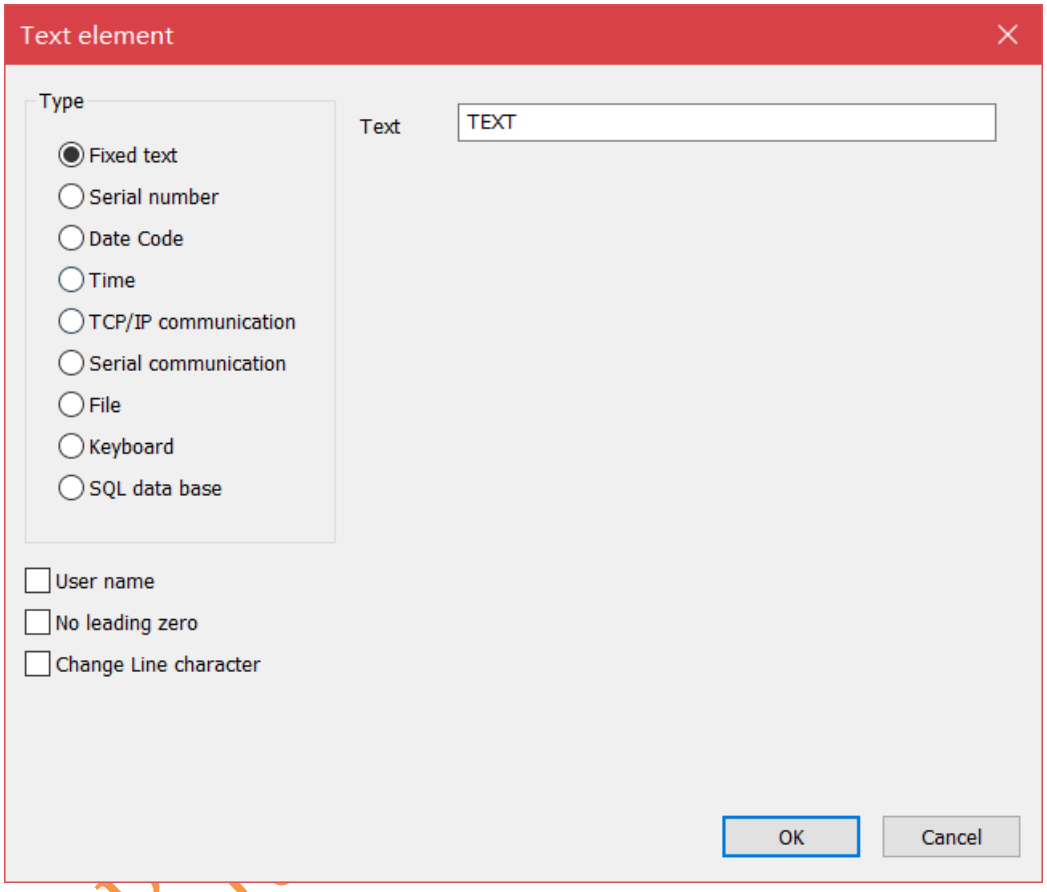


Figure 4-22 Variable text type

Fixed text: fixed characters set in advance.

Serial number: Change the text in fixed increments during machining.

Date: The system automatically retrieves date information from the computer to form new text during processing.

Time: The system automatically takes the time information from the computer to form a new text during processing.

Network port communication: The character transmitted by the network port during processing forms new text.

Serial communication: Characters transferred from the serial port form new text during processing.

File: Read the text to be processed line by line from the user-set TEXT text or EXCEL table during processing.

Keyboard: The user enters the text to be processed from the keyboard during processing.

SQL database: The characters extracted from the database during processing form new text.

Keyboard: The keyboard text is the text input by the user from the keyboard. When the keyboard text system is selected, the system will display the content as shown in Figure 4-23 and ask the user to set the keyboard text parameters.

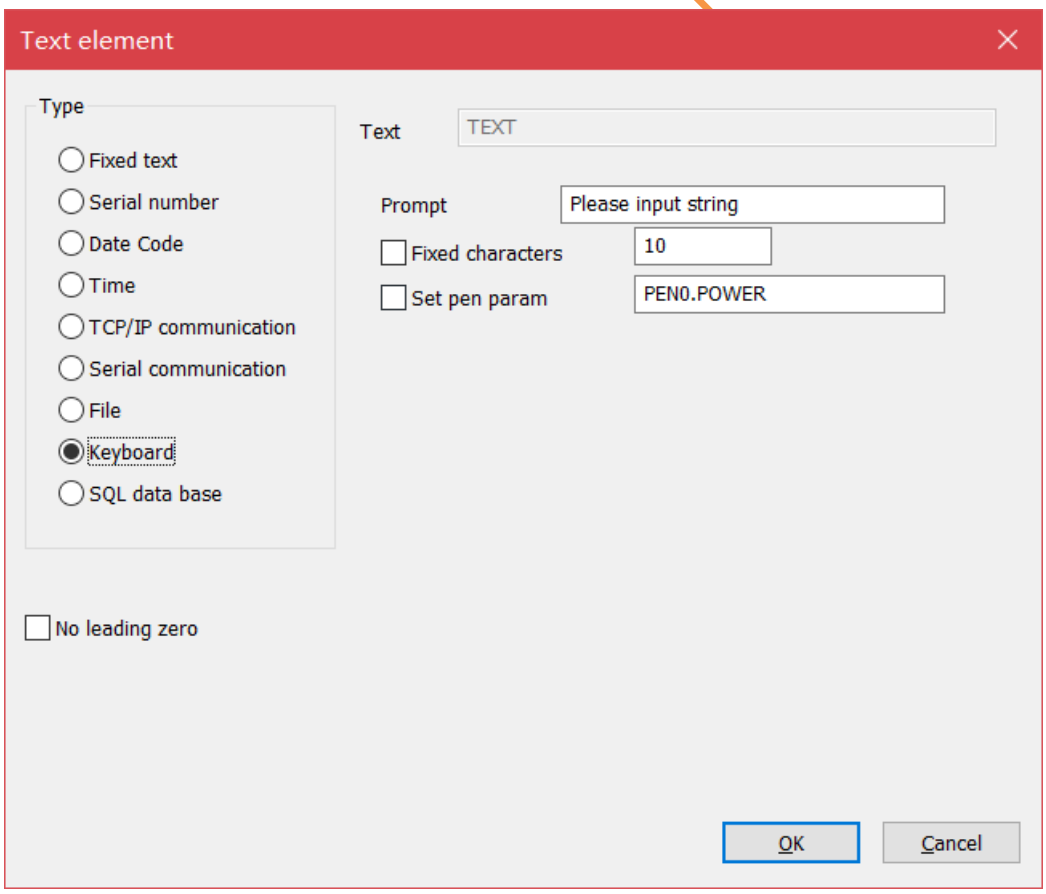


Fig4-23：keyboard parameter

Tip: It means the user is prompted to input the text to be processed during processing.

The user manually enters the text to be processed directly.

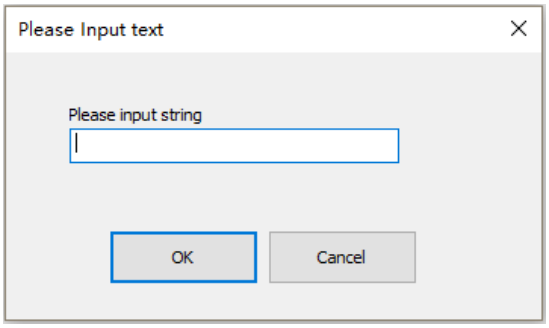


Fig4-23

Number of fixed characters: If the user selects, the number of characters input and the set number of characters are the same for marking. Otherwise, it must be re-entered.

Date: A date text object In the process of processing, the system will automatically take the date and time information from the computer to form a new text.

When the user selects the date text, a list of currently-predefined date formats is automatically displayed in the variable text dialog box, as shown in Figure 4-25. Users can select their desired date format directly from the date format list.

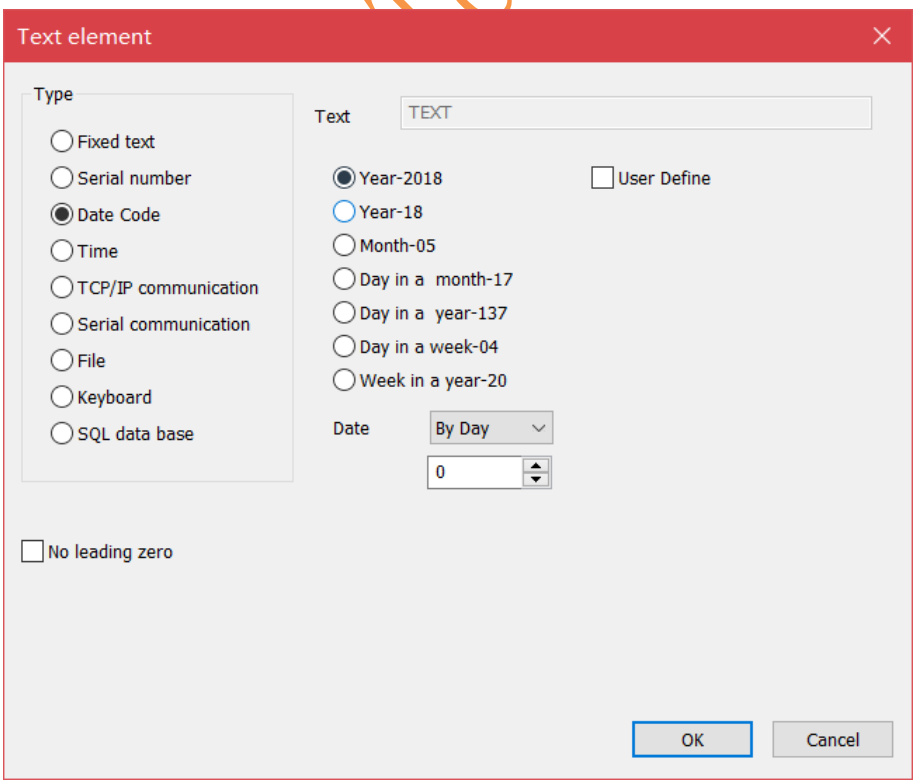


Figure 4-25: Date Format List

If you do not find the format you need in the date format list, you can also define your own special date format.

serial number

The serial number text is a fixed increment of text processing.

When the user selects the serial number text, the parameter definition of the serial number text is automatically displayed in the variable text dialog box, as shown in Figure 4-26.

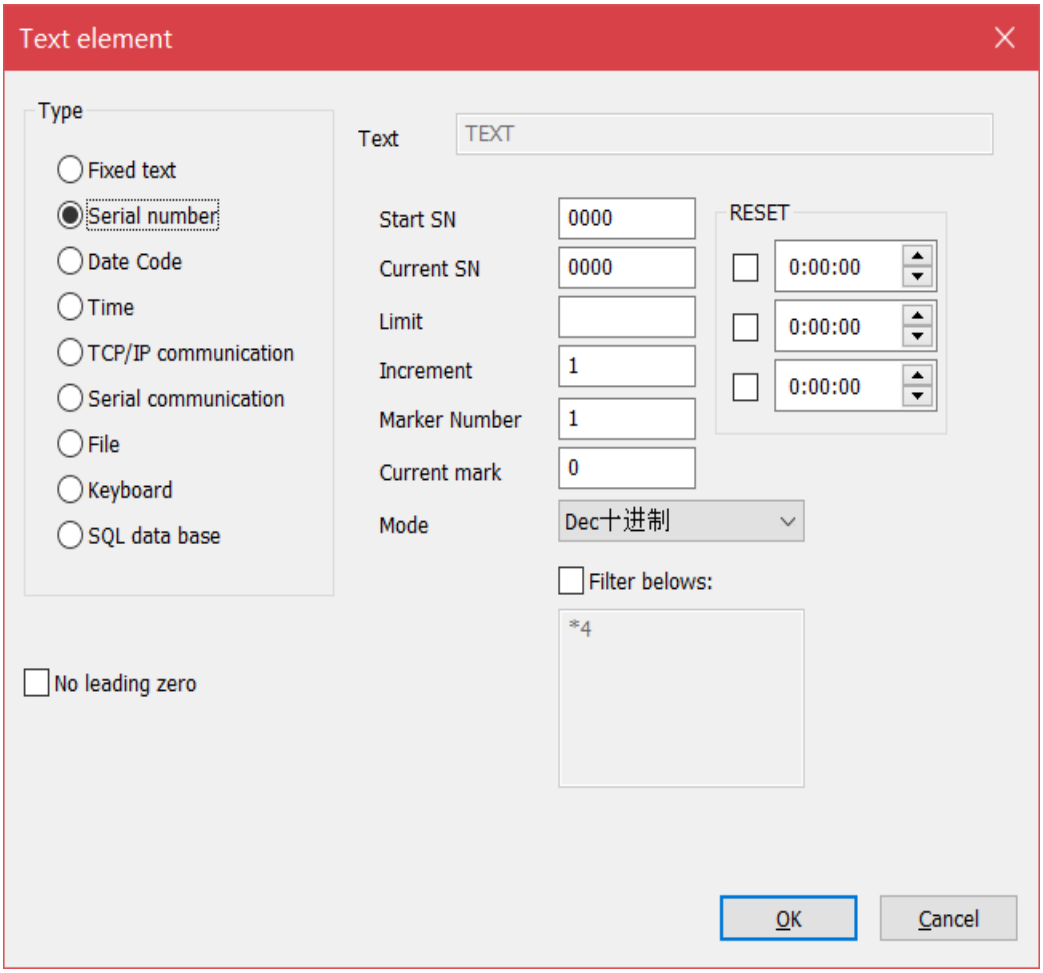


Figure 4-26 Parameter definition of serial number text

Start Serial Number: The first serial number currently being processed. It can be any ASCII character between “0-9” and “a-z” and “A-Z”.

Current serial number: The serial number currently being processed.

Serial number increment: It refers to the increment of the current serial number. It can be a negative value. When it is set to a negative value, it means that the serial

number is decremented.

If the current serial number increment is 1, if the start number is 0000, then each serial number will be added to the previous serial number, for example, 0000, 0001, 0002, 0003...9997, 9998, 9999, When the serial number reaches 9999, the system will automatically return to 0000. If a, b, c.....x, y, z, when the serial number reaches z, the system will automatically return to a. For example, A, B, C.....X, Y, Z, when the serial number reaches Z, the system will automatically return to A.

If the increment of the current serial number is 5, if the starting number is 0000, the serial number is listed as 0000, 0005, 0010, 0015, 0020, 0025.....

If the increment of the current sequence number is 2, if the start sequence number is aaaa, then the sequence number is aaaa, aaac, aaae, aaag, aaai, aaak.....

Others and so on.

Each marking number: refers to the number of each serial number to be processed and then changing the serial number.

After the user presses the extended key, the serial number expansion dialog box appears, as shown in Figure 4-27.

Reset: The specified time resets the serial number and restarts.

Filter the following symbols: You can set 20 filter conditions in the filter list and filter out some unwanted serial numbers.

If the start number is 0000, the number group whose number increment is 1 :

0000，0001，0002，0003，0004，0005……，0012，0013，0014，0015，0016…

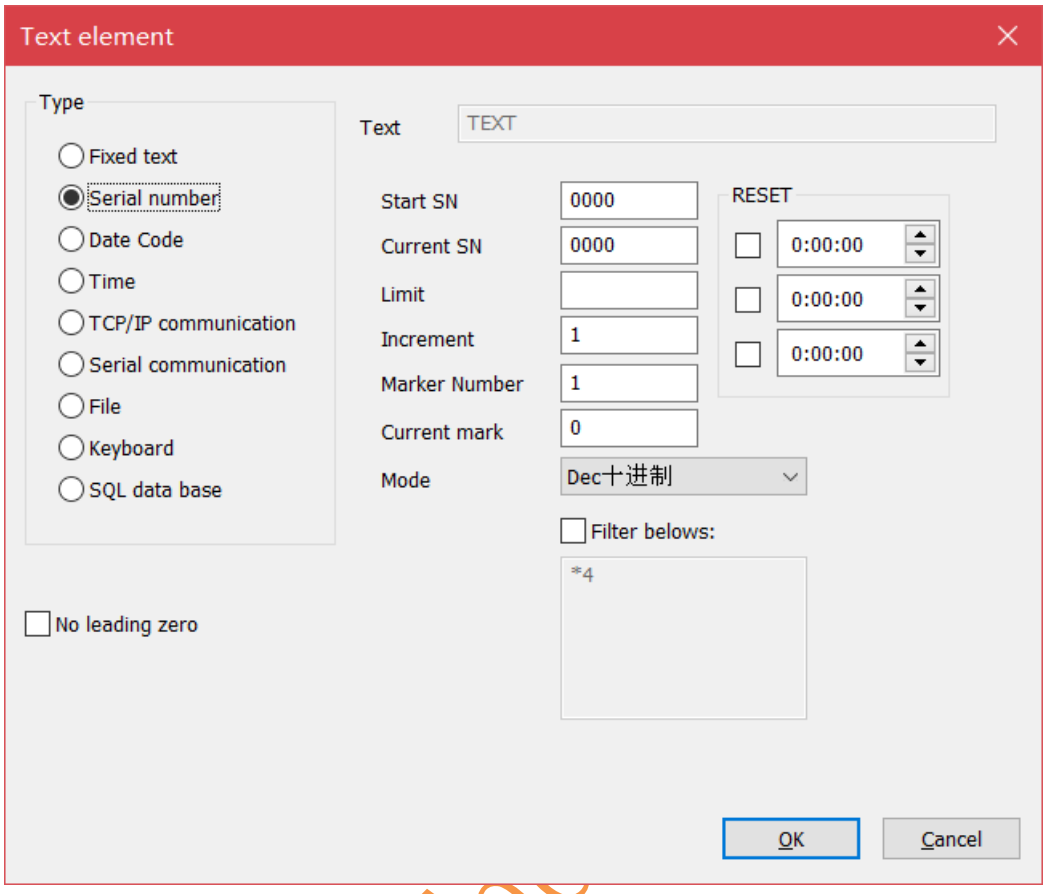


Figure 4-27 Serial Number Extended Parameters Dialog Box

If the filter condition is "*4", all serial numbers whose numbers at the end of the sequence number are "4" are filtered out, and "*" represents a wildcard symbol.

Then the serial number group becomes:

0000，0001，0002，0003，0005，0006……，0012，0013，0015，0016，0017…

If the start sequence number is 1000, the sequence number increase number is 500.

1000，1500，2000，2500，3000，3500……

If the filter condition is "2*", all serial numbers with the first number "2" are filtered out.

Then the serial number group becomes:

1000，1500，3000，3500，4000……

File

Currently EzCad3 supports two kinds of list files

1. TXT text file

When the TXT file is selected, the system will display the content shown in Figure 4-28(a). The user is required to set the file name and the line number of the current text to be processed.

Automatic reset: When processing to the end of the text file, the line number is reset to 0, and processing is started again from the first line.

2. Excel text file

When the Excel file system is selected, the content shown in Figure 4-28(b) is displayed, requiring the user to set the file name, field name, and the line number of the current text to be processed. Currently, the form of *.xls is supported.

Field Name: Refers to the text of the currently set field name in Form 1 in the Excel file table. During processing, the system automatically extracts the text to be processed from the corresponding column.

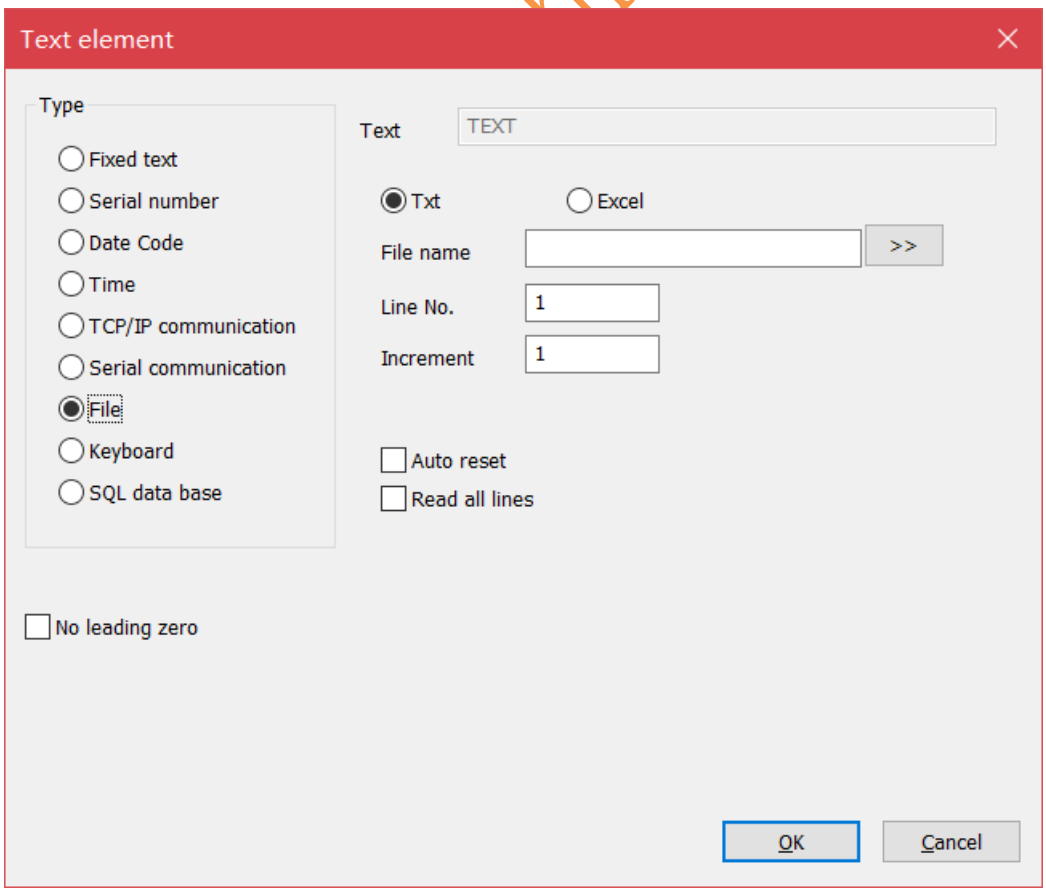


Fig4-28（a）file parameter

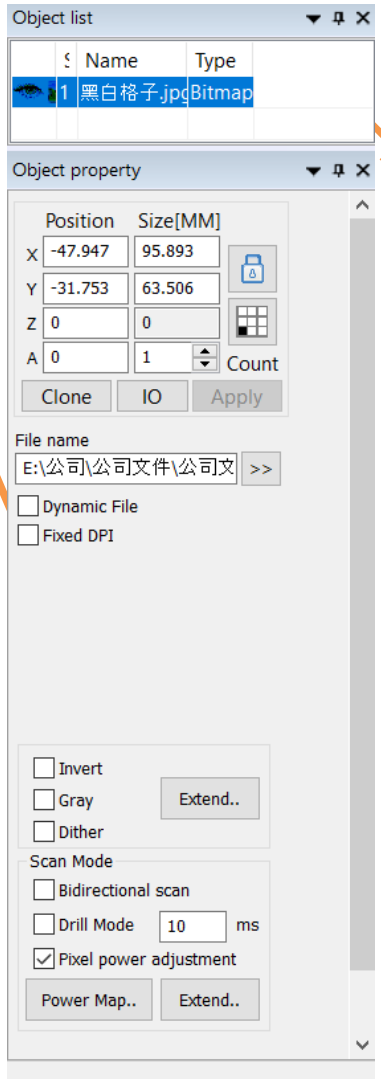
4.11 bitmap

If you want to enter a bitmap, select the Bitmap command in the Draw menu or click the  icon.

The system will pop up the input dialog as shown in Figure 4-29 and ask the user to select the bitmap to be input.

The current system supports bitmap formats: Bmp, Jpeg, jpg, gif, tga, png, tiff, Tif

After the user enters the bitmap, the property toolbar displays the bitmap parameters as shown in Figure 4-30.



Bitmap parameters shown in Figure 4-30

Dynamic input file: refers to whether or not to read the file again during

processing.

Fixed size X: The width of the input bitmap is fixed to the specified size, if it is not automatically stretched to the specified size.

Fixed size Y: The height of the input bitmap is fixed to the specified size, if it is not automatically stretched to the specified size.

Fixed position: When dynamically inputting a file, if you change the size of the bitmap.

Fixed DPI:Because the DPI value of the original input bitmap file is not fixed, this function can be used to force a fixed DPI value. The larger the DPI value, the denser the point, the higher the image precision, the longer the processing time, and the value of DPI. 10-2000 When dynamically inputting a file, if you change the bitmap size, which position is used as a reference.

DPI: Refers to how many points per inch, 1 inch is equal to 25.4 millimeters.

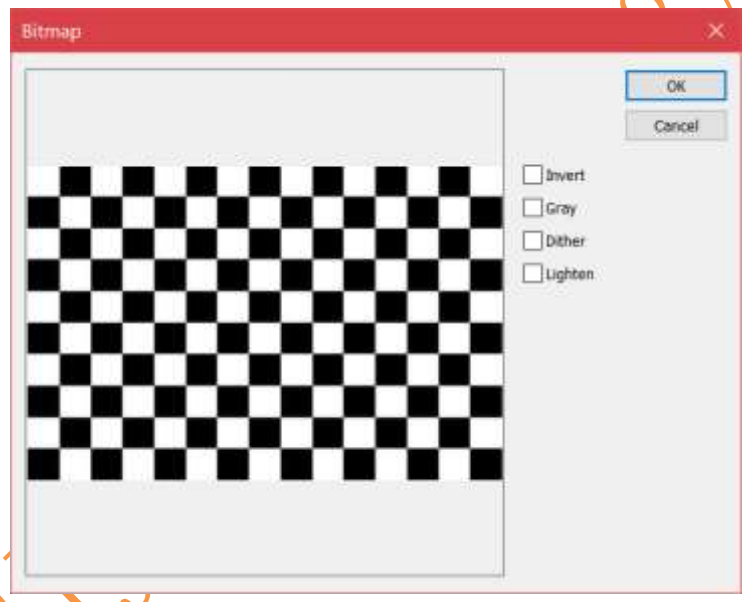
Invert: Inverts the color value of each point in the current image.

Gray: convert the colorful bitmap to gray bitmap.

Fig 4-32 effect

Dither: Similar to the "halftone pattern" function in Adobe Photoshop, a black-and-white two-color image is used to simulate a grayscale image, and different

grayscale effects are simulated by adjusting the degree of density of the dots with black and white, as shown in Figure 4-33. (The vertical bar in the picture shows the problem, it will not appear when processing).



Lighten: Change the brightness and contrast of the current image.

Bidirection scan: Bitmap scanning direction is two-way scanning back and forth,

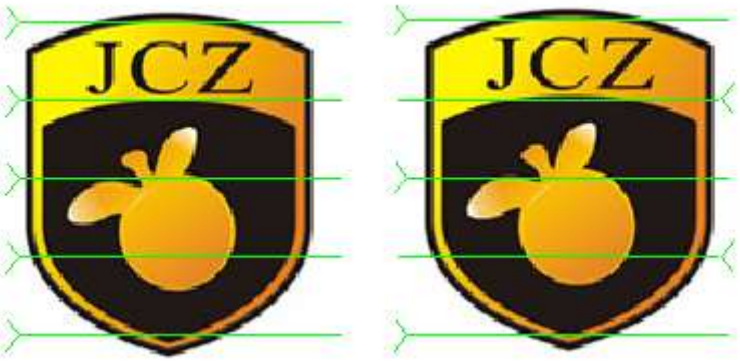
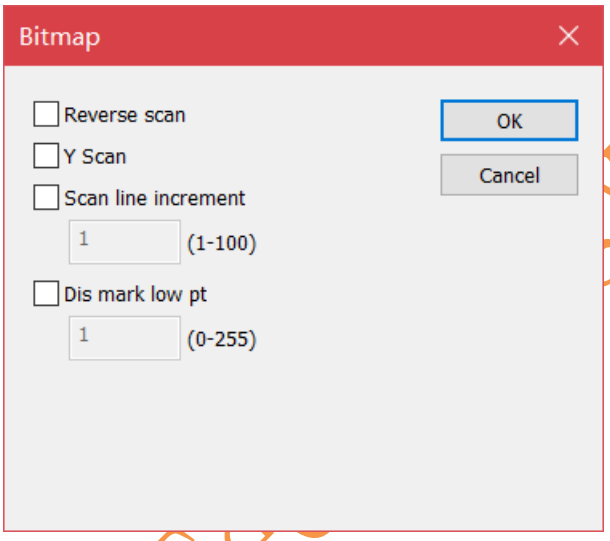


图 4-35 left is single scan, right is direction scan

Drill mode: the processing bitmap is converted to a point, and the light emission time of each point is the current setting time, which is not ticked as the threading mode.

Pixel power adjustment: Refers to whether or not the laser adjusts the power according to the gray level of the pixel when processing each pixel of the bitmap.

Scan mode extend:



Reverse scan：The processing bitmap scans in the X-direction scan direction from the bottom up, select the reverse direction and scan from top to bottom.

Y scan: When the bitmap is selected, the Y direction is scanned one by one in a row, and the X direction scans one line at a time.

Scan line increment: interlace scanning according to the set interval, proper setting can improve processing efficiency.

Dis mark low pt：Setting the grayscale points below will not mark.

4.12 vector file

Install the vector file .this is the icon  .

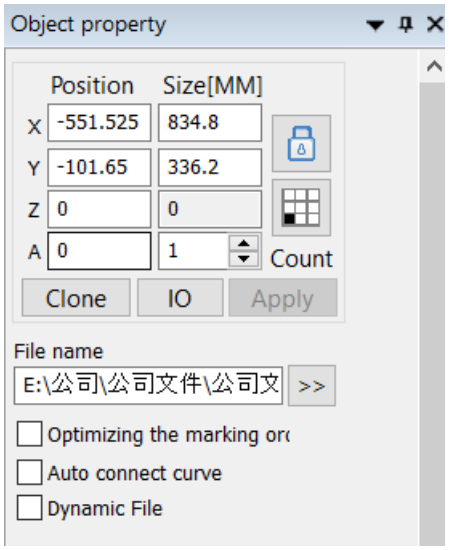
Pop up the file select dialog ， select the file and click “ok”.

Support vector file format：.PLT, .DXF, .AI, .DST, .etc.

The unit in dxf is inch DXF： set the file size unit as inch

Put to center：The imported vector will be placed in the center of the work area.

Install the vector file the show the attribution view:



If the vector graphic contains several color information (the color of the stroke can be specified by drawing software such as Coredraw, AutoCAD, etc.), when inputting the vector graphic, HGLaserMark2.0 will automatically distinguish the color type, and the user can press the color or Pen number selection object , you can set the marking parameters (see section 8.1 "Color" check), the software will automatically calculate the marking order, so that the corresponding marking time is reduced

Optimizing the marking order：The software will automatically calculate the marking order and reduce the marking time.

Auto connect curve：The software automatically finds adjacent curve segments and connects.

Dynamic file：Same function with bitmap.

4.13 Time

Use it to set the delay time .this is the icon  .

The attribution is following:

Waiting Time：When the processing is executed to the current delayer, the system waits for the specified time before continuing to run.

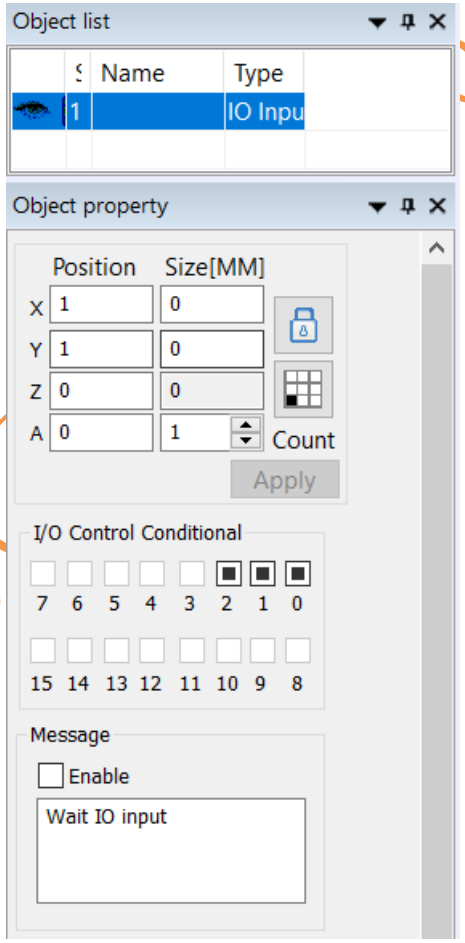
4.14 input port

Use the input port to control the mark object. This is the icon .

The attributions is following:

I/O control Conditional IO： When the process is executed to the current input port, the system reads the input port, and then compares the current value with the value of the control condition IO. If they are equal, the system continues to run downwards; otherwise, the system reads the port again.

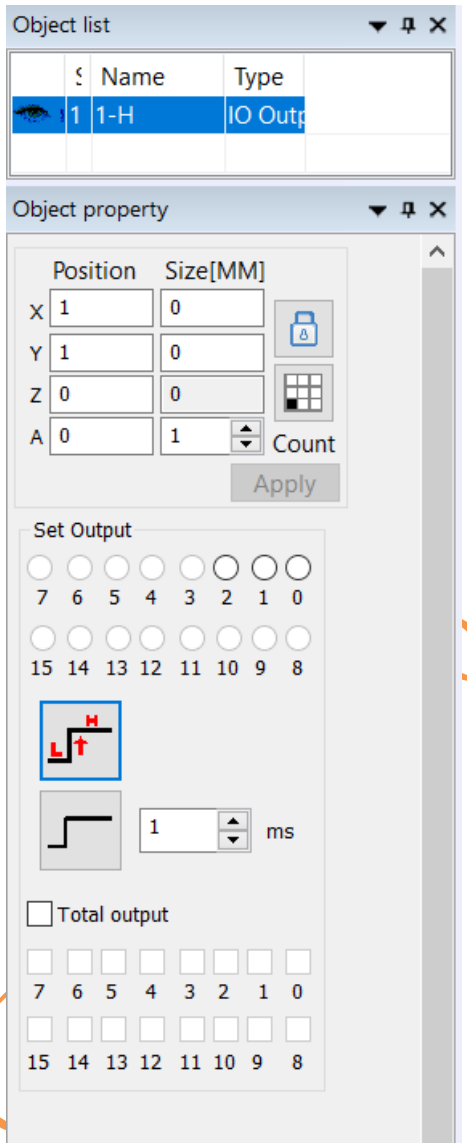
Message： The prompt message when the system reads the port value equal to the control condition IO.



4.15 Output port

Use the output port to control the mark object. This is the icon .

The attributions is following:




Indicates that the system outputs a high level to the port when the process is executed to the current output port.


Indicates that the system outputs a low level to the port when the process is executed to the current output port.

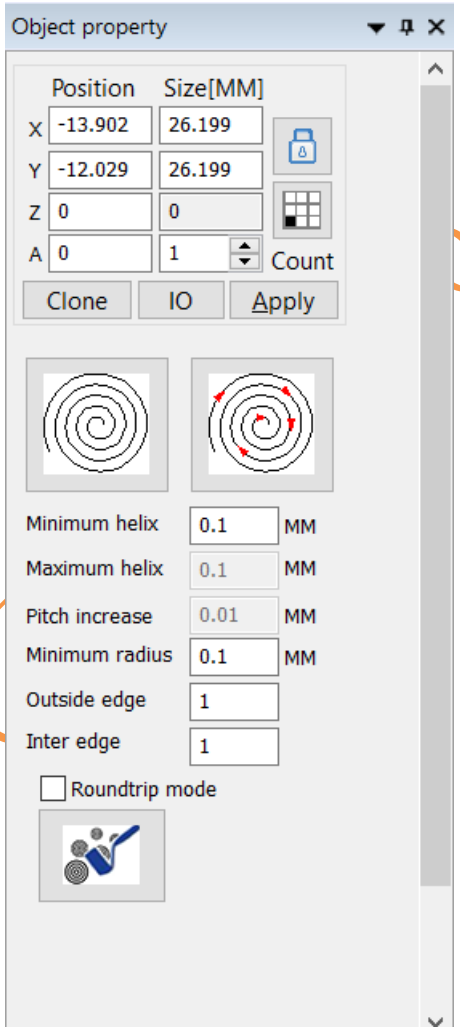

Indicates that the system outputs a fixed level to the port and will not be restored after the output.

 Indicates that the system outputs a pulse level to the port and returns to its original level after outputting the specified time.

Total output： After checking it, the output ports set at the bottom will all be output high or low. The “hook on” is a long height, and the “no check” is a long low.

4.16 Spiral

Draw a spiral.



The icon in the upper left corner can change the type of spiral. There are three types of spiral: equidistant, increasing pitch, and decreasing pitch. Select the pitch increasing and decreasing to set the minimum and maximum spiral pitch, set Minimum spiral pitch value as the pitch of the equidistant spiral.

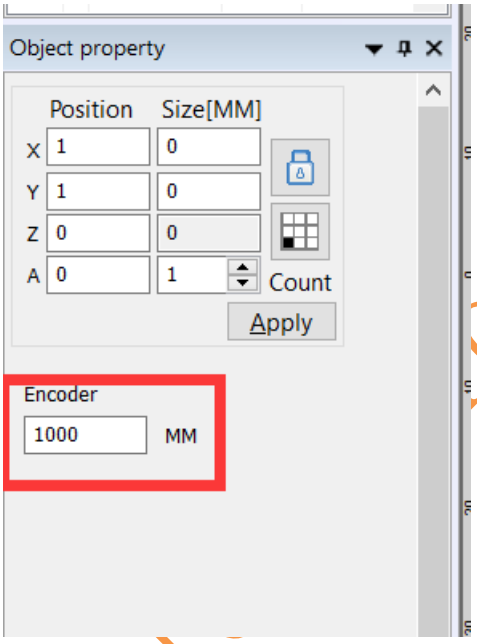
The icon in the upper right corner can set the marking direction

Roundtrip mode：After checking, the software view will have a spiral with the

end of the end as the starting point and the starting point as the end point.

4.17 Encoder distance

Set the encoder movement distance. The software will calculate the encoder movement position according to the set distance value, and then mark after reaching the designated position.



5 Modify Menu

The Modify Menu contains advanced options in modifying Arrays, arrays text, offsets, turn into curves, trim, etc.

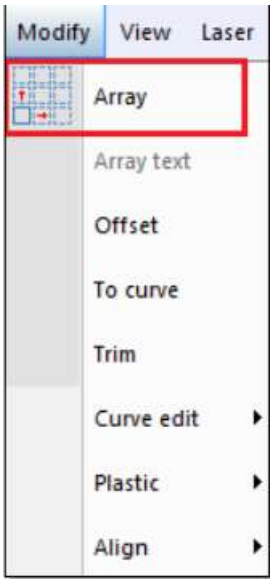


Fig 5-1 Modify

5.1 Array

Clicks the array command, the system will pop up a dialog box as following picture. There are two modes: "rectangular" and "circular".

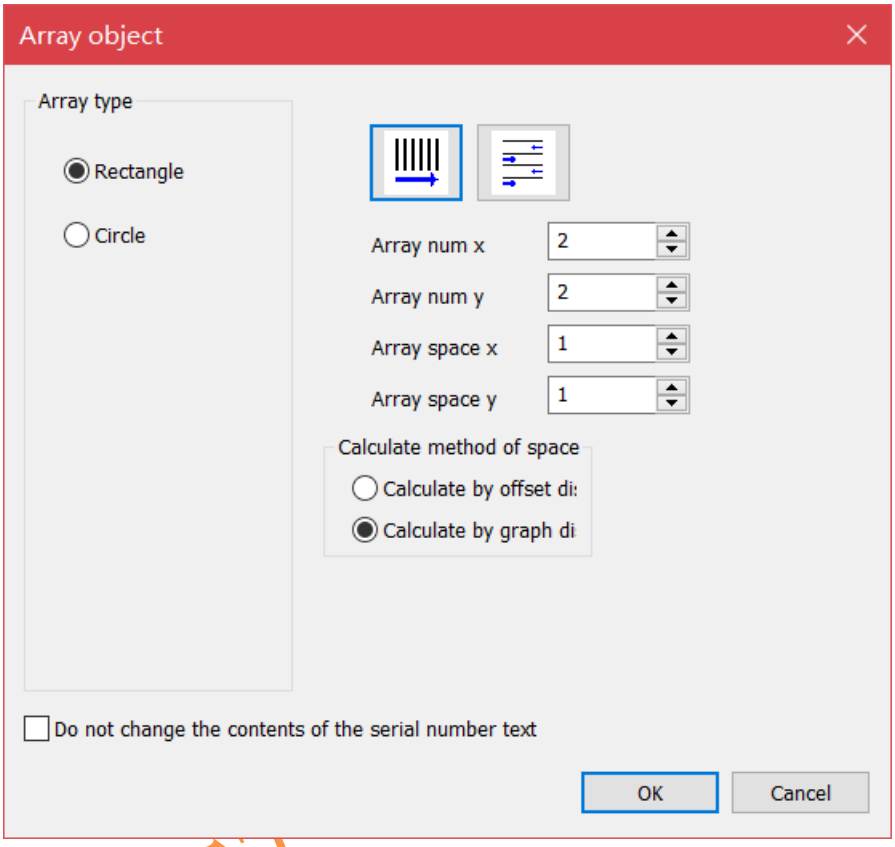


Fig 5-2 Array

“Rectangle “indicates arrays in X and Y directions.

Fig 5-3

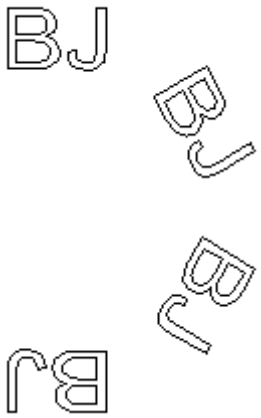


Fig 5-4

"Circle" indicates the array of angles.

5.2 Array text

Variable Text get multiple texts but they are a whole object, so the position and size of each variable text in the array cannot be changed. Select the array object and click on "dynamic text array" to modify the size and position of each text.

5.3 Offset

Delete old curve：Whether to keep the original graphics. Unchecked to retain the original graphics, check to remove the original graphics, leaving only offset graphics.

Offset dist: the offset distance between Refers to the distance between the offset graphics and the original graphics.

count：Number of offset graphics

When you use this function, you only need to set the offset distance, and th2en use the mouse to click the offset direction of the graphics to make the offset graphics.

5.4 Turn into curves

Remove the selected graphic object's attributes and turn it into a curve object.

5.5 Trim

When there is a curve in the object, click on the trim and the mouse will become the shape of the scissors. Curves will turn blue when the mouse moves over the curve. Click the left mouse button and the curve will be deleted.

5.6 Curve edit

Auto connect：When the user clicks the command, user can set the connect error value.

5.6.1 Auto connect error

When the distance between the first and last point of the two selected figures is smaller than this parameter, the two curves are connected into a curve.

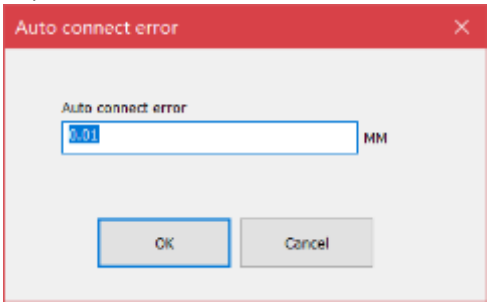
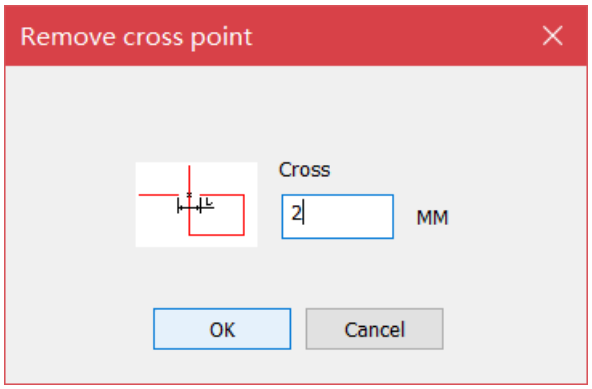
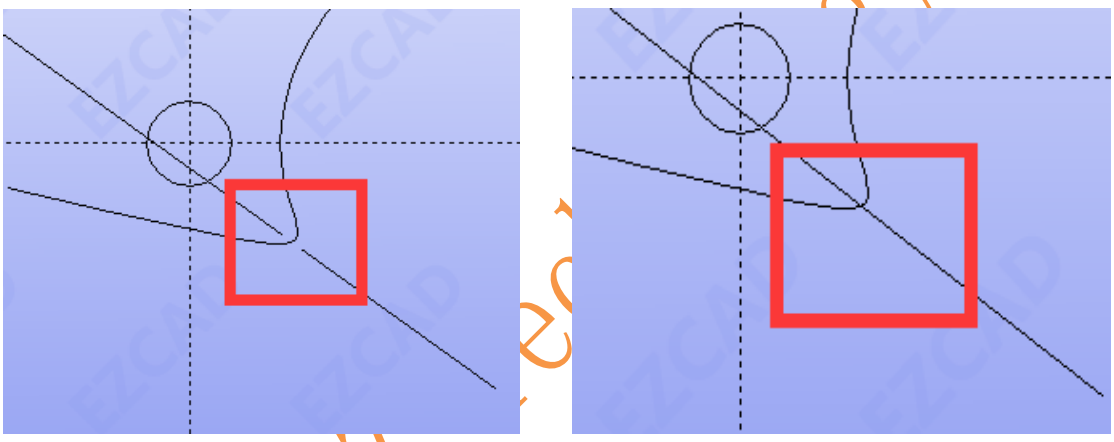


Fig 5-5

5.6.2 Remove crosses point

The command will remove the cross line that we can set the length.





5.7 Plastic

weld：It is possible to merge two intersecting closed areas into one closed area.

trim：You can trim a closed area out of the graphics contained in another area.

intersect：It is possible to merge two intersecting closed areas into one closed area, leaving only the intersecting parts.

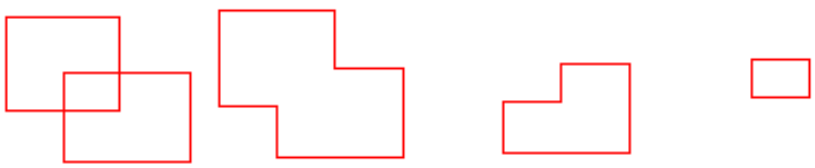


Fig 5-8 transform

5.8 Align

Left： Aligns objects according left of the last object in the list of objects

Hor center：Aligns objects according the horizontal centerline of the last object in the object list

right： Aligns objects according to the right of the last object in the list of objects

top： Align objects according the top of the last object in the list of objects

Ver center： Align objects according the vertical center of the last object in the object list

bottom： Align objects according the bottom of the last object in the list of objects

center：Align objects according the center point of the last object in the list of objects

6 View Menu

6.1 Zoom

There are seven models.

 View the whole area. You need to use the mouse to select the magnified rectangular area. If you right-click directly, the current view will be reduced to half of the current view. If you press the left mouse button directly, the current view will be Zoom in on the current position with the mouse position centered.

 Use the mouse to move the current view in parallel.

 Zoom in on the current view.

 Zoom out the current view.

 View the whole objects.

 The currently selected object fills the entire viewing area for observation.

 The current workspace fills the entire viewing area for observation.

6.2 Ruler, grid

Display horizontal and vertical rulers, grid points and auxiliary lines.

6.3 Capture grid

The command automatically places the points you draw on grid points in the workspace.

6.4 Capture guild line

The command automatically capture to the guides as you move the objects. The auxiliary line can be dragged by the left mouse button anywhere in the ruler.

6.5 Capture entity

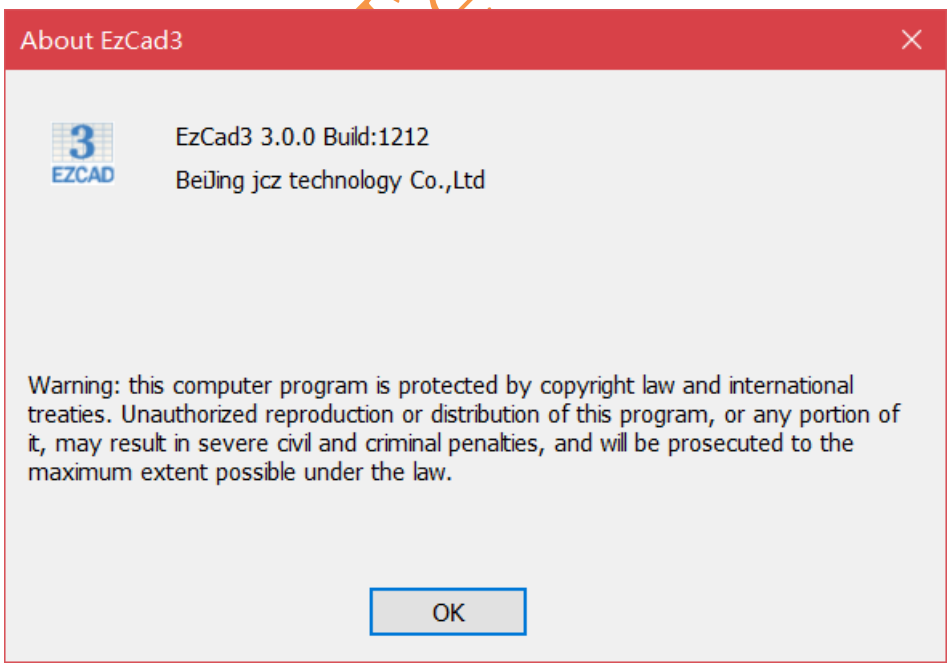
When performing certain operations, the software will automatically find the feature points such as vertices, midpoints, nodes, center points, intersections, etc. on the object.

7 3D View

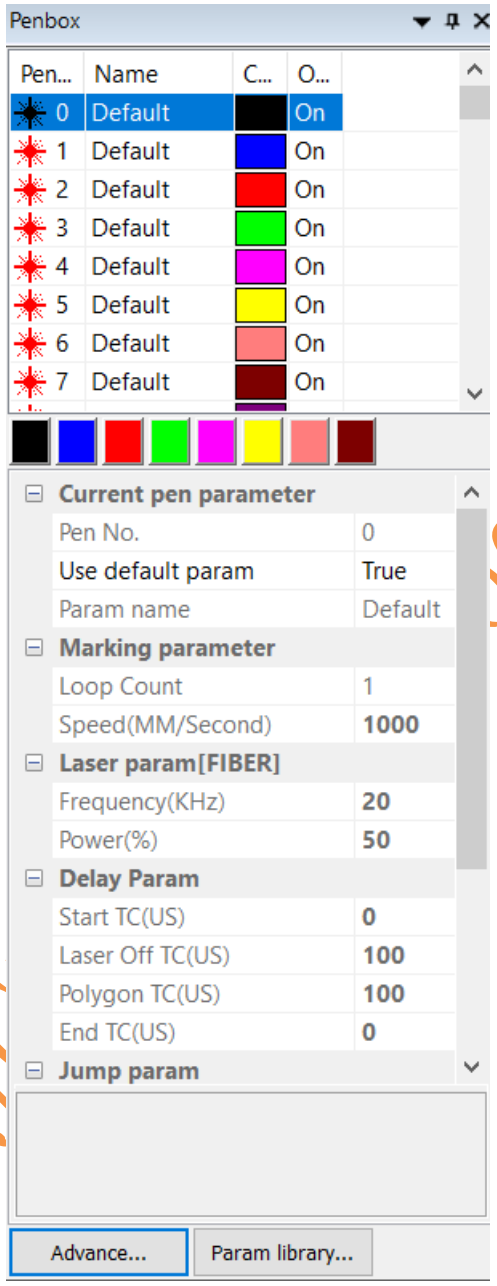
EZCAD 3 software support 3D marking, this feature need special license, and we edit another option manual to introduce it.

8 Help

Show EZCAD3 information, contain version, user and software copyright .etc.



9 process



9.1 Pen list

There are 256 “pen” in each file, from 0 to 255.

Indicates that the current pen is to be machined, that is, when the processed object corresponds to the current pen number, it is processed, and double-clicking this icon can be changed.

Indicates that the current pen is not processed, that is, when the processed object corresponds to the current pen number, it is not processed.

Color: Indicates the current pen color. This color is displayed when the object corresponds to the current pen number. Double-click the color bar to change the color.

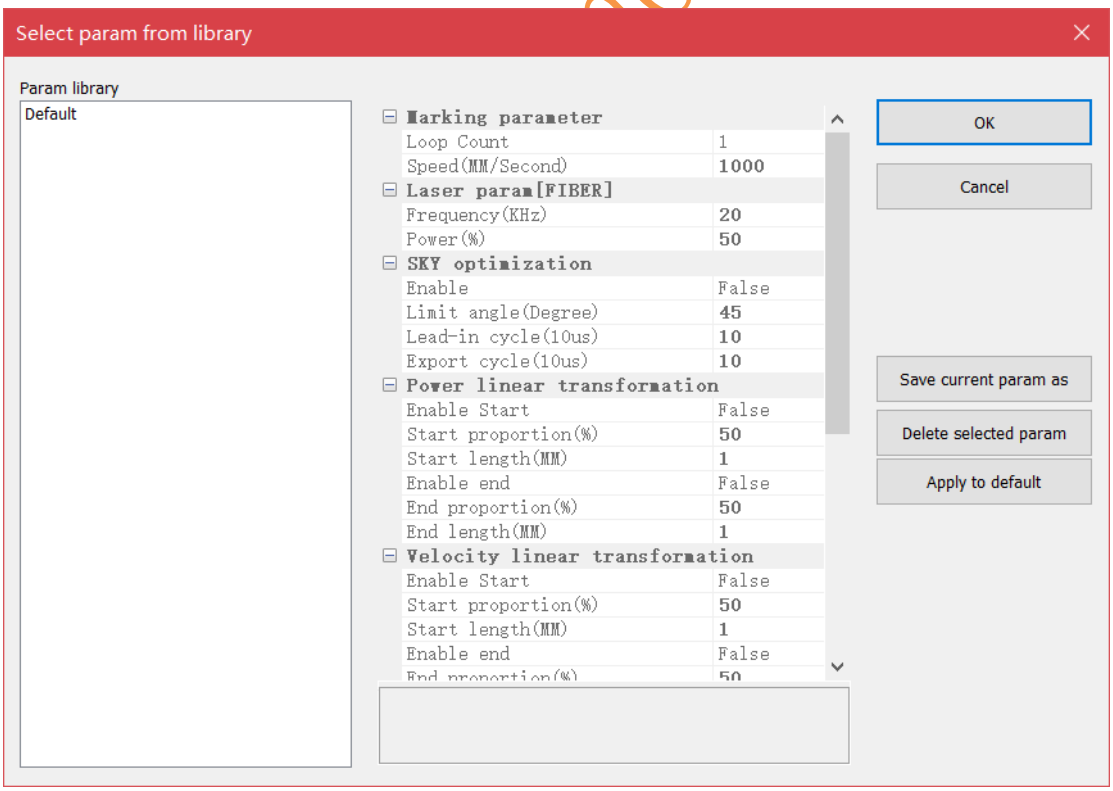
parameter application button： When the user presses the parameter application button, the pen number of the currently selected object will be changed to the corresponding button pen number.

When the user right-clicks on the current list.

Fig 9-2parameter application button

9.2 Param library

Save the parameters user set.



Apply to default: Save all parameters of the current parameter to the parameter named "default".

Param library：Save parameters currently set by all users for processing various materials.

Save current param as: Indicates that the parameters in the pen are saved to the parameter library.

Delete select param as: Indicates to remove the current parameter from the parameter library.

Marking parameter

1) Loop count：Indicates the number of times that all objects correspond to the current parameter.

2) Speed： Indicates the current processing parameter marking speed

Power linear transfer：

1) Enable start and end：Indicates whether the start position power ramping is enabled

2) Start proportion： The percentage of the initial power of the light output. The actual initial light output power is the power percentage of the current processing parameter multiplied by this percentage.

3) Start length： Starting power gradient length.

4) End proportion： The percentage of power at off position, the actual ending light power is the power percentage of the current processing parameter multiplied by this percentage.

5) End length： Adjustment....

Velocity linear transformation：

1) Enable start： Indicates whether the start position is enabled for speed gradation

2) Start proportion： The percentage of the starting speed of the light output. The actual starting light speed is the percentage of the speed of the current machining parameter multiplied by this percentage.

3) Start length： Starting speed gradient length.

4) Enable end：Indicates whether the end position speed gradient is enabled

5) End proportion： The percentage of speed at off position, the actual off position speed is the percentage of speed of the current machining parameter

multiplied by this percentage.

6) End length： End position speed gradient length.

Optimized parameter：

1) Enable： Whether to enable optimization parameters

2) Acc.distance: The galvanometer accelerates the distance in advance, and if this parameter is properly set, the unevenness of the starting point of marking can be eliminated.

3)Bidirectional migration： The galvanometer and the laser are not synchronized and cause two-way misalignment. Setting this parameter appropriately solves the problem of bidirectional pad offset effectively.

Wobble：

1) Enable： After being enabled, the jitter is effective, mainly when marking a single line, the need to thicken the line, or the need to use a specific jitter pattern, can save time, improve efficiency.

2)Type： Dither type, spiral, sine, ellipse.

3)Diameter：Jitter diameter, the larger the diameter, the larger the jitter pattern.

4)distance： The spacing between adjacent dither patterns.

5)diameter2： The maximum diameter of the elliptical jitter type.

6)Time per point： When the object is a little object, the light time of each point.

For example：

Draw a 40 x 20 or so rectangle and fill it with the following parameters: outline and fill, padding 0, pad spacing 1.0, padding angle 0, and one-way padding (i.e. do not select two-way round-trip padding options).

Set the marking parameters to the following mode：

Parameter name： XX - User-Defined Name (user is advised to use an easy-to-understand, identifying name)；

Loop count： 1；

speed： XX——User needs speed；

Jump speed： XXX——User-defined speed (1200 - 2500 recommended) User required speed；

Power： 50%；

Frequency : 5KHZ；

Start TC： 300；

End TC： 300；

To process the filled rectangle, observe the relative positions of the start segment and the border of the filled line of the marked rectangle. There may be the following situations:：

The first kind: the filling line is separated from the boundary, as shown in Figure

9-6 below. This is due to the excessive delay in the start segment. It is necessary to reduce the start segment delay.

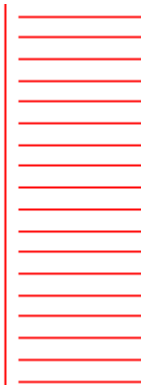


Fig 9-6 case1

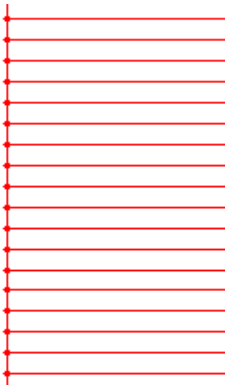


fig 9-7 case2

In the second case, the beginning of the filling line coincides with the boundary, but there is a phenomenon of "sticker head" as shown in Figure 9-7. That is, the marking of the beginning of the filling line is heavy. This is due to the fact that the start delay is too small and the start delay needs to be increased.

In the third case, the filling line coincides with the boundary, and there is no “sticker head” phenomenon in the second case. This is what we need. The delay at the beginning is appropriate.

Fig 9-8 case3

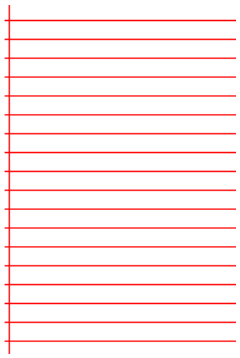


Fig 9-9 case4

Because the lasers and galvanometers used by different manufacturers are different, the performance varies widely. Sometimes, no matter how the delay of the start segment is modified, the beginning of the filling line and the boundary line cannot coincide. In this case, the acceleration distance parameter needs to be set (general numerical range is between 0.05-0.25). However, at this time, there will be a fourth case where the beginning of the fill line exceeds the boundary line, as shown

in Figure 9-9. At this time, the delay of the start segment can be increased or the acceleration distance can be reduced. As long as these two parameters are adjusted properly, the satisfactory results will be achieved.

Adjust end TC:

Also marking the above filled rectangle, at this point the relative position of the end of the filling line and the boundary has the following three conditions, similar to the beginning of the relationship between the paragraph and the border,

In the first case, the filling line is separated from the boundary, as shown in Figure 8-11. This is due to the small delay in the ending segment. This is due to the need to increase the delay of the ending segment.

Fig 9-10 case1

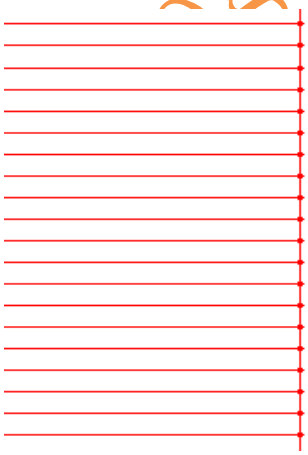


Fig 9-11 case2

In the second case, the filling line coincides with the boundary line, but the filling line has a “matchhead” phenomenon at the end, that is, the marking of the ending line of the filling line is heavy, as shown in Fig. 9-11. This is due to the excessive delay in the ending stage. Yes, this needs to reduce the end delay;In the third case, the filling line coincides with the boundary line, and there is no "sticker head" phenomenon in the second case, as shown in Figure 9-10. This is what we want. The delay at the end of the time is appropriate.

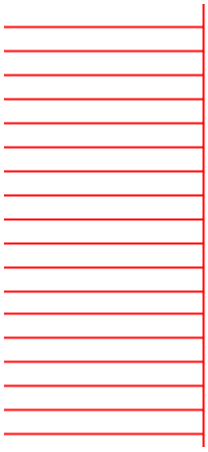


Fig 9-11 case3

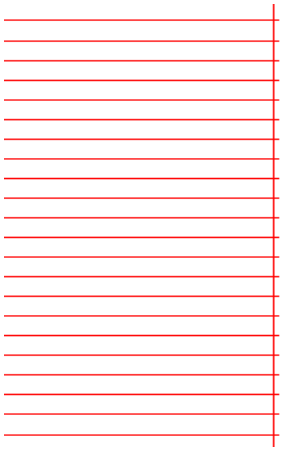


Fig 9-12 case4

Because the lasers and galvanometers used by different manufacturers are different, the performance varies greatly. Sometimes, no matter how the end-of-sequence delay is modified, the end of the filling line and the boundary line cannot coincide. In this case, the end point compensation needs to be set. Between 0.05-0.25. However, a fourth case occurs at this time: the end of the fill line exceeds the boundary line, as shown in Figure 9-12. At this time, the delay at the end stage can be reduced or the compensation at the end point can be reduced. As long as these two parameters are adjusted properly, the satisfactory results will be achieved.

9.3 Mark control

Red: The outer frame of the figure to be marked is marked, but no laser is used to indicate the processing area so that the user can position the workpiece. This function is used for marking machines with red indicating light.

Mark: start mark.

Press F2 directly to execute this command.

Continuous: Indicates that the current file has been repeatedly processed and

the current file is being processed cyclically.

Mark select: Only the selected object is machined.

Multilayer：The number of offline processing layers enabled, used together with offline processing, to achieve offline processing.

Part: Indicates the total number of parts currently processed.

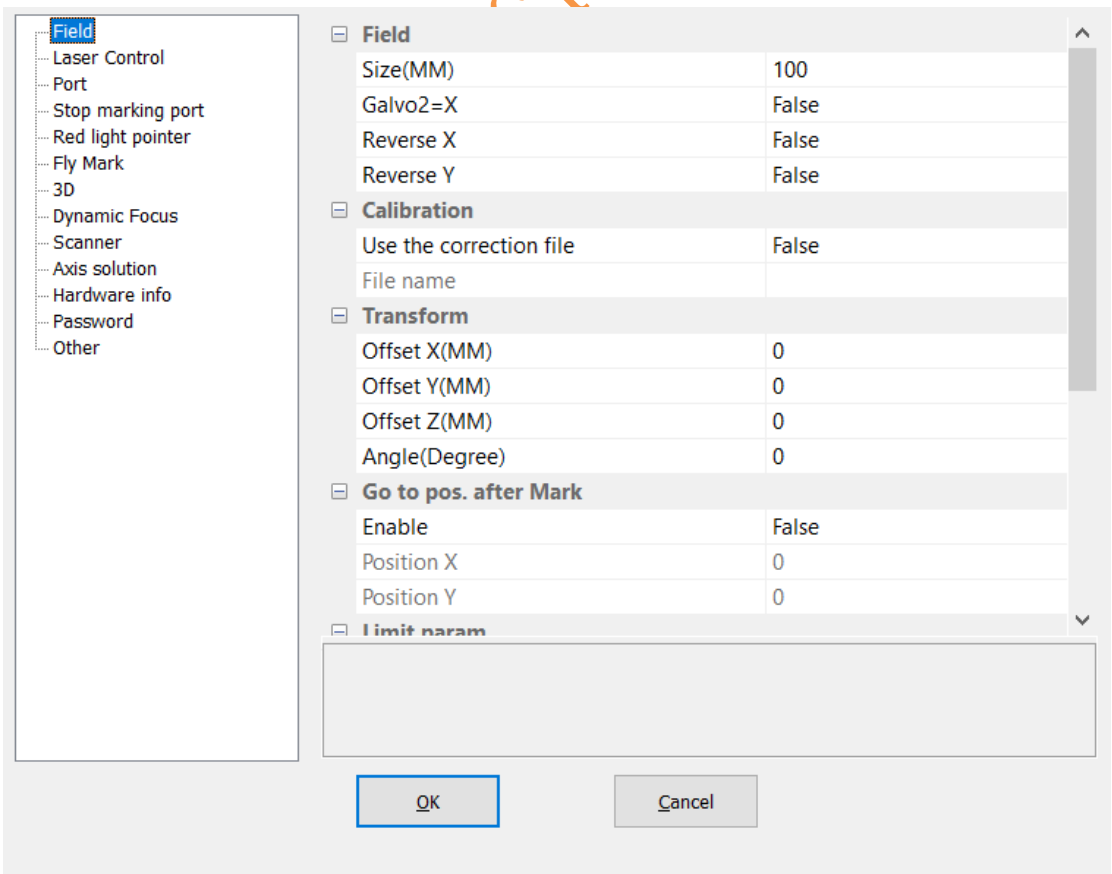
Total: Indicates that the total number of parts currently being machined is invalid in continuous machining mode. When not in the continuous machining mode, if the total number of parts is greater than 1, the machining will be repeated until the number of parts processed is equal to the total number of parts.

Para: Current device parameters. Press F3 directly to execute this command.

Box： Click this button to mark the top view boundary of the model in the current software.

9.4 Machine parameter

9.4.1 Field



1) Size： The actual maximum marking range corresponding to galvanometer.

2) galvo2=x: Represents the galvo mirror output signal 2 of the control card as the x axis of the user coordinate system.

3) Reverse X: Indicates that the output of the current galvo x is reversed.

4) Reverse y：Indicates that the output of the current galvanometer y is reversed

5) calibration： Is external calibration file enabled?

Transform：

1) Offset X： When processing, the X coordinate offset of each point of the workspace, such as the original point coordinate X is 20, the offset X is -20, the actual processing is X is 0 .

2) Offset Y： The Y coordinate offset of each point in the workspace during table processing.

3) Offset Z：Z coordinate offset of each point in workspace when table is processed.

4) Angle： A coordinate offset of each point in the workspace when the table is being processed.

5) Goto pos after mark： Set the oscillating mirror to the specified position after the current machining is set.

Limit parameter：

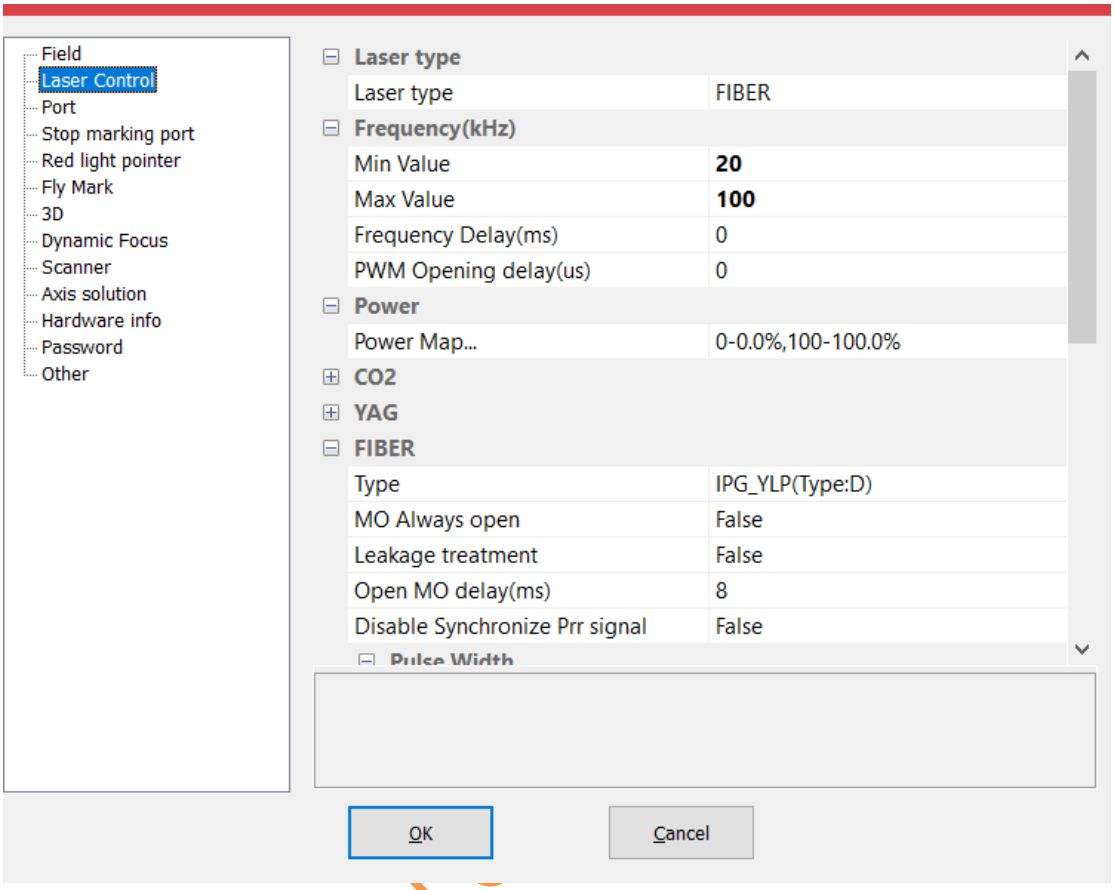
1) Min speed： The galvanometer movement allows to set the minimum speed.

2) Max speed： The galvanometer movement allows the set maximum speed.

3) Minimum linear length：The minimum linear length of the composition curve.

4) Curve scatter tolerance：The maximum chord-level error of a curve discretized into a straight line.

9.4.2 Laser control



Laser type：

1)Fiber：Indicates current laser type is fiber laser

2)CO2：Indicates the current laser type is CO2 laser.

3)YAG：Indicates the current laser type is YAG laser.

4)SPI：Indicates the current laser type is SPI laser.

5)QCW：Indicates the current laser type is QCW laser.

Frequency

1)Min value：The laser can set the minimum frequency.

2)Max value：Laser can set the maximum frequency.

3)Frequency delay：Delay time required when the laser changes frequency.

4)PWM opening delay：Time delay of rising edge and rising edge of Gate when PWM is on.

Power

Power map：Set the user-defined power ratio and the actual power ratio. If the power ratio set by the user is not in the dialog box, the linear interpolation is used.

CO2：

1)Enable tickle：Enables the preionization signal. Some manufacturers CO2 lasers need this signal to work properly, such as the United States SYNRAD's laser.

2)Pulse freq：Pulse frequency of preionization signal.

3)Pulse width：Pulse width of preionization signal.

YAG：

1) Firstpulsekiller：The duration of the first pulse suppression signal when the laser is on.

2) Q switch open when FPK end：The Q switch is turned on when the laser is turned on and so on after the first pulse suppression signal is completed. Otherwise, the first pulse suppression signal is turned on and the Q switch is turned on..

3) Enable current output：Enables the analog power signal output of the control card.

4) Current map：Set the user-defined current ratio and the actual current ratio. If the current ratio set by the user is not in the dialog box, the linear interpolation value is used.

FIBER：

1) Type: Fiber laser class.

2) MO always open：After enabling, the MO signal is always on.

3) Leakage treatment：After each marking a line segment, the MO signal will be turned off and turned on the next time..

4) Open MO delay：The MO signal gives the AP signal after the delay. If the setting is too small, it may damage the laser..

5) Enable pulse width setting：Whether the pulse width is enabled.

6) Change pulse duration delay：Delay time for the laser to change pulse width.

7) Pulse width index mode：Pulse width is represented by an index.

SPI

1) Simmer cur：SPI laser standby power.

2) Change wave delay：The time from changing the waveform to the light output takes time due to the laser changing the mode.

QCW-Enable waveform output：

1) The remote control signal is low level：Control signal high and low effective setting.

2) The error reset signal is active low：Yes, reset signal is low, no, reset signal is high.

Other

1) Enable laser delay time for the first time：Whether to enable the first time to open the laser delay time.

2) Laser on time：When the laser is turned on, the galvanometer starts to move after this time delay.

3) Discheck the status of the laser：It is forbidden to check the laser status before processing.

9.4.3 Port

Input port

1) Input IO mask：Set the input port that the current software allows, and increase or change the input port that can be used.

2) Stable time：Due to interference from signals that may be received by external factors, proper settings can eliminate such as relay jitter.

3) Input IO state：Currently enabled input status.

Start marking IO

1) Port：When the system is not in the marking state, the trigger signal is given to the designated input port. When it is valid, the system will automatically start marking.

2) Active low level：Start marking port active low

3) Pulse mode：This item indicates that the software processing start signal is pulsed. Even if the input is continuous level, the software reads only one

pulse. Otherwise, the processing input is a continuous level.

4) Laser ready：This port is output according to the laser system status. After setting this port, a “power” switch button will be displayed above the “parameters” in the software interface.

5) Red indicate starting port：When the system is not in the red indication state, if the specified input input signal is valid, the output port designated by the red cursor will output a high level, turning on the red light.

6) Door IO：The safe door signal is connected to this port. When the user opens the safety door, it stops processing automatically. Only when the safety door is closed, it can be processed to protect the operator from laser burn.

7) Z layer: In deep carving or 3D printing, the port set when marking the contents of the current layer is marked with a layer when the trigger signal is received, and the extension axis Z axis needs to be enabled for use.

8) port：Set the trigger input port.

Output port

1) Red light pointer：When the system gives a red indication, it will output a high level to the specified output port.

2) Marking output：When the system performs marking process, it will output high level to the specified output port.

3) Out port for laser power：This port can be used to control the laser power on and off.

4) Mark finished：When the system finishes processing, it will output signal to the specified output port.

Z layer

1) Port：In deep carving or 3D printing, when the current layer content is marked, the currently set port outputs the set level signal..

2) Active low level：Yes, the output signal is low; no, the output is high.

3) Pulse width：Output signal time.

4) Stop marking port：Specify an input port as the stop machining port.

When the port receives a signal during machining, the current machining will be terminated and the user will be prompted with an error message.

9.4.4 Red light pointer

1) Show contour：Show all outlines.

2) Light speed: Indicates the speed of the system when indicated by red light.

3) Offset PosX: When the red light deviates from the position of the actual marking graphic in the x direction, this correction can be used.

4) Offset PosY：When the red light deviates from the position of the actual marking graphic in the y direction, this correction can be used.

5) Size scaleX：When the red light and the actual marking pattern have a dimensional deviation in the x direction, this correction can be used.

6) Size scaleY：When the red light and the actual mark line y direction size deviation can be corrected by this.

7) Prohibit extended shaft movement：The red light indicates whether the axis is moved.

9.4.5 Fly mark

1) Enable：Enable the fly marking function.

2) Enable speed simulation：Enable the pipeline speed in hardware simulation mode

3) Pipeline from right to left：Check to indicate that the software thinks the flow direction is from right to left.

4) Keep ent order：Check this box to indicate that the software will mark the contents of the workspace one by one in the order of the object list. The position of the marking position is the same as the drawing position, and the relative position between multiple objects can be guaranteed to be the same as the drawing position..

5) Encoder signal reversed：Checked to invert the encoder output signal that the software will accept.

6) Only encoder A：The board only reads the phase A signal of the encoder and shields the phase B signal.

7) Flight error correction factor： reserve.

9.4.6 3D

Enable： Whether to enable 3D mode

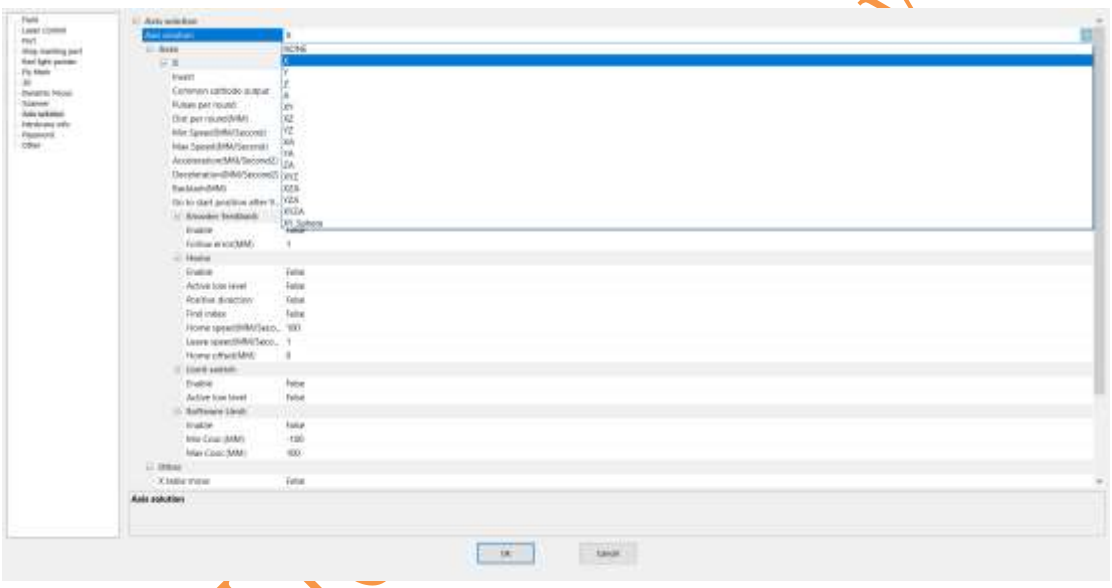
9.4.7 Dynamic focus

Enable： Whether to enable dynamic focus mode

9.4.8 Scanner

Scanner type： Currently supports 16-bit, 18-bit XY2-100, and NEWSON 18-bit and NEWSON 20-bit.

9.4.9 Axis solution



The diagram shows the selection of the expansion axis program. The corresponding axis control is selected. The axis control can be parameterized, such as the number of pulses per revolution and distance, speed and acceleration, zero point, limit switches, etc.

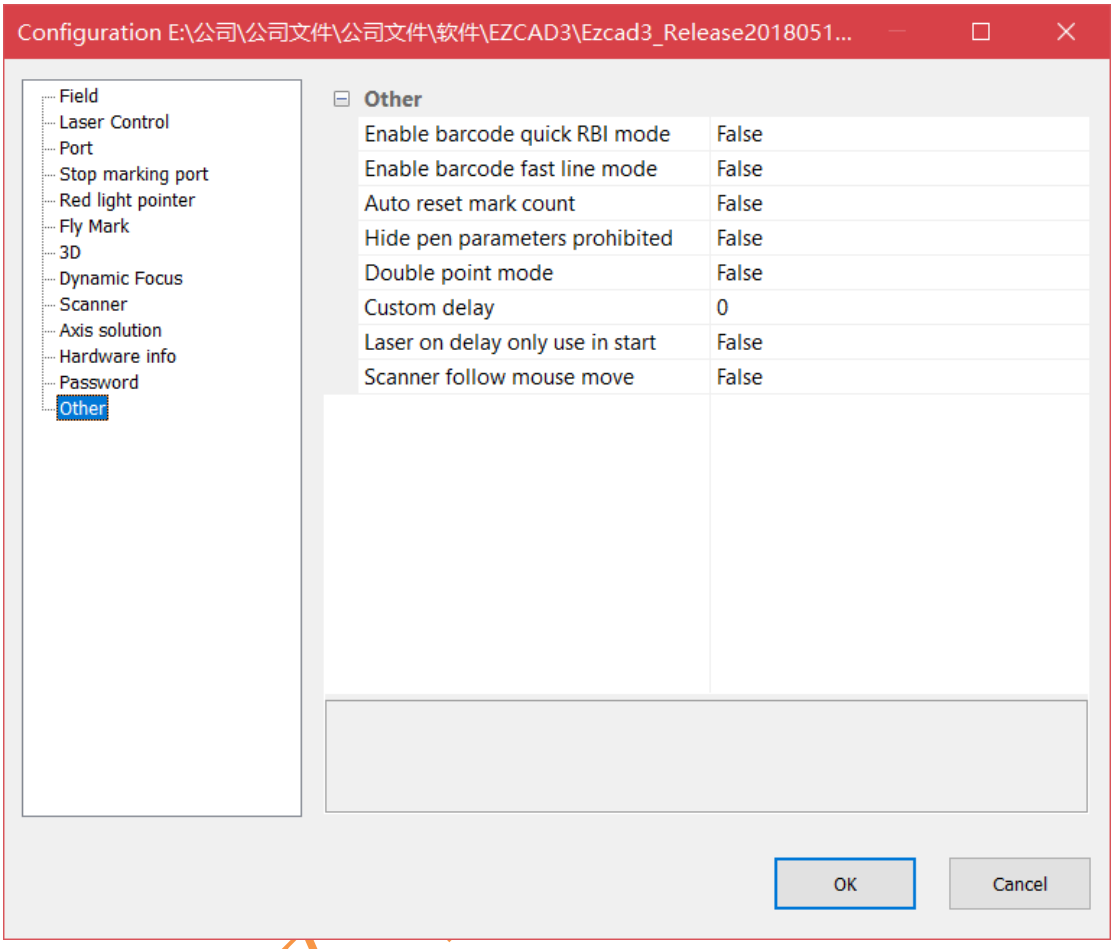
9.4.10 Hardware info

Hardware information includes board type, version number, function code and other information.

9.4.11 Password

F3 parameter password

9.4.12 Other



1) Enable barcode quick RBI mode：The two-dimensional dot matrix code, such as the laser response time less than 100ms, can enable the fast dot mode, improve the processing efficiency, and can be used with the flight.

2) Enable barcode fast line mode：The dot matrix QR code can be drawn to enable fast threading mode, improve processing efficiency, and can be used in conjunction with flights.

3) Auto reset mark count：Processing to a specified number of times.

4) Hide open parameters prohibited：Hide processing pen parameters.

5) Double points mode：Since the power of the laser is not large, the energy of a single spot is relatively small. In the fast dot mode, this mode can be marked twice.

6) Custom Delay：Reserve.