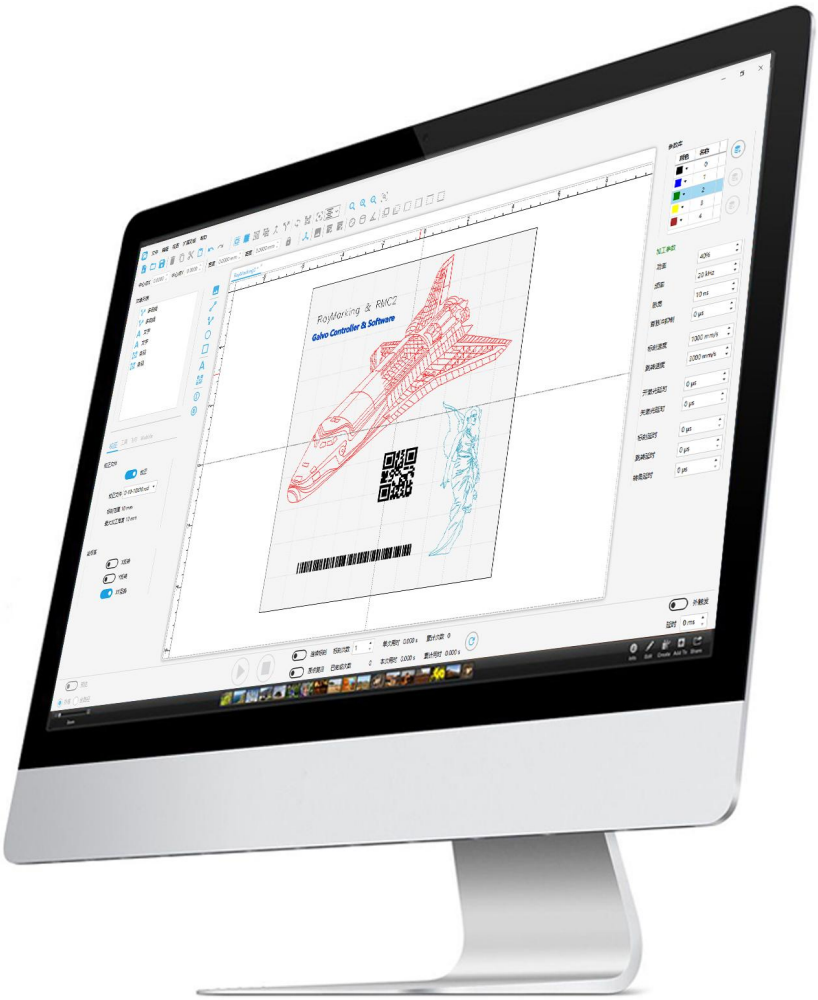
dedicated to motion

RAY-MOTION

www.ray-motion.com



RayMarking

Laser Marking Software

User Manual For RayMarking

Copyright

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The user manual is only applicable to the use of RAY-MOTION system, and the content related to non RAY-MOTION's products in this article is for reference only. System users should be familiar with the entire content before operating.

Book design by RAY-MOTION.

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Version Releases

Versions	Date	Attribute
Rev.1.0.a	2022.1	• Suitable for RMC2 boards, RayMarking V2.5 and later • Updated description of the Fly, Wobble, Surface, Deep Eagle features • Updated "CorrectionWizard instructions"
Rev.1.1.a	2022.8	• Update UI interface • Added object list function • Added XY slipway,Z axis, rotary axis control panel • Added Surface DXF file import function • Added signal input and output function • Added multi-file mark function
Rev.1.1.b	2022.8	• Updated RMC2 line card configuration diagram • Add IPG type laser control interface description
Rev.1.2.a	2023.5	• Updated to May 24, 2023
Rev.1.2.b	2023.10	• Standalone RayMarking software content

Overview

The manual is intended to assist those who use RayMarking software to complete the basic functional operations of the galvo.

The contents of this manual are divided into basic functions and advanced functions according to the order of introduction. Users can choose to jump to designated chapters for reference according to their own needs and the permissions of RMC2 card.

Content

Copyright I
Version Releases II
Overview III
Content IV
Software Installation 1
Installation Notes 1
Software Installation 2
Driver Installation 3
Language 4
RayWelding Instructions 5
Menu Bar And View Tabs 5
View Switch 6
Zoom In And Out 6
View Back 6
Zoom To Selected 6
Horizontal And Vertical Viewing Angle Movement 7
Select The Correct Correction File 8
Correction Tab 8
Functions 8
Creat And Edit 9
Basic Graphic Creation 9
Create Motion&IO 14

Import Vector File 16
Select And Cancel 18
Move 19
Rotate 19
Scaling 19
Array 20
Copy, Cut And Paste 20
To Center And Alignment 21
Group, Ungroup, Combine, Split 21
Reverse 22
Object List 22
New, Open, Save,Save As 23
Fill Tab 24
Parameter Adjustment 27
Parameter Library 27
Power 28
Frequency 28
Pluse Width 28
First Pluse Killer 29
Mark Speed 29
Jump Speed 29
Laser On Delay 29
Laser Off Delay 30
Mark Delay 30

Jump Delay 30
Polygon Delay 31
Process Executes 32
Preview 32
Mark Continuous And Mark Count 32
Auto Back To Center 32
Start And Stop 32
Results 33
External Trigger 33
Multi-Document Mark 34
Tool Tab 35
Laser Test 35
Guide-Light Correct 35
Lens Temperature Feedback(Galvo Protocol) 36
Fly Tab 37
Wobble Tab 38
Curved Surface 39
Deep Carving 39
Curved Surface 41
Axis Control Function 45
Motion& Motion tab 45
XY Slipway Control Panel 46
Z-axis Control Panel 48
Rotary Axis Control Panel 49

Axis Control Cards Usage _____ 50

Safety _____ 58

Software Installation

Installation Notes

Before you install, make sure that your computer's hardware and software configuration meets the following requirements:

·The main frequency of processor is above 2GHz

·More than 2G memory

·Hard disk free space exceeds 200M

·Installed the Microsoft Windows 7/8/8.1/10 operating system

·Microsoft .Net Framework 4.6 is installed

The above is only the minimum configuration required for the normal operation of the software, in order to ensure a smooth experience, it is recommended to choose Intel Core i5 CPU of the same level or higher and equipped with more than 8G of memory.

Software Installation

Double-click the installer(RayMarkingSetup_XXX.exe) and follow the installation wizard.

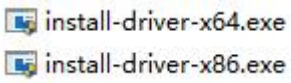
Any software installation package of RAY-MOTION would contains CorrectionWizard software zip in the USB flash. There's no installer provided for CorrectionWizard.

For the use of CorrectionWizard software, refer to the "User Manual For CorrectionWizard".

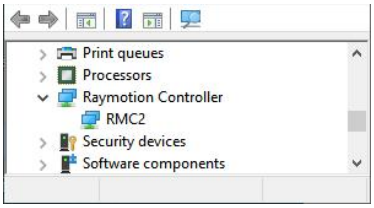
Driver Installation

Connect the control card to the power supply and connect to the computer via a USB cable.

As shown in the image below, select the correct driver and install it according to your system. 32-bit select x86, and 64-bit select x64.



“RMC2” entry appears under the “Raymotion Controller” column of Device Manager to indicate that the installation was successful.



Language

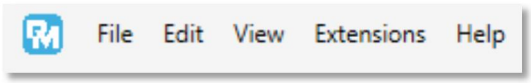
The language of RayMarking is related to the windows system settings.

The system language is Chinese then the sotfware is the same as Chinese, otherwise the software is displayed in English.

RayWelding Instructions

Menu Bar And View Tabs

1) Menu Bar



2) New, Open, Save, Delete, Copy, Cut, Paste, Undo, Redo.

3) Edit Toolbar

Select All, Select Invert, Group, Ungroup, Combine, Split, Reverse, To Polyline,To Center, Alignment.

4) View Toolbar

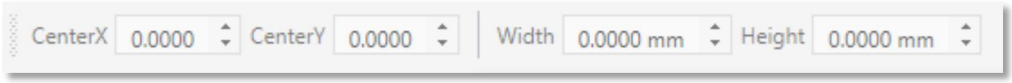
View Back, Zoom In, Zoom Out, Zoom to select.

5) Drawing Toolbar（The latest version has a vertical layout and the same functions)

Vector File, Line, Polyline, Circle, Rectangle, Text, BarCode, Motion,Signal In,Signal Out.

6) Outline Toolbar

Center X, Center Y, Width, Height, Keep Ratio.



7) 3D Toolbar

3D View, Import DX, Import Model, Delete, Sphere, Cylinder, Slop, Front View, Back View, Left View, Right View, Top View, Bottom View.

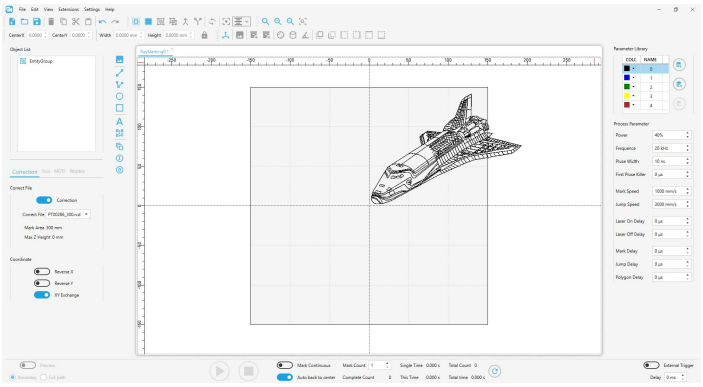
View Switch

Zoom In And Out

Use the mouse wheel to control zoom in and out, forward for zoom in and backward for zoom out. Or use the "Zoom In" and "Zoom Out" buttons in the View toolbar.

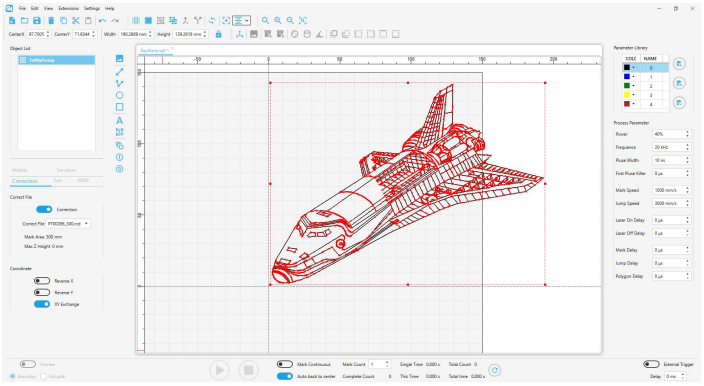
View Back

"View Back" means centering the entire work area in the drawing area, click the "View back" button in the view toolbar to achieve this function.



Zoom To Selected

"Zoom To Selected" means that the view will be enlarged or reduced appropriately till the selected primitives displayed in the drawing area in the center. This function can be achieved by clicking the "Zoom To Selected" button in the view toolbar.



Horizontal And Vertical Viewing Angle Movement

Press and hold the "Shift" button, and the mouse wheel will move forward to the image down, or to move up.

Press and hold the "Ctrl" key, and the mouse wheel will move forward to the image left, or to move right.

Select The Correct Correction File

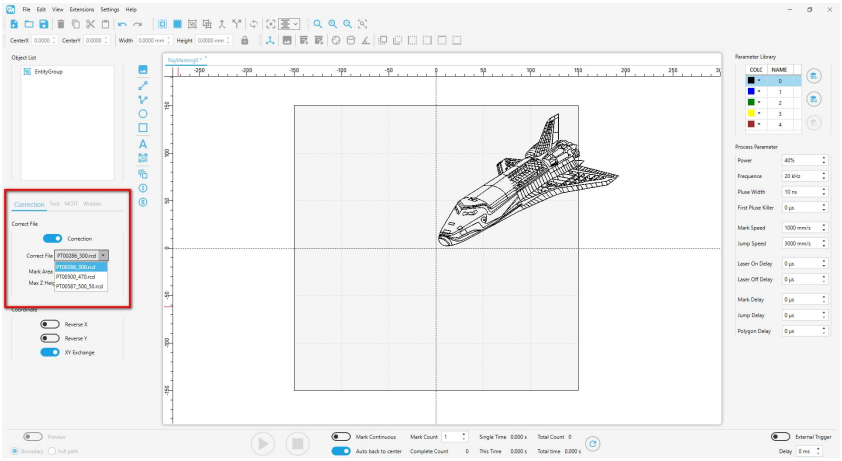
Correction Tab

Correction Tab is used to display and select correction files.

When there is no correction file, some of the features of this tab are not available.

This tab will not be visible when the control card is not detected.

For detailed instructions on creating an adjustment file, please refer to CorrectionWizard Software Usage.



Functions

1)Correction switch: This switch indicates whether to turn on the correction. When this switch is selected, the correction function is enabled. When the correction function is not enabled, even if the correction file is selected, there is still no correction effect.

2)Marking range: Indicates the preset format size in the correction file, which will be displayed directly in the drawing area, and the drawing file cannot exceed the area.

3)Maximum processing height:Indicates the size of the Z-axis focal length that the device can move in dynamic axis correction.

Creat And Edit

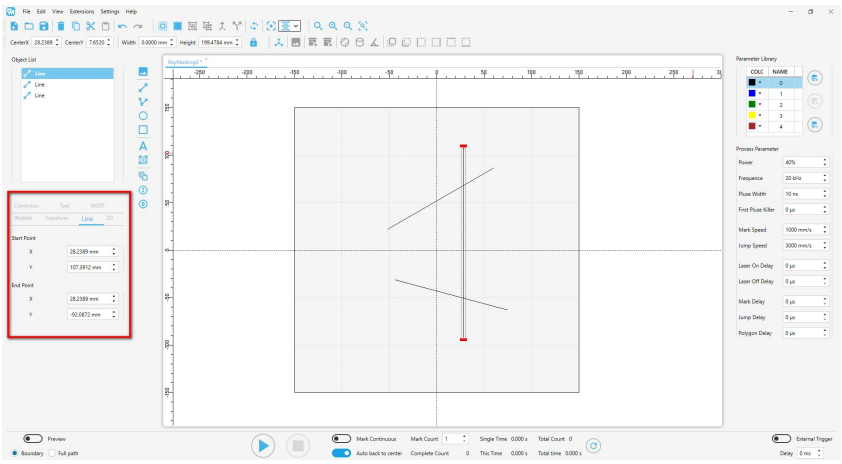
Basic Graphic Creation

1) Line

Click the line button in the drawing toolbar, specify the starting point, drag to the end point, and release to complete the drawing of the line.

If you need a straight line at an angle of 0°, 30°, 60°, 90°, etc., you need to hold down the Ctrl key and then perform the drag and drop operation.

Check the drawn line to adjust the coordinates of the start and end points in the Line tab on the left.

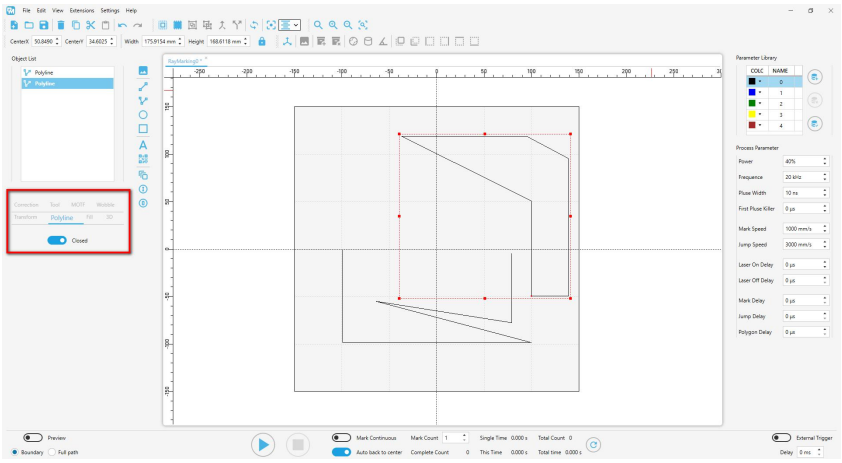


2) Polylines

Click the Polyline button in the Drawing toolbar, left-click at the beginning of the drawing area, move to the next inflection point and click the left button again to complete the polyline drawing multiple times.

If you need a straight line at an angle of 0°, 30°, 60°, 90°, etc., hold down the Ctrl key and perform the operation.

Select the drawn polyline and turn on the closed loop switch in the "Polyline" tab on the left to make the polyline a fully closed polygon.

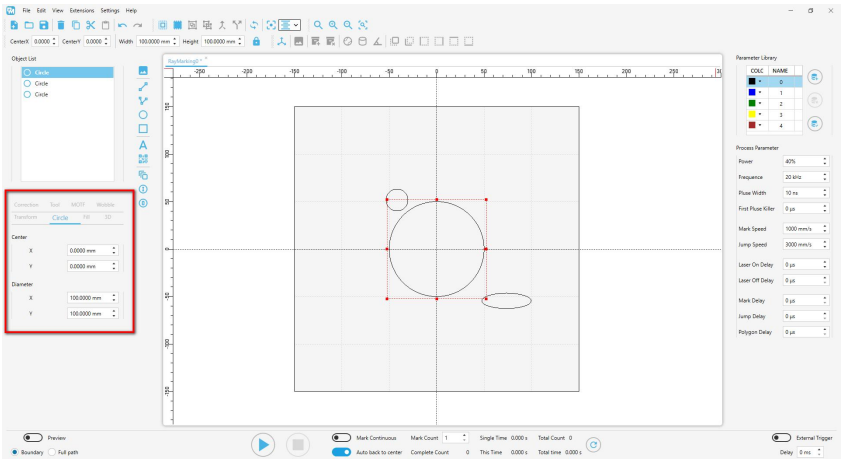


3) Circle

Click the "Circle" button in the drawing toolbar, determine a corner of the circumscribed rectangle at the starting point of the drawing area, drag it to the end point and release it to complete the drawing of the circle.

If a perfect circle is required, hold down the Ctrl key and perform the operation.

Select the drawn circle and adjust the coordinates of the center point and the radius in the X and Y directions on the "Circle" tab on the left.

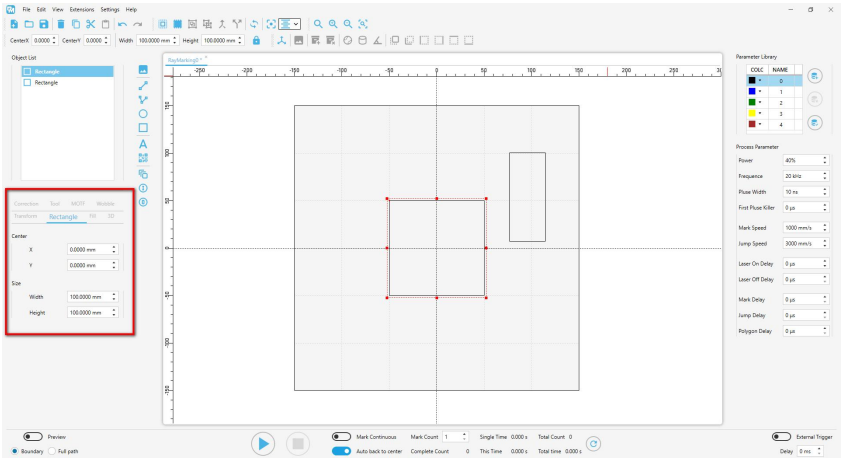


4) Rectangle

Click the "Rectangle" button in the drawing toolbar, determine a corner of the rectangle at the starting point of the drawing area, drag it to the end point and release it to complete the drawing of the rectangle.

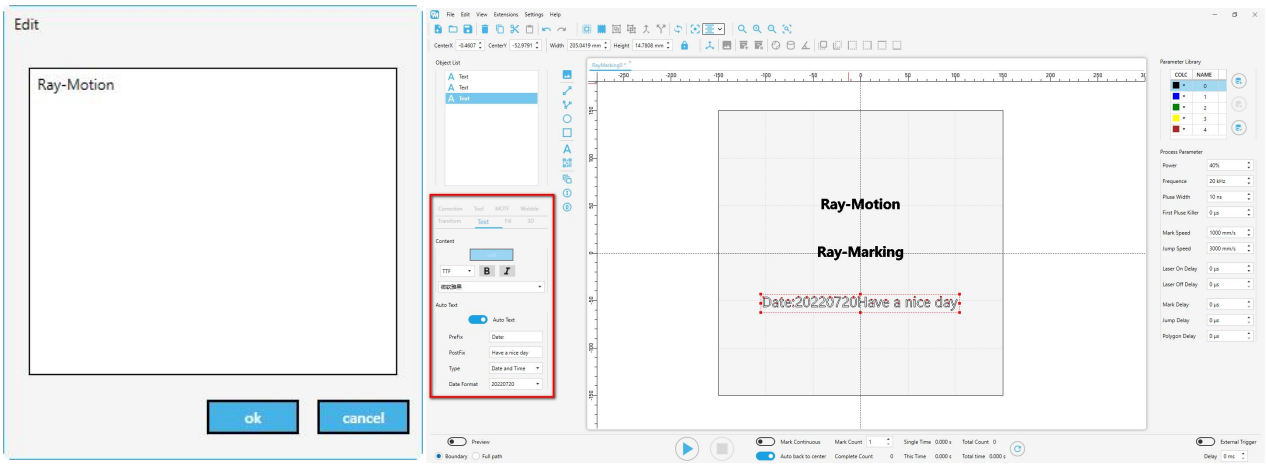
If square is required, hold down the Ctrl key and perform the operation.

Select the drawn rectangle, and adjust the coordinates of the center point and the length and width in the "Rectangle" tab on the left.



5) Text

Click the "Text" button in the drawing toolbar, complete the settings of the document in the window and click OK, and then click the left button in the drawing area to complete the creation of the graph.



If you need to modify the text, select and execute it in the "Text" tab on the left.

"Edit" button to re-edit the text content.

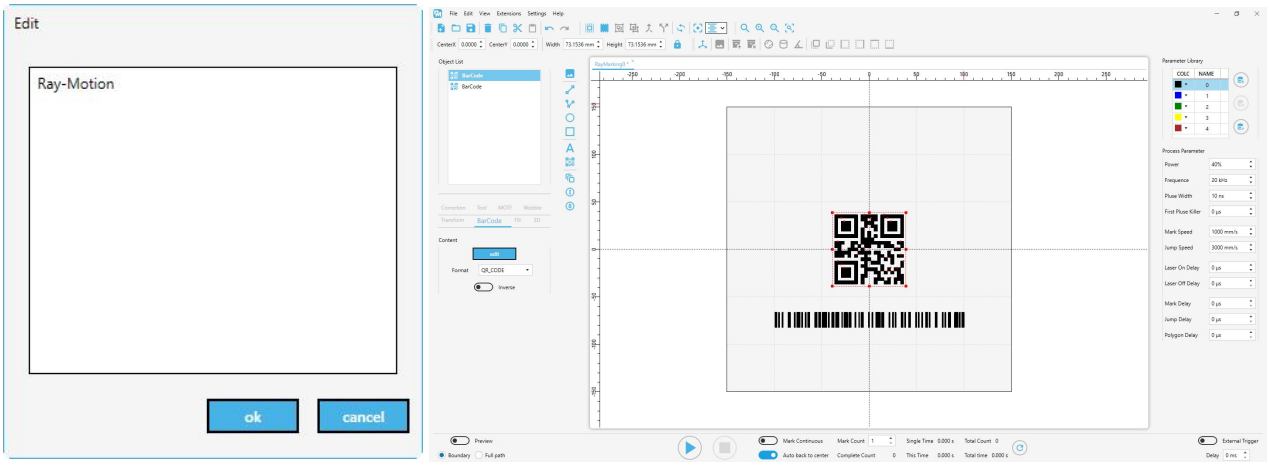
There are two types of fonts: TTF and SHX. TTF is consistent with the system font library, and SHX is the CAD preset font. If the selected font library does not include the entered text, it will display an error or disappear.

Auto text is activated to automatically add the system time or date. Format, prefix and postfix can be set.

6) BarCode

Click the "BarCode" button in the drawing tool, select the coding form and fill in the content, and click the drawing area to complete the production after confirmation.

This feature should be used in conjunction with the Fill tab.



The barcode can be re-edited. Content and code system needs to match.

Create Motion&IO

1)Motion

Adding is done via the "Motion" button in the drawing toolbar. See "Axis Control Functions" for details.

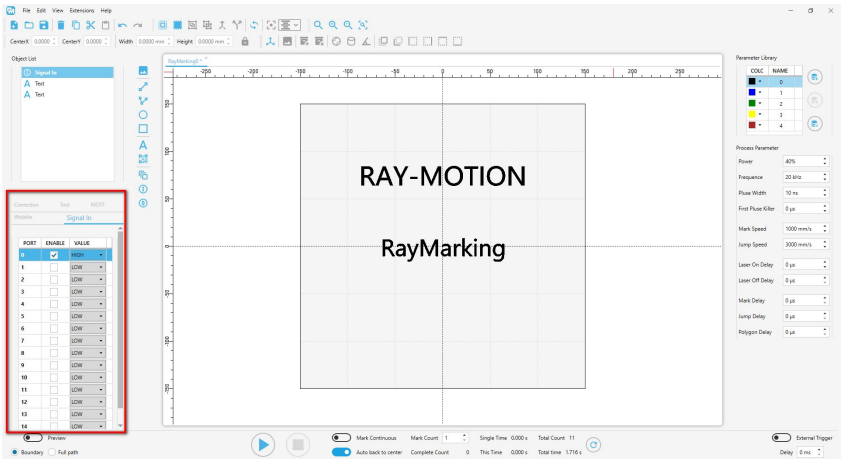
2)Signal Input

Control the process of marking the graphic elements by receiving external high and low level signals.

When the external input signal does not meet the preset criteria of the Signal Input tab, the marking process will be suspended at the Signal Input object until the external input signal meets the conditions.

The Signal Input tab provides 16-port reception settings.

First check the "Enable" checkbox to determine which port needs to receive the signal, and then set High or Low to determine the high and low levels of the signal to be received.



3)Signal output

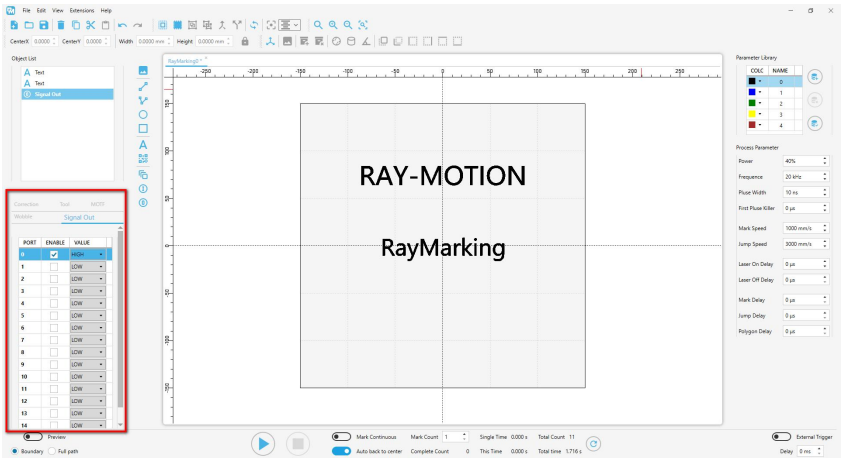
The marking process information is output by outputting high and low level signals to the external.

When the signal output is executed, the high and low level signal output of the corresponding port will be completed according to the setting of the signal output tab, indicating that the graphic element before this signal output has been processed.

Note: The signal output function provides a pattern change of high and low levels. For example, after setting port 0 to output high, it will continue to output high until a signal output change is made to port 0 or the control card is powered off and restarted.

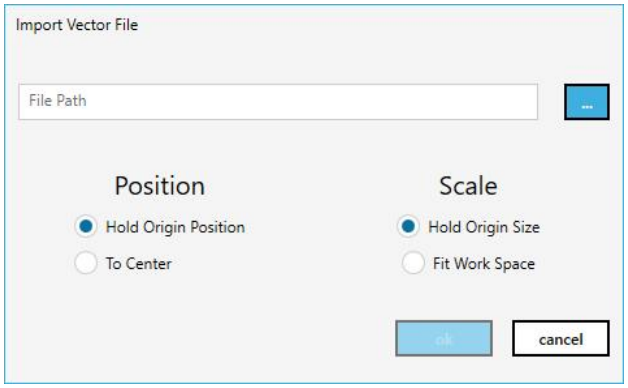
The Signal Output tab provides output settings for 16 ports.

First check the "Enable" checkbox to determine which port output signal is needed, and then set High or Low to determine the high and low level of the output signal.

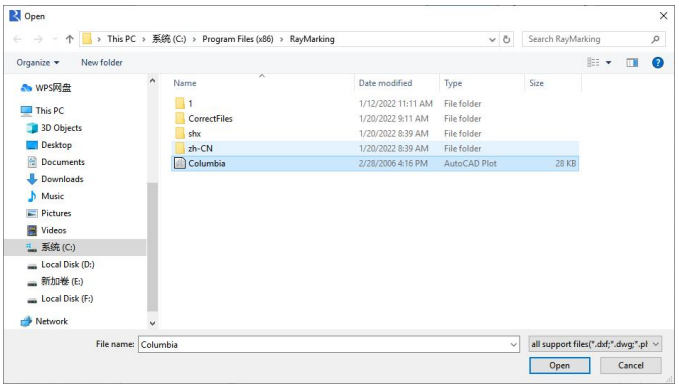


Import Vector File

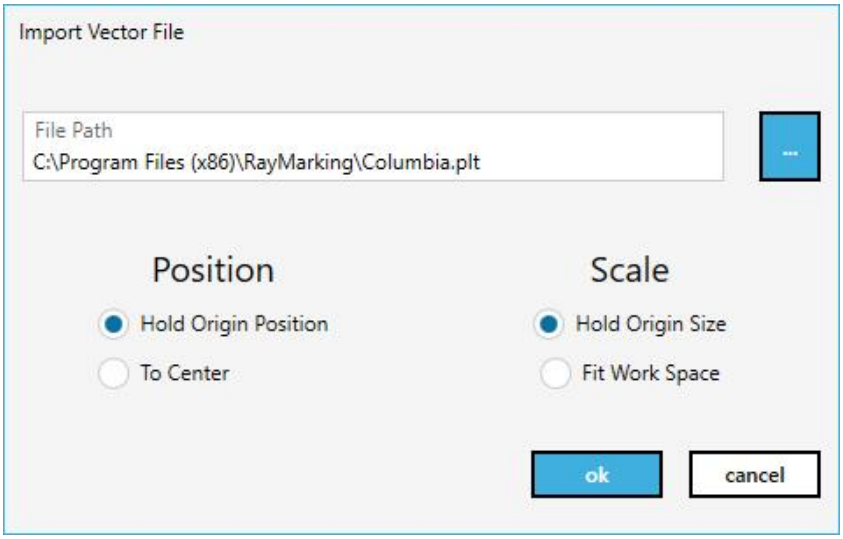
1) Select "File" - "Import Vector File" in the menu bar, or directly click the "Vector File" button in the drawing toolbar to open the import vector file window.



2) Click the blue button on the right side of "File Path" to open the file path index, go to the file path and select the file to be imported, and click "Open".



3) Select the desired position, scale options and click the "OK" button to complete the import of the vector file.



Position:

Hold origin Position:Maintain element position in drawings.

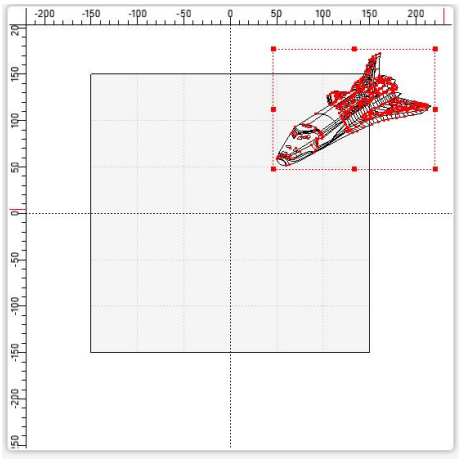
To Center:Centers the element center into the workspace.

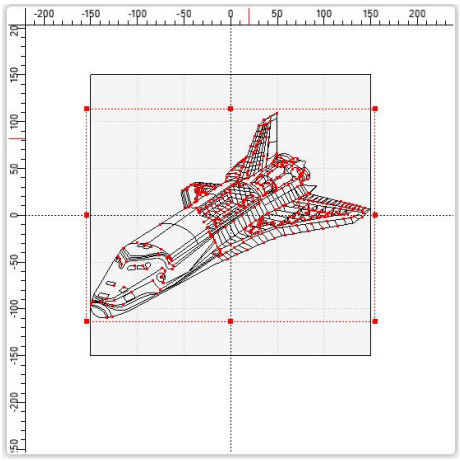
Scale:

Hold origin Size:Import with original drawing size.

Fit Work Space:Full-scale scaling based on workspace size.

The specific effect is as follows, the left picture is the original position and the original size, the right side is centered and adapted to the work area.





Select And Cancel

There are four ways to select primitives:

1) Left-click directly, when a red dotted rectangle appears on the outer frame of the primitive, it means that it has been selected.

2) Frame selection from left to right, only when the entire element is framed will it be selected.

3) Frame selection from right to left, when any part of the element is framed, it will be selected.

4) Right-click in the drawing area will display the options of select all and inverse selection, or select the "select all" and "inverse selection" buttons in the editing toolbar. Select all will select all elements in the page, and inverse selection will select all elements except those already selected.

5) Select in the list of objects on the left, hold the "Ctrl" key to achieve multi-target selection, and hold the "Shift" key to achieve continuous selection.

Clicking on an empty space in the drawing area will cancel the selection.

Move

There are three ways to move:

1) After the graphic element has been selected, the mouse icon will turn into a cross arrow after moving the mouse into the red dotted rectangle, and you can move it by dragging.

2) When the element has been selected, you can use the "Move" function in the"Transform" tab on the left, set the displacement amount and click the corresponding direction to move.

3) When an element has been selected, pressing the arrow keys on the keyboard will move the element in the direction. The amount of displacement is related to the parameter of the Move function in the Variation tab on the left.

Rotate

When the element has been selected, the "Rotate" function in the "Transform" tab on the left can set the rotation amount. Click the "Clockwise" or "Anticlockwise" button to rotate by a predetermined value according to the set direction.

Scaling

When the graphic element has been selected, the graphics can be expanded and retracted through the red dotted rectangle that appears in the outer frame of the graphic element, and the red dot can be directly dragged with the mouse.

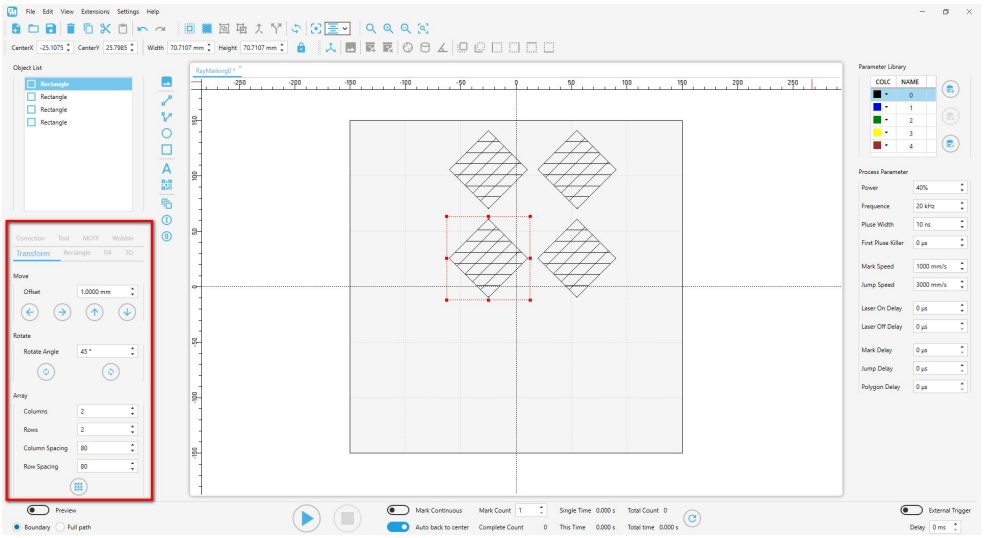
When the element has been selected, the length and width of the element can also be directly defined in the outline toolbar.

The default is to lock the ratio of length and width. If you need non-proportional scaling during the operation, click "Keep Ratio" in the outline toolbar to turn off this state.

Array

The array function can copy the selected primitives and place them in a rectangular array with a set length and width.

When the element has been selected, fill in the number of rows, columns and corresponding spacing in the "Array" function in the "Change" tab on the left, and click the Array button to complete the operation.



Copy, Cut And Paste

1) Copy: You can right-click to select "copy", "Ctrl + C" on the keyboard, or directly click the "Copy" button in the basic toolbar when the element has been selected. The copied element will not disappear, but copying it again will remove the previous copy.

2) Cut: You can right-click to cut or directly click the "Cut" button in the basic toolbar when the element has been selected.

3) Paste: You can restore the previously copied or cut primitives by right-clicking and pasting, "Ctrl+V" or directly clicking the "Paste" button in the basic toolbar.

To Center And Alignment

1) To Center: Clicking the "To Center" button in the editing toolbar.

2) Alignment: Select the alignment operation of the corresponding primitive by clicking the "Alignment" button in the editing toolbar. There are six alignment methods.

Group, Ungroup, Combine, Split

When two or more primitives have been selected, the primitives can be processed into one primitive by right-clicking and clicking the "Group" and "Combine" buttons in the group, merge or editing toolbar for convenient operation.

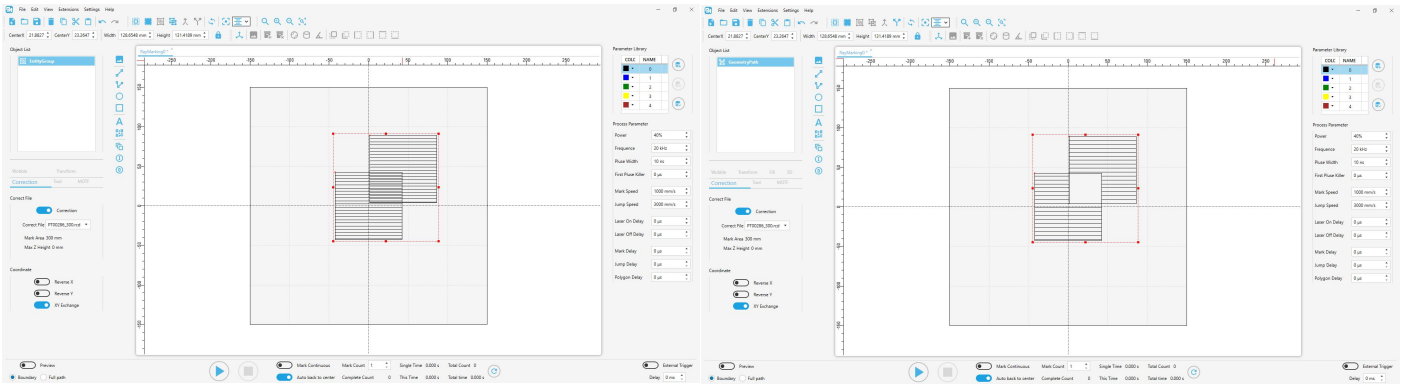
When the complete grouping or merging of primitives has been selected, right-click to ungroup, split, or click the "Ungroup" and "Split" buttons in the editing toolbar to restore the primitives to an independent state.

The difference between Group and Combine:

1) Group: Into a primitive group, an independent individual or a whole with a fixed relative position.

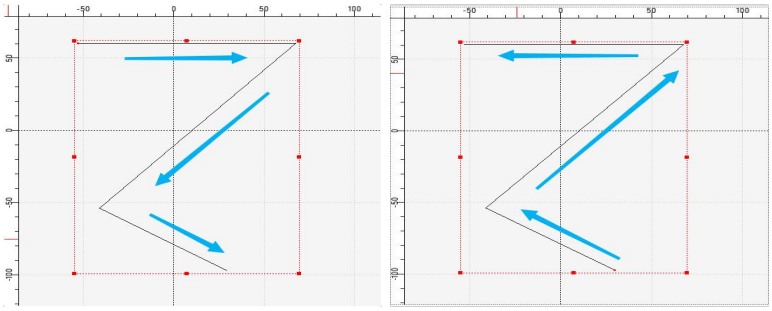
2) Combine: Into one primitive and become a unique individual.

Combine will affect the filling result of primitives. When adding filling, the position of the overlapping part will be "empty".



Reverse

The laser processing process completed by the laser galvo is directional, so there is a red dot at the starting point in the primitive. If you want to reverse the processing direction, you can click "Reverse" in the editing toolbar when the primitive has been selected.

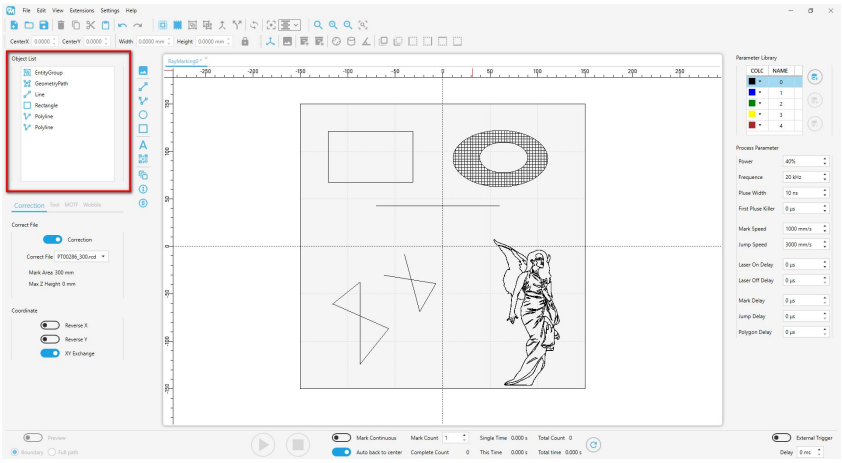


Object List

The object list on the left contains the graphical objects and motion objects, uniformly called objects.

The graphical objects would be bound to the drawing area drawing element and left click will complete the selection operation.

The motion objects would perform motion control for a single axis. The motion object will be selected and set in the Motion tab.



Elements in the object list are selected by holding down the Ctrl key for multi-target selection, and by holding down the Shift key for continuous selection.

The list of objects is arranged in processing order, and the position of the selected element can be changed by dragging and dropping with the left mouse button.

New, Open, Save,Save As

1)After selecting the file option in the menu bar, you can create, open, save, save as, and so on.

2)Save: Clicking Save overwrites the previous file, which is the same as the Save As operation if it was not previously saved.

3)Save As: Clicking Save As will save the file and give the file a new name, the path and name can be chosen by yourself.

4)New: If there are no files in the image or the files have been saved, create a new blank file directly, otherwise it is the same as the save operation.

5)Open: Find the desired file in the corresponding path and click Open.

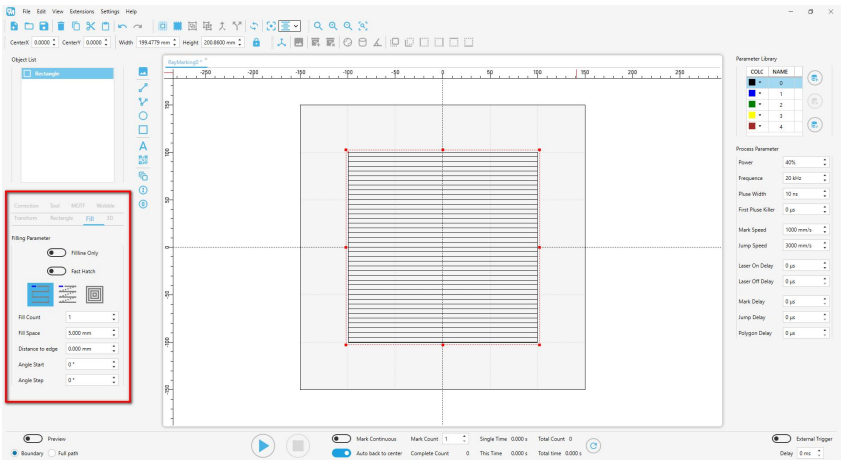
Fill Tab

This tab is only available on closed elements.

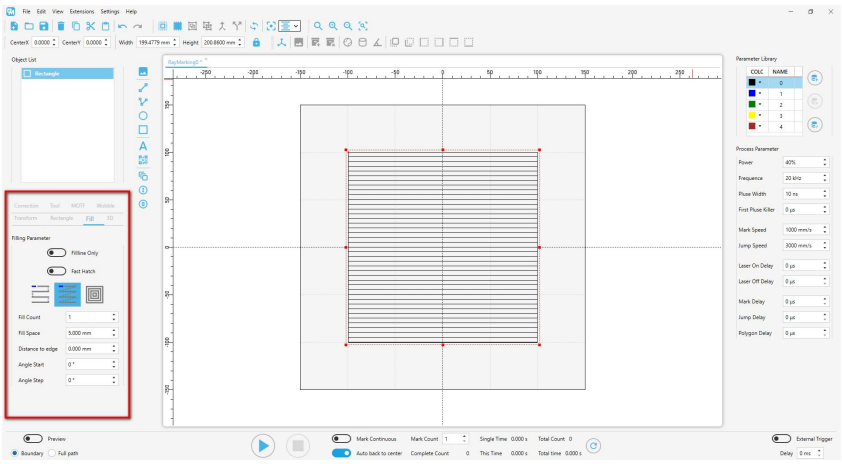
1)Fill line Only: Only fill lines are marked, no outline lines are marked.

2)Fast Hatch: The bow fill will be done with one power on command,may be accompanied by additional fill lines.

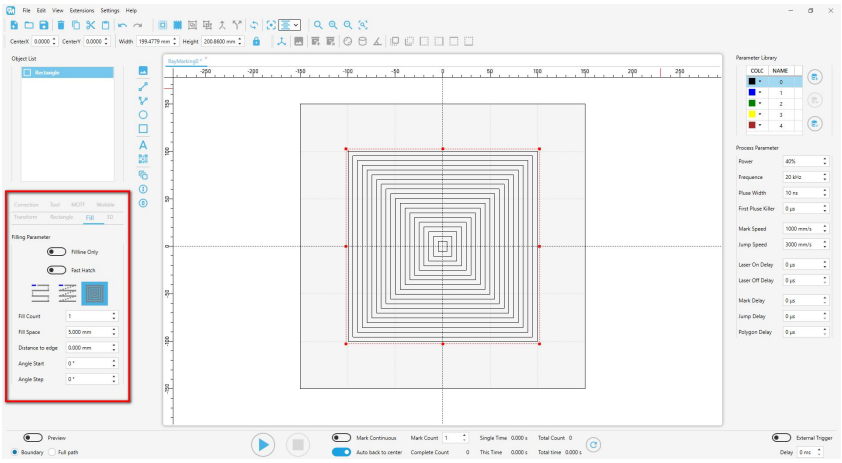
3)Bow Fill: Make the fill in a bow motion, filling adjacent lines always in the opposite direction.



4)Z Filling: Make the fill in a Z-shaped motion, and the line direction of the same filling is always the same.

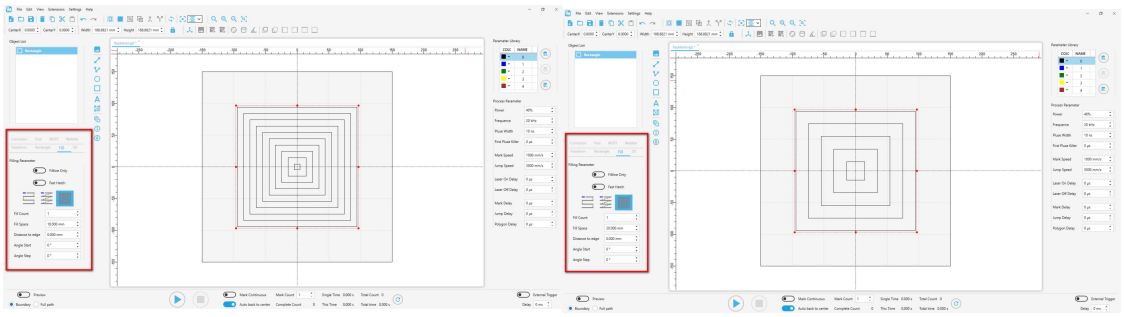


5)Rectangular-ambulatory-plane Filling: Make the fill in a rectangular-ambulatory-plane motion.

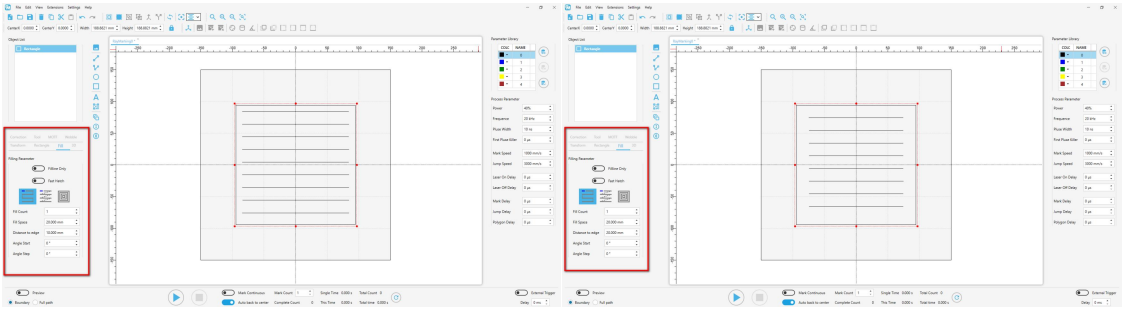


6)Fill Count: Represents the number of fill lines, generally used in conjunction with "Start Angle" and "Progression Angle".Generally used with starting angle and progressive angle.

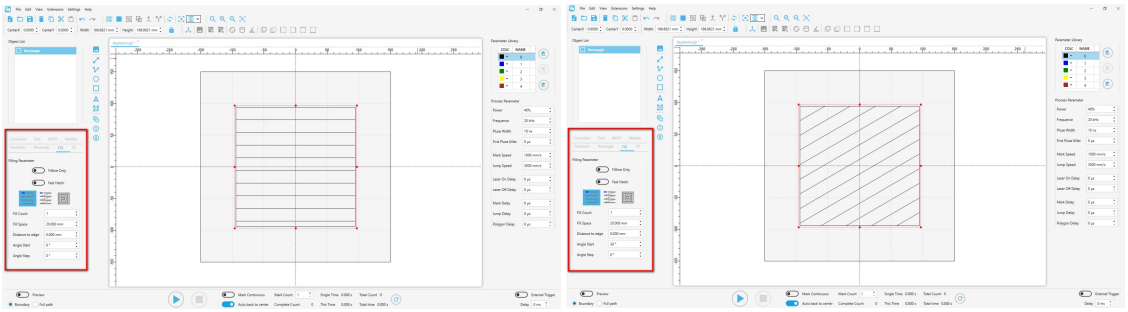
7) Fill Space:Set the distance between fill lines.



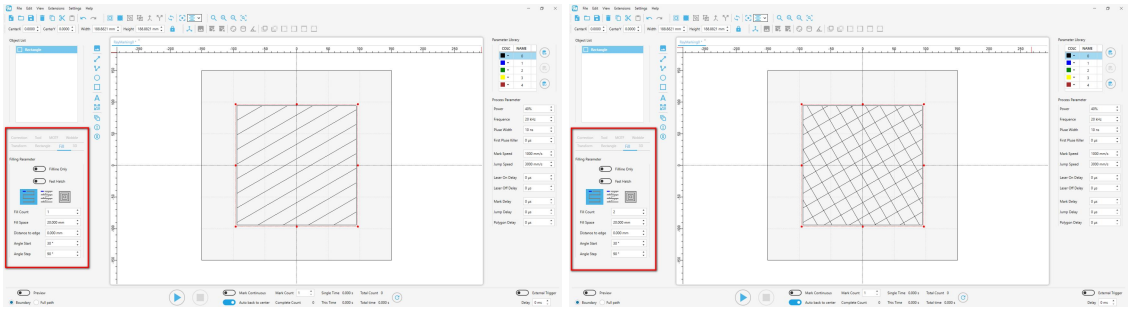
8) Distance to edge: Set the distance between the fill line and the box.



9) Start Angle: Set the start angle deflection of the filled line.



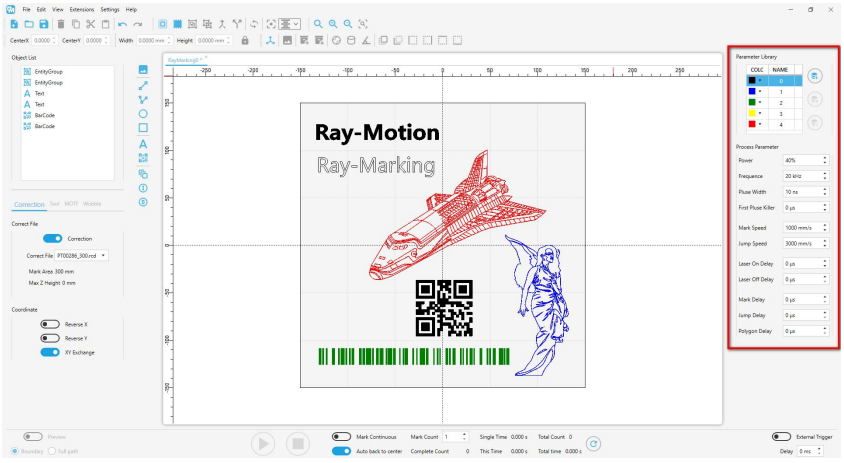
10) Progression Angle: Sets the angle that the line direction of the next fill needs to be changed after a fill, Only when the number of times is two or more.



Parameter Adjustment

Parameter Library

RayWelding has a parameter library on the right side of the interface, you can set the parameters and distinguish them in the drawing area with different colors.



1) Picking: In the parameter library list, click the left button to select a parameter group, and the scroll bar on the right can drop down to display the hidden parameter group. Modifications to the processing parameters below will be automatically saved to the corresponding parameter group.

2) Color: The color in front of the parameter group can be selected from the drop-down list triggered by clicking the left button.

3) Name: The name of the parameter group defaults to the number from the number, and the name can be modified by double-clicking the number.

4) New/Delete: "New" and "Delete" buttons on the right can add and delete groups.

5) Apply: Click the "Apply" button to the right of the parameter table to apply the current parameter group and color to the selected element.

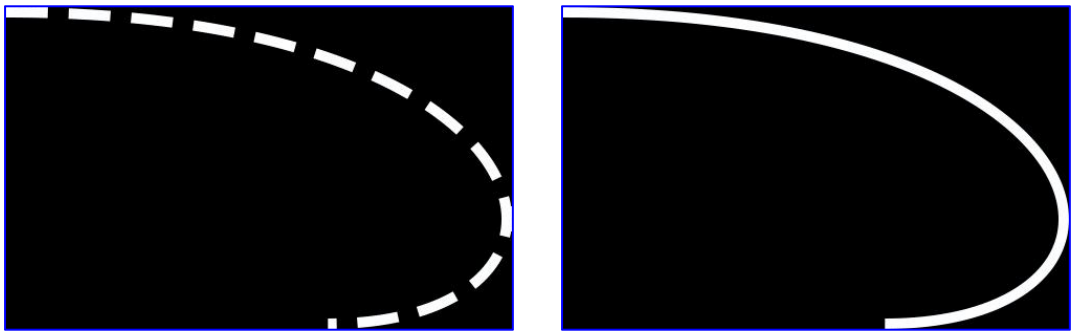
Power

Used to set the laser output power. The larger the value, the greater the laser output. You can set it according to the actual needs.

Frequency

Used to set the pulse repetition rate (PRR) of the laser output.

If the frequency is low and the marking speed is fast, the laser break point will be more obvious; otherwise, the connection will be tight.



Pluse Width

Used to set the pulse width of the MOPA laser. This parameter will affect the applicable range of the frequency parameter.

The higher the pulse width, the stronger the laser output energy per unit time, but it is not an absolute factor.

First Pluse Killer

Used to set the first pulse suppression value for some lasers.

Mark Speed

Used to set the speed of laser processing, which has an absolute influence on the processing time of primitives.

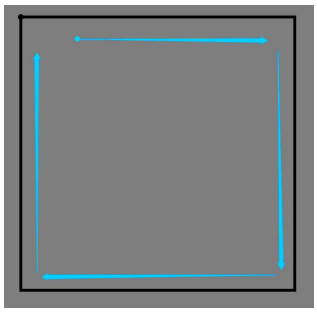
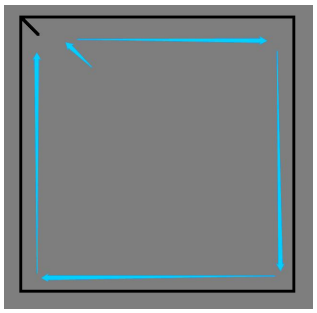
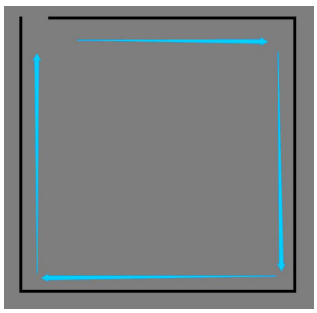
Jump Speed

Used to set the speed of the air jump, which has an indirect effect on the processing time of the primitive.

Laser On Delay

After the marking command starts, after this delay time, the laser starts to emit light. (This parameter can be set to a negative value.)

It is generally set at high speed, and added when the laser starting point leads or lags to correct the opening position.When the delay of turning on the laser is positive, the turning on of the light will be delayed, otherwise, it will be advanced. The picture on the far right shows that the graph is not closed due to too large parameters.

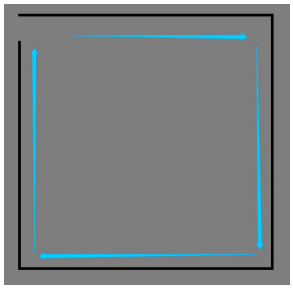
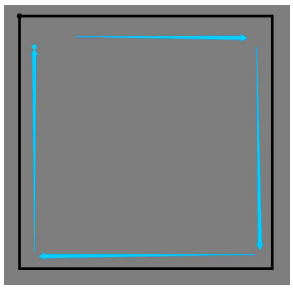
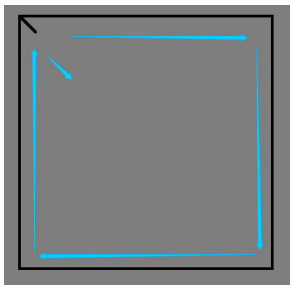




Laser Off Delay

After the marking command ends, after this delay time, the laser stops emitting light.

This parameter can only be a positive value.

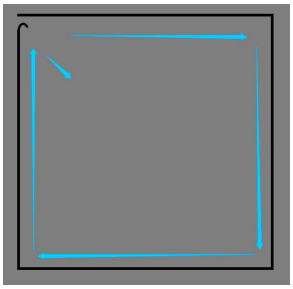
It is generally set at high speed, and added when the laser end point is ahead to correct the light-off position.The two pictures on the right show the over-etching caused by the high delay of turning off the laser.

Mark Delay

After the marking command ends, the next command will only start after this delay time.

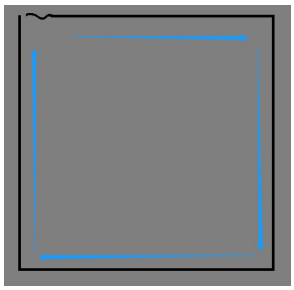
It is used for stability after high-speed marking movement. If the delay is too short, it will cause tailing, and if the delay is too long, it will affect the processing time.



Jump Delay

After the jump instruction ends, the next instruction will only start after this delay time.

It is used for stabilization after high-speed jump movement. Too short delay will cause jitter (overshoot), and too long will affect processing time.

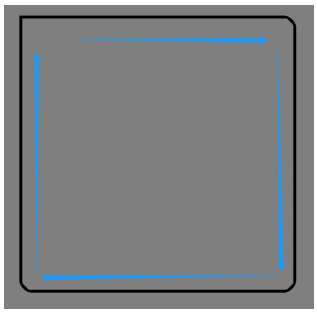


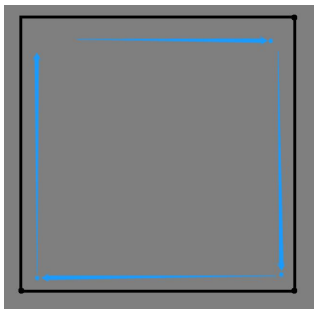
Polygon Delay

When there are multiple marking instructions in succession, this delay will be inserted between every two markings, and the laser will continue to emit light within the delay time.

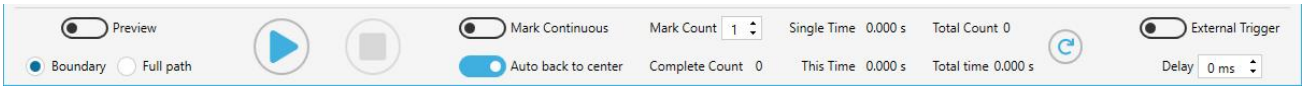
It is used for the stabilization of high-speed corners (radians), and has a great influence on the processing speed of arcs.

Too short may result in an arc near the corner (left), and too long may result in over-etching at the corner (right).





Process Executes



Preview

Provides a pointing light preview of selected objects.

The "Boundary" represents the smallest enclosing rectangle of the marked object.

The "Full path" represents the entire path of the marked object.

Mark Continuous And Mark Count

If "Marking Continuous" is selected, the marking will not stop after completion, but will repeat the marking process indefinitely until the current marking is stopped.Otherwise, it will execute the marking task for the set number of times.

When continuous marking is turned on, the set marking times will be invalid.

Auto Back To Center

If "Auto back to center" is selected, after marking stops, the galvo will return to the origin coordinates (0, 0).

Start And Stop

Start marking: After this button is pressed, the processing process will start, and if the laser is turned on, the laser will be output.

Stop marking: Used to stop the current processing.

Results

Total Count: Displays the number of markings completed.

Single Time: Displays the time taken for a single marking process.

This Time: Display the total time spent since the start of this processing.

Reset Time: Reset all result display contents to zero, restart accumulation and display.

External Trigger

Used to activate the external trigger function, and can set the delay parameter after the external trigger signal arrives.

For detailed wiring information, please refer to "User Manual For RMC2".

Multi-Document Mark

1)Select Extended Functions in the menu bar to open the multi-document marking window

2)Click "Add" to open the file path index, go to the file path and select the multiple files you need to import, click "Open"

3)Provide input settings for 16 ports, select the map according to the signal input. See Create and edit signal input functions for details.

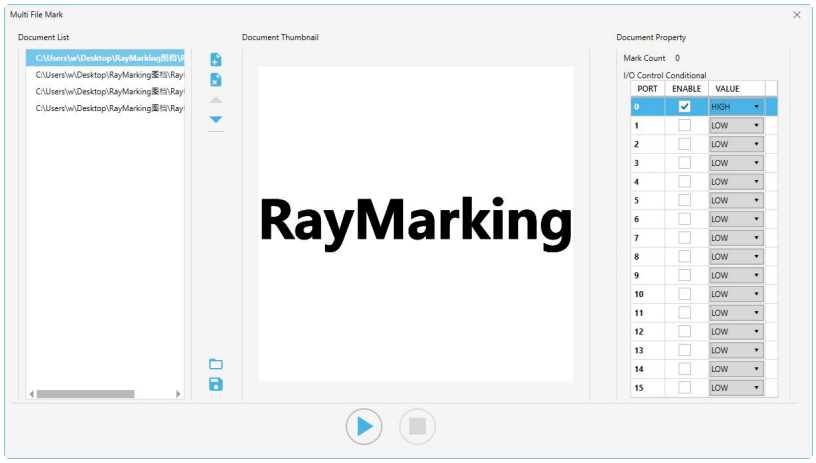
4)Click the engraving button and wait for the signal input for image selection processing.

5)If you need to change the order of document position, click "Move Up" or "Move Down" to adjust.

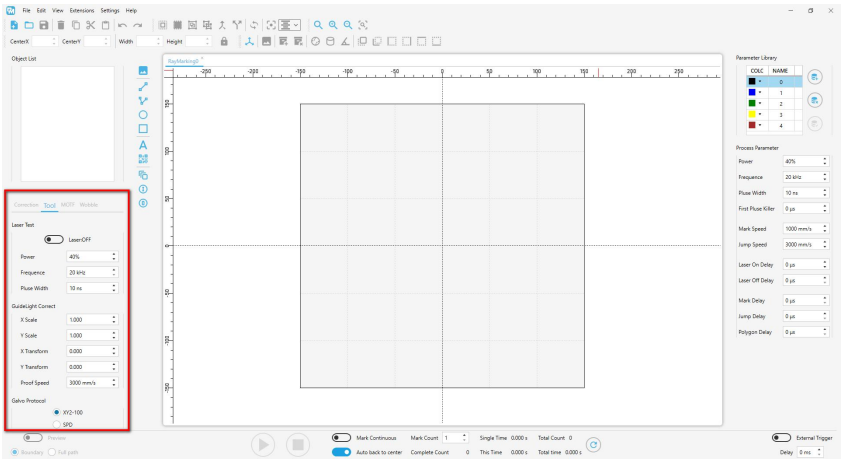
6)If you need to remove a document in a multi-documents, first select the document you want to remove, and click "Delete" to remove the document.

7)After processing, you can click "Save" to save the multi-document file (save the file in .rmdf format).

8)Recover saved multi-document files by "Open File", if the file is missing, a prompt will appear.



Tool Tab



Laser Test

Laser: Used to turn the test laser output on or off. When this switch is turned on, the laser will output the test laser according to the set parameters.

Power: Only for setting the output power of the test laser.

Frequency: Only for setting the pulse repetition frequency of the test laser output.

Guide-Light Correct

X、Y Scale: Used to set the scaling of the indicator light in the X and Y directions.

X、Y Transform: Used to set the offset of the indicator light in the X and Y directions.

Proof Speed: Used to set the scan speed of the preview light.

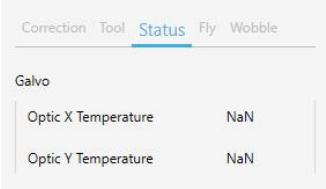
Attention: After the operation, the element may be out of the marking range of the calibration file, and the path during preview may be incorrect.

Lens Temperature Feedback(Galvo Protocol)

SPD:Checking this protocol will pop up a status tab showing X, Y lens temperature.

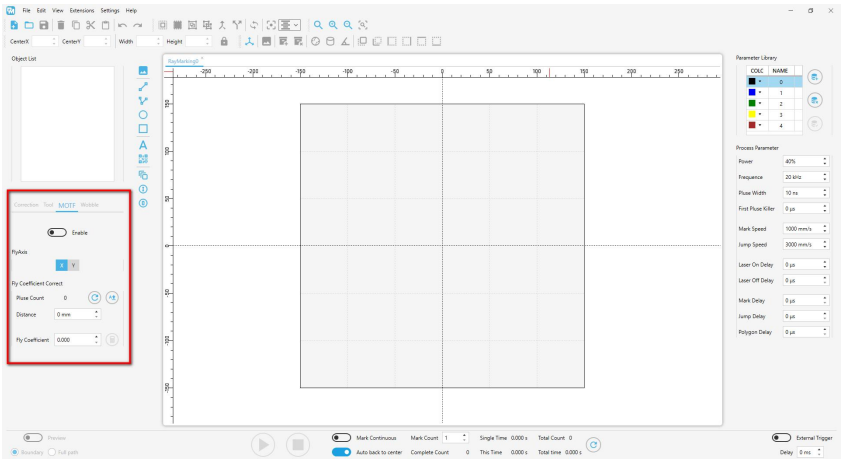
Neutron series only.

XY2-100:Common Galvo Protocol



Fly Tab

Used to make various settings for Marking-on-the-fly.



1) Enable: Used to enable MOTF function.

2) FlyAxis: Used to indicate the direction of travel of the conveyor belt.

3) Flight Coefficient Correct: Used to calibrate the flight coefficient, which directly affects the effect of flight marking.

① Pluse Count

Click "get pluse" to get the number of pulses output by the encoder during a period of time when the conveyor belt is running. Click "pulse reset" to reset the pulse count.

② Distance

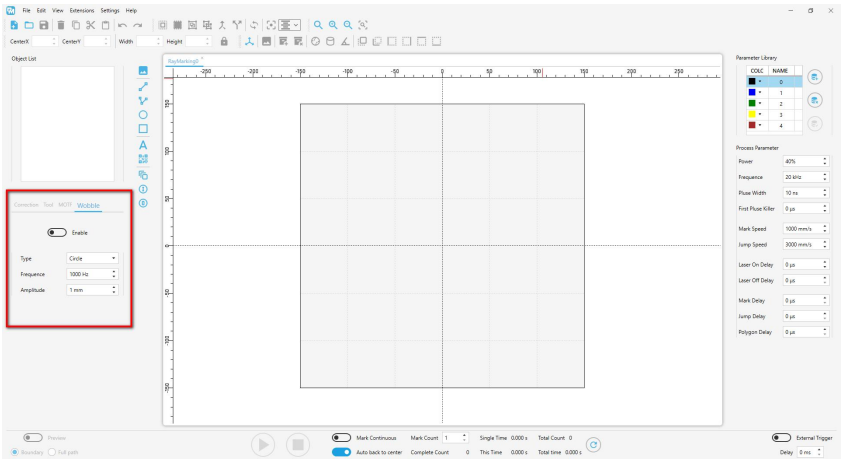
Used to fill in the distance traveled by the conveyor belt.

③ Fly Coefficient

Click "computing coefficient" to calculate the flight coefficient according to the obtained encoder pulse number and the distance filled in. This flight coefficient can also be filled in by yourself. Generally, if the flight marking pattern is deformed, it can be solved by fine-tuning left and right on the basis of the calculated flight coefficient.

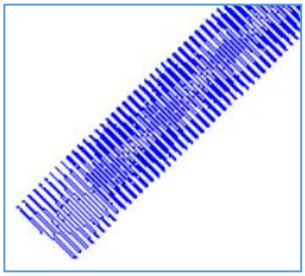
Wobble Tab

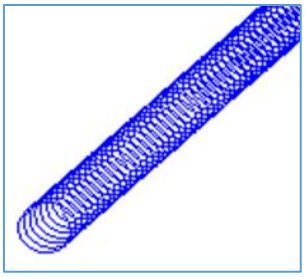
Used to set the Wobble function of the galvanometer, which is generally applicable to the welding field (welding seam widening).

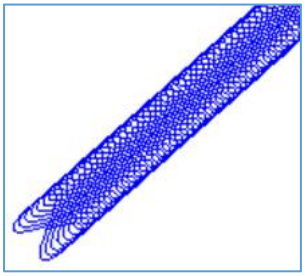


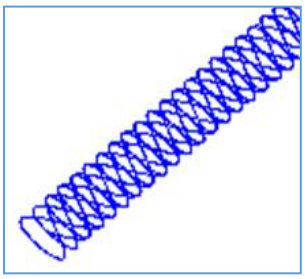
1) Enable: Used to turn on the Wobble function.

2) Type: Four types of Wobble types are available, each type is shown as follows:

Line: 

Circle: 

Eight: 

Infinity: 

3) Frequency: Used to set the number of cycles per second the Wobble oscillates.

4) Amplitude: Used to set the width of the Wobble wiggle.

Curved Surface

Deep Carving

After selecting the drawing element in the drawing area, the 3D tab appears on the left side. Checking the Deep Sculpt option in the 3D mode will set the currently selected drawing element to Deep Sculpt mode, and the parameters for the Process Height and Focus Down Per Processing will appear below.

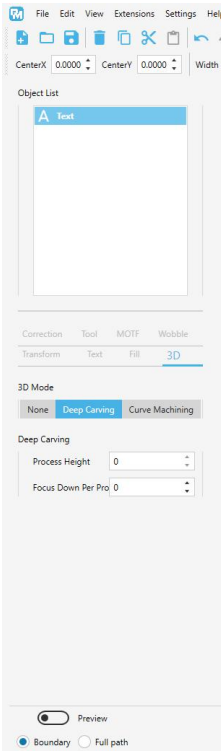
Process Height: Total change in focal length of the process.

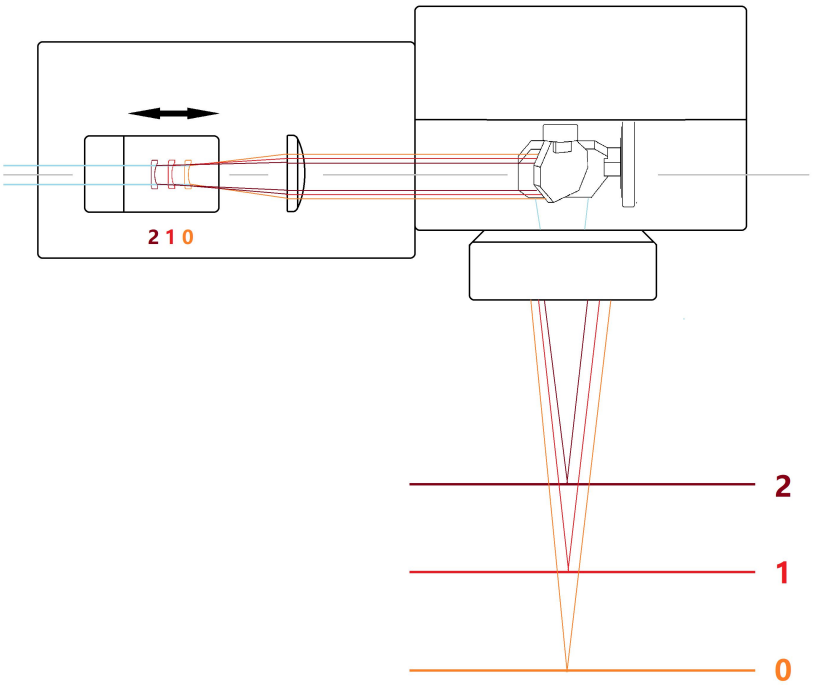
Focus Down Per Processing: Focal height to be changed for each completed layer.

Deep Carving is based on the focal length, and the focal length is shortened by adjusting the dynamic axis position.

The following figure is an example: after the device is powered up, the plane where the focal length located is Position 0. After setting the "Process Height" parameter, the dynamic axis position will be changed and the focal length will be set to Position 2. After that, setting the parameter "Focus Down Per Processing" will generate multiple parallel Position 1 to achieve layer by layer engraving.

No need to adjust the height of the oscillator throughout this process.





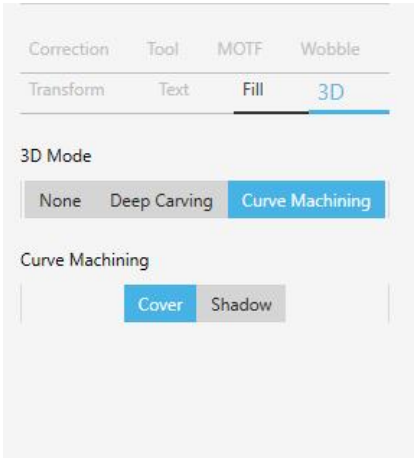
Attention!

All drawing elements can have parameters in the 3D tab, and the 3D tab will only appear if a single drawing element is selected. If you need to do 3D engraving of multiple elements at once, you can choose to merge, group and then set parameters or set each element individually.

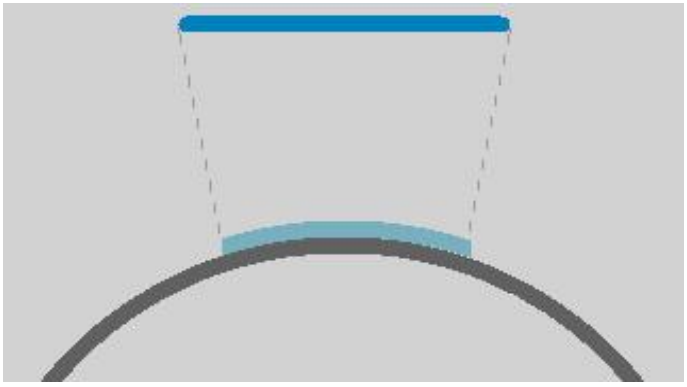
Curved Surface

1) 3D Tab

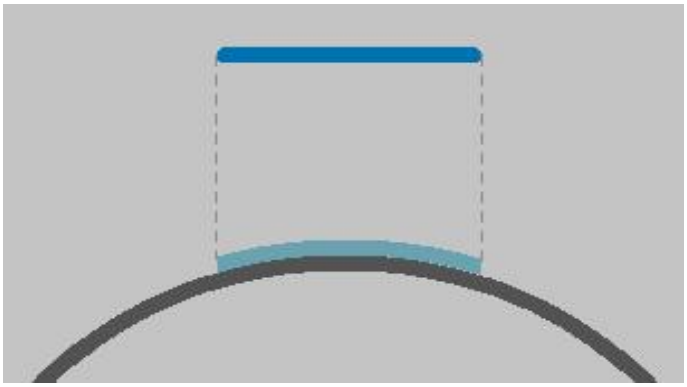
After selecting the drawing element in the drawing area, the 3D Tab appears on the left side. Selecting the surface sculpting option in 3D mode will set the currently selected drawing to surface sculpting mode, and the options for Cover and Shadow will appear.



Cover: Deform the graphic element into a shape that fits the surface of the target and covers it with the target, as shown below.



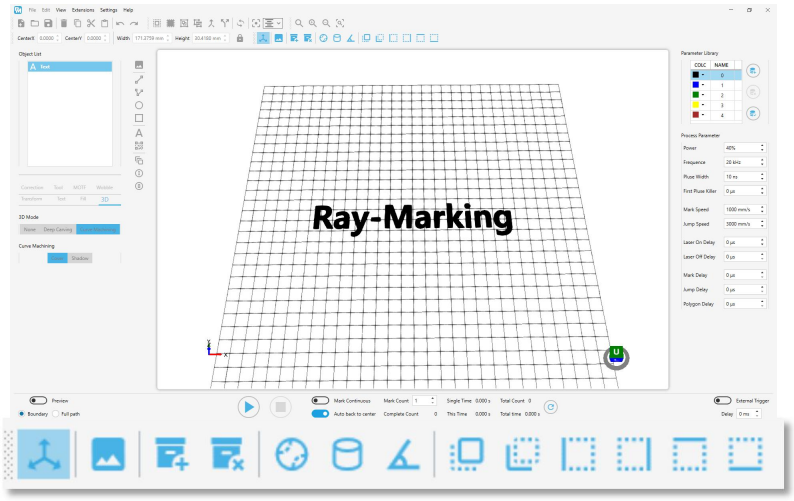
Shadow: Projecting the shape of the figure element vertically onto the external surface of the target object.



2)3D mode and 3D toolbar

After you have finished setting the mode for surface engraving in the 3D tab, you also need to apply the drawing elements in the 3D view (each time you make changes to the mode or the dimension and position of the drawing elements, you need to enter the 3D view again to complete the drawing element application).

The 3D view allows you to set the surface environment in which the engraving task will be processed.



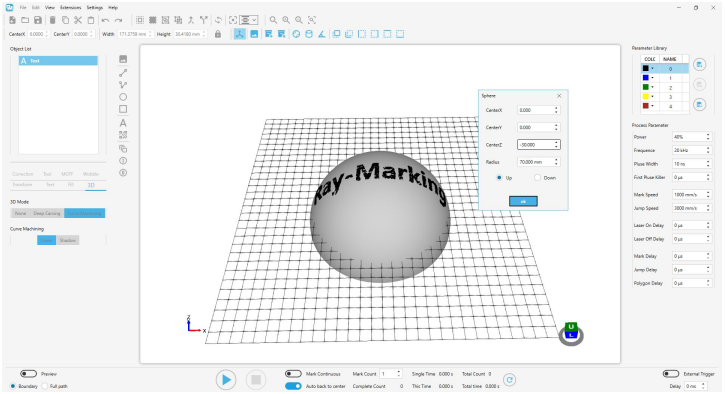
①View angle operation: Hold down the right button in the drawing area and drag to make the view angle rotate, or click the view button on the right side of the 3D toolbar.

②3D view switch: Turning it on will turn off most of the functions of the software, while turning on other functions of the 3D toolbar.

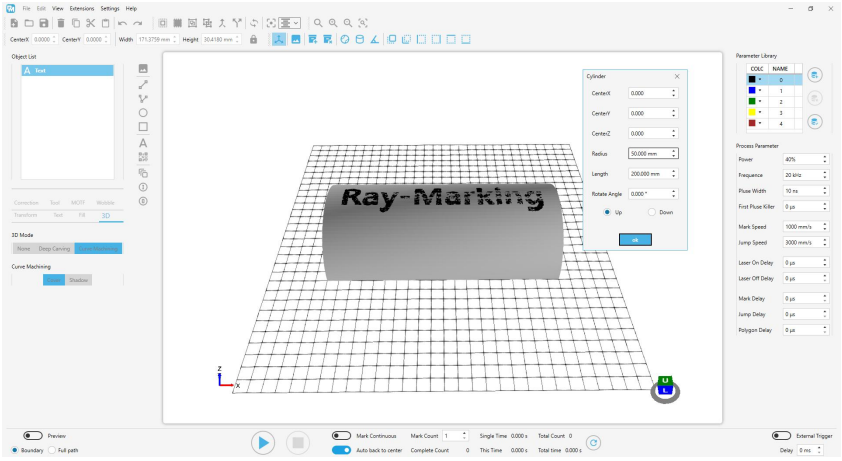
③Import model: You can import 3D files in STL format to simulate surface models.

④Delete: Delete the set surface model.

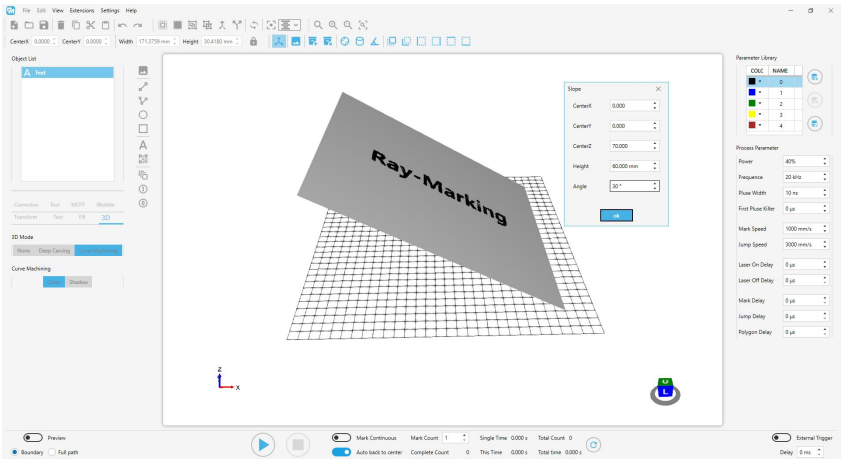
⑤Sphere: Creates a hemispherical surface with the ability to set the center position, radius, and upper and lower hemispheres.



⑥Cylindrical: Creates a hemispherical surface with the ability to set the cylinder rotation angle, position, radius, and length.



⑦Bevel: Create a bevel, you can set the tilt angle, bevel rectangle side length (height) and position.



Attention!

The same settings as in the figure above on this page will cause partial focal lengths to cause undesirable results.

The grid plane in the drawing area is the limit of the position that the dynamic axis of the galvo can reach, i.e. the farthest focal position. The focal lengths of the elements below this plane will be the same as this plane. For normal processing, you can increase the value of "center point Z" to make the target plane higher than the grid plane.

In addition, the surfaces and inclined planes created in the 3D view can be moved in the 3-axis direction, but cannot be rotated. The orientation problem can be solved by rotating the elements.

Surface positioning: In principle, the creation of surfaces in the software should be fully consistent with the actual marked surface of the target item, including size, shape, height and other parameters, in order to optimize the marking effect.

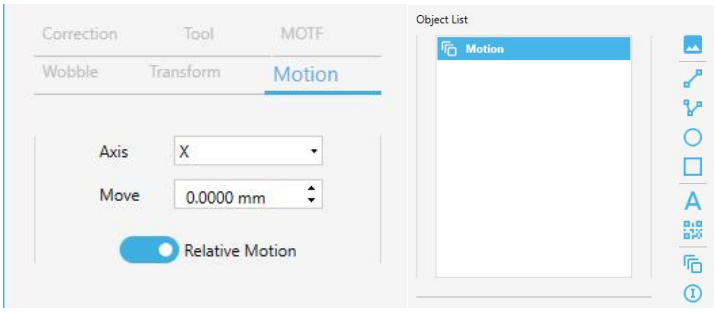
Axis Control Function

Motion& Motion tab

It is added via the "Motion" button in the drawing toolbar. The "Motion" is not a drawing element and does not affect or create drawings in the drawing area.

The Motion tab appears when the Axis Control Card is connected and Motion is selected in the object list, and you can choose to set the parameter settings for the direction and displacement of the movement of the four axes (X, Y, Z, Theta).

Relative Motion Switch: Sets whether the parameters of the motion object are applied to the relative motion state or the absolute motion state.



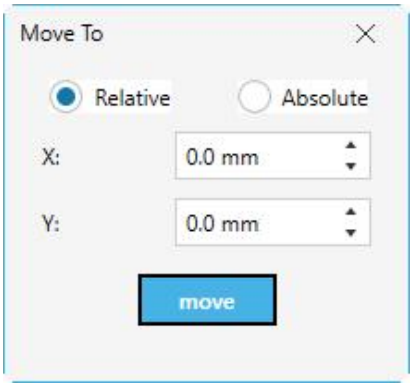
XY Slipway Control Panel

XY axis motion control is carried out according to the parameters set by XY slipway,the upper is the positive direction of Y, the right is the positive direction of X, and the movement value is the amount of displacement that is used to control the button with a single click.

Move to:

Relative Motion: The amount of displacement of the set displacement value that can be continuously moved.

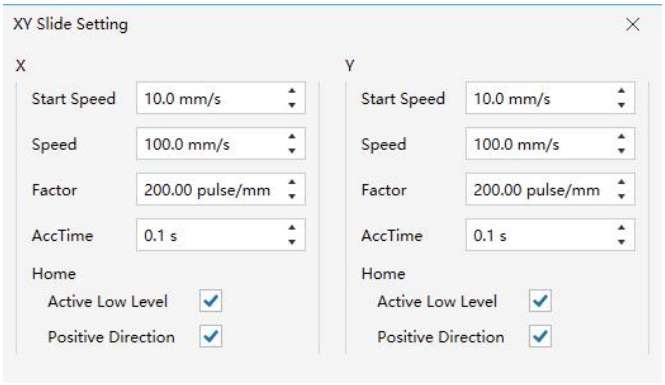
Absolute Motion: Moves to the set displacement value.



Return to Zero: Sets the current position of the slipway to zero.

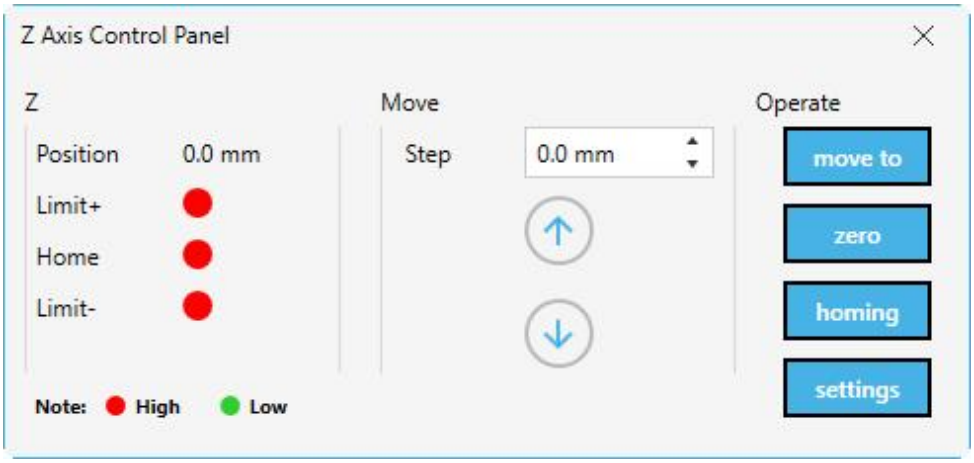
Origin Regression: Adjusts the slipway to the coordinate system origin position.

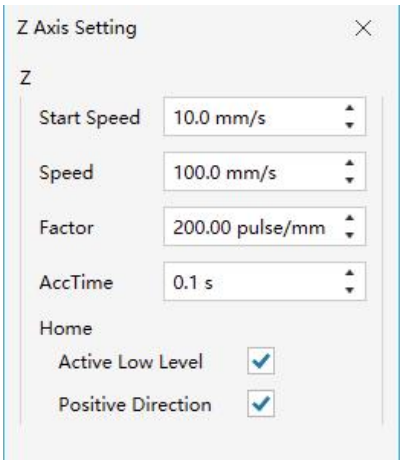
Settings: The settings include the operating speed, starting speed, coefficient, and acceleration time of the corresponding axis.



Z-axis Control Panel

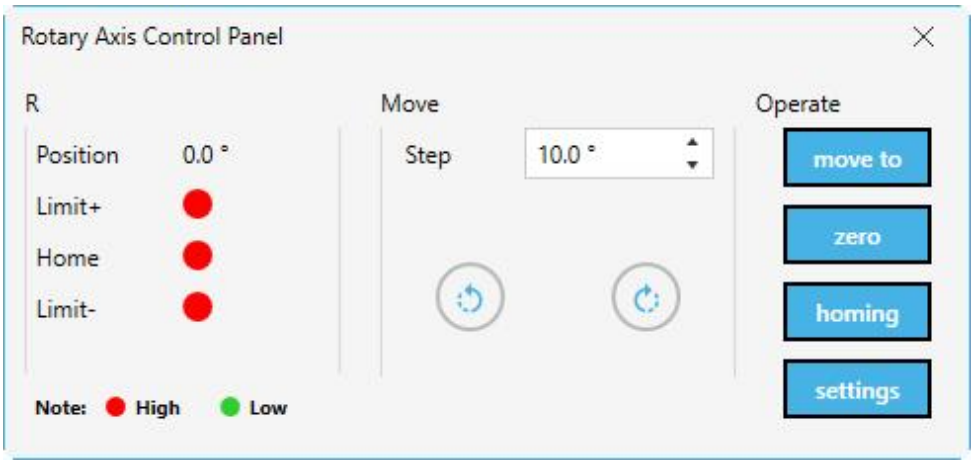
According to the parameters set by the Z axis control, the Z axis motion control,the upper is the positive direction, and the movement value is the displacement amount of the control button with a single click.

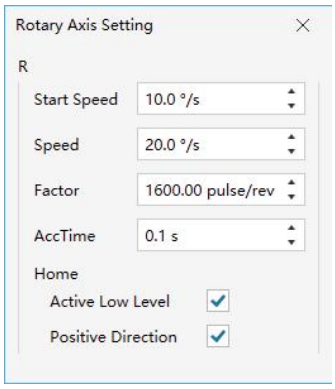




Rotary Axis Control Panel

The motion control of the rotary axis is carried out according to the parameters set by the rotary axis, and the movement value is the displacement amount of a sigle click of the control button.

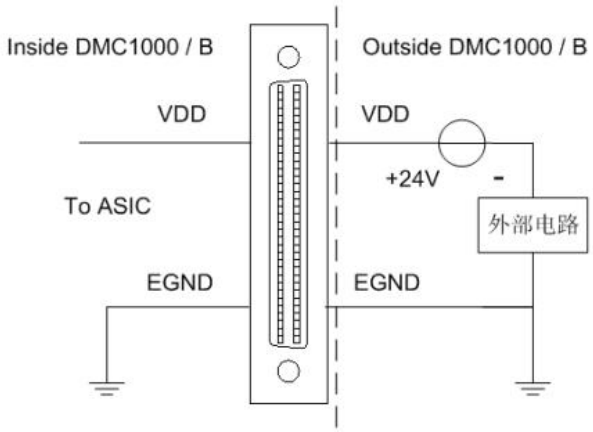




Axis Control Cards Usage

1)Control card connection

The internal IC power supply of DMC1000B motion control card is provided by the PCI bus of PC (+5VDC), and the external interface requires +24VDC power supply from the user. The wiring schematic is shown in the following diagram.

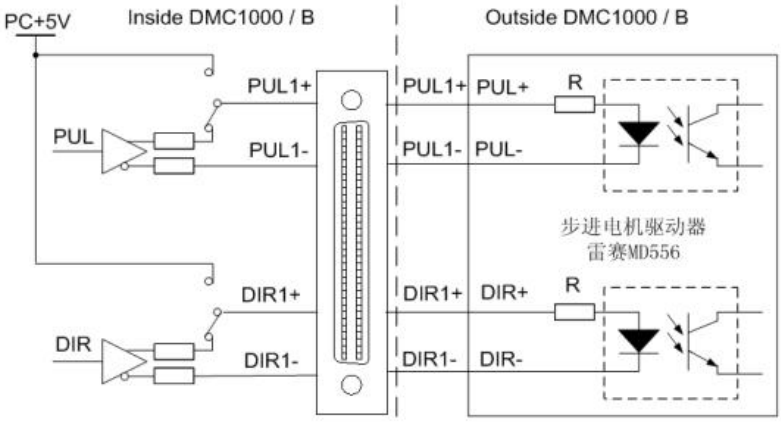


Internal chip power (provided by the PCI bus): +5VDC ±5%,max: 900mA;

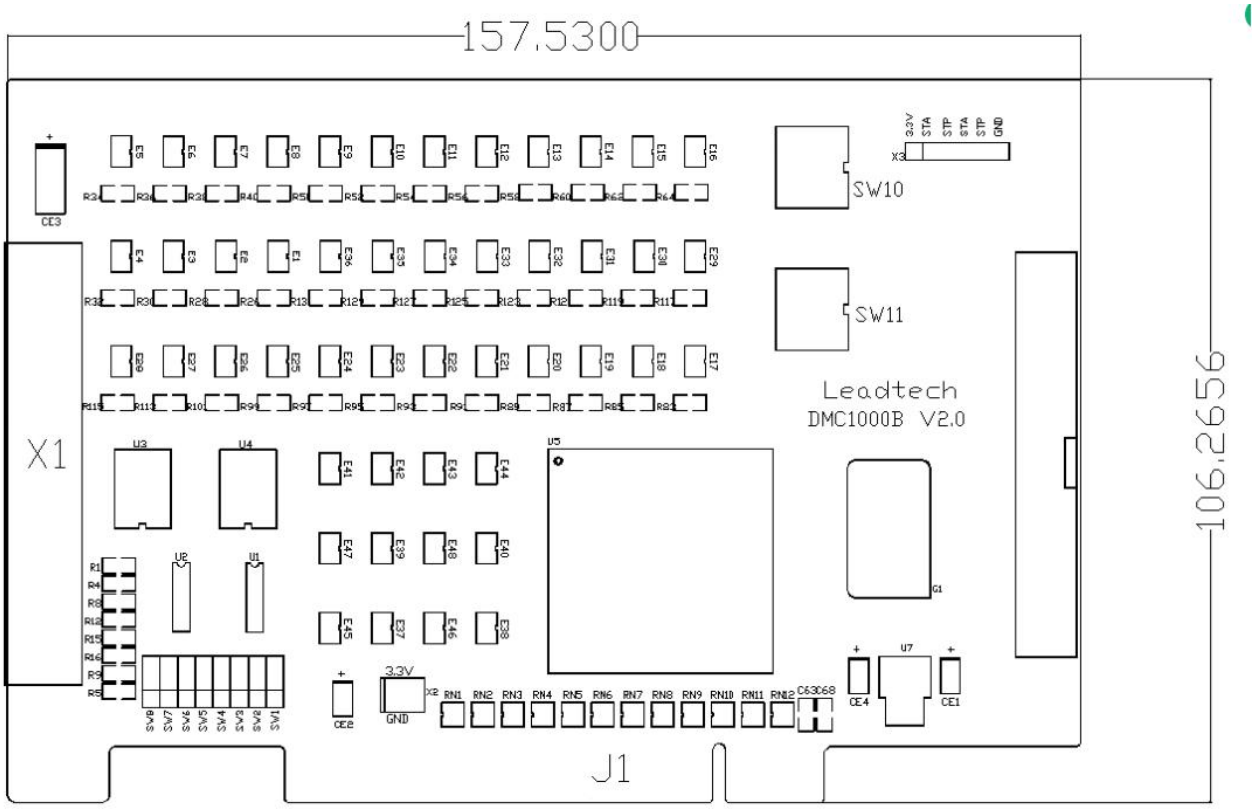
External interface power(Required from user):+24VDC ±5%,max: 500mA;

2)Stepper motor driver wiring example

The wiring method between the first axis of the DMC 1000B card and the MD556 stepper motor driver is shown in the figure blow.



3)Axis control card outline diagram

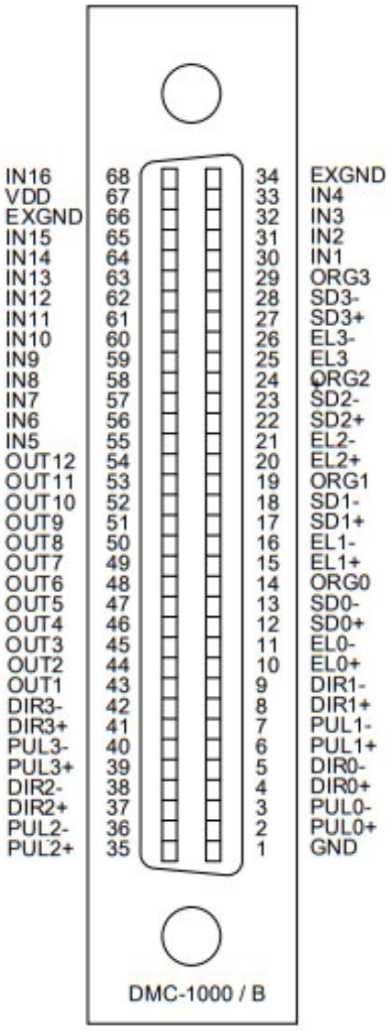


Index	Name
J1	PCI port
X1	SCSI-II type 68-pin socket

4)Interface X1 Pin Definition

X1 is the main interface for the DMC 1000B motor control and I/O signal control, and is a SCSI-II type 68-pin socket.

The pin numbers correspond to the signals as shown in the table.



Index	Name	Explain	Index	Name	Explain
1	GND	BUS power ground	35	PUL2+	2nd axis output pulse signal(+)
2	PUL0+	0th axis output pulse	36	PUL2-	2nd axis output pulse

		signal(+)			signal(-)
3	PUL0-	0th axis output pulse signal(-)	37	DIR2+	2nd axis output direction signal(+)
4	DIR0+	0th axis output direction signal(+)	38	DIR2-	2nd axis output direction signal(-)
5	DIR0-	0th axis output direction signal (-)	39	PUL3+	3rd axis output pulse signal(+)
6	PUL1+	1st axis output pulse signal(+)	40	PUL3-	3rd axis output pulse signal(-)
7	PUL1-	1st axis output pulse signal(-)	41	DIR3+	3rd axis output direction signal(+)
8	DIR1+	1th axis output direction signal(+)	42	DIR3-	3rd axis output direction signal(-)
9	DIR1-	1th axis output direction signal(-)	43	OUT1	Isolated universal output signal 1
10	EL0+	Isolating the 0th axis positive limit signal(+)	44	OUT2	Isolated universal output signal 2
11	EL0-	Isolating the 0th axis negative limit signal(-)	45	OUT3	Isolated universal output signal 3
12	SD0+	Isolation the 0th axis positive deceleration signal(+)	46	OUT4	Isolated universal output signal 4
13	SD0-	Isolation the 0th axis negative deceleration signal(-)	47	OUT5	Isolated universal output signal 5
14	ORG0	Isolation the 0th axis origin	48	OUT6	Isolated universal output

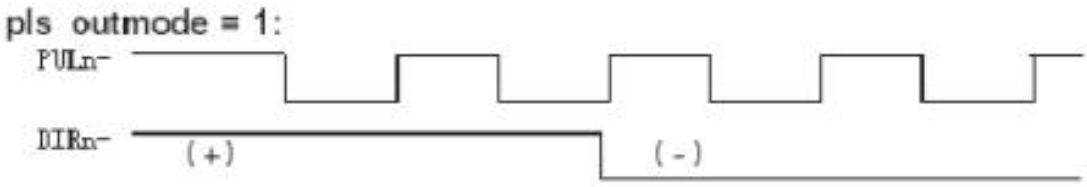
		signal			signal 6
15	EL1+	Isolating the 1st axis positive limit signal(+)	49	OUT7	Isolated universal output signal 7
16	EL1-	Isolating the 1st axis negative limit signal(-)	50	OUT8	Isolated universal output signal 8
17	SD1+	Isolation the 1st axis positive deceleration signal(+)	51	OUT9	Isolated universal output signal 9
18	SD1-	Isolation the 1st axis negative deceleration signal(-)	52	OUT10	Isolated universal output signal 10
19	ORG1	Isolation the 1st axis origin signal	53	OUT11	Isolated universal output signal 11
20	EL2+	Isolating the 2nd axis positive limit signal(+)	54	OUT12	Isolated universal output signal 12
21	EL2-	Isolating the 2nd axis negative limit signal(-)	55	IN5	Isolated universal input signal 5
22	SD2+	Isolation the 2nd axis positive deceleration signal(+)	56	IN6	Isolated universal input signal 6
23	SD2-	Isolation the 2nd axis negative deceleration signal(-)	57	IN7	Isolated universal input signal 7
24	ORG2	Isolation the 2nd axis origin signal	58	IN8	Isolated universal input signal 8
25	EL3+	Isolating the 3rd axis	59	IN9	Isolated universal input

		positive limit signal(+)			signal 9
26	EL3-	Isolating the 3rd axis negative limit signal(-)	60	IN10	Isolated universal input signal 10
27	SD3+	Isolation the 3rd axis positive deceleration signal(+)	61	IN11	Isolated universal input signal 11
28	SD3-	Isolation the 3rd axis negative deceleration signal(-)	62	IN12	Isolated universal input signal 12
29	ORG3	Isolation the 3rd axis origin signal	63	IN13	Isolated universal input signal 13
30	IN1	Isolated universal input signal 1	64	IN14	Isolated universal input signal 14
31	IN2	Isolated universal input signal 2	65	IN15	Isolated universal input signal 15
32	IN3	Isolated universal input signal 3	66	EXGND	External power ground, input
33	IN4	Isolated universal input signal 4	67	VDD	External Power+24V, input
34	EXGND	External power ground, input	68	IN16	Isolated universal input signal 16

Note: When you need to use IO signals, such as dedicated signals such as limits and origins, or general-purpose IO signals, be sure to input the +24VDC power supply at pins 67 and 66 (do not reverse the power supply). Note to users using ACC68_V3.2 power strips: Pin numbers labeled "VDD" and "EXGND" are only meant to power the power indicators of the power strip, and when controlling IO signals, it is still necessary to input an external +24VDC supply at pins 67 and 66.

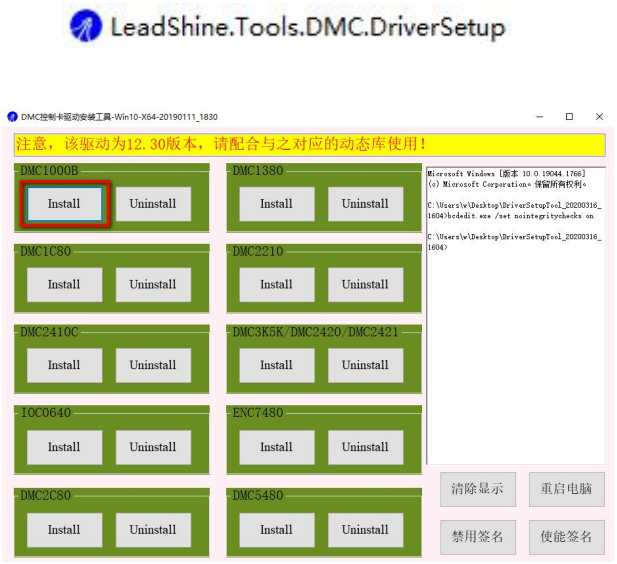
5)Pulse/direction mode

In this mode, the PULn-terminal outputs a command train of pulses, the number of pulses corresponding to the corresponding "distance" of the motor operation, and the pulse frequency corresponding to the "speed" of the motor operation. DIRn- terminal output direction signal, the output level of the signal corresponds to the direction of rotation of the motor. This mode is most commonly used in motor drives. The pulse signal is valid for the falling edge, that is, the pulse signal is normally high, and when it becomes low, the motor takes a step.

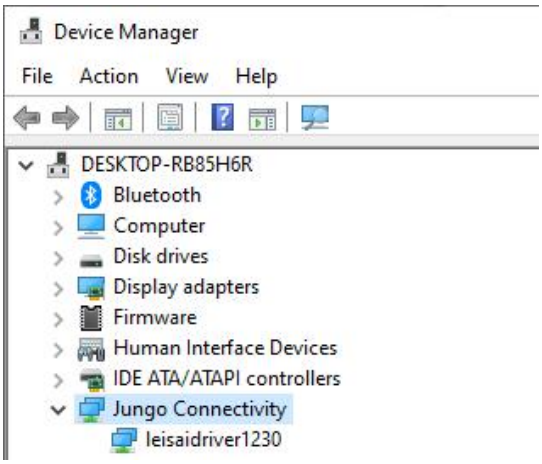


6)Driver Install

The process of installing the DMC 1000B control card driver is very similar to installing drivers for other plug and play cards (e.g. MODEM cards, graphics cards, etc.). It is recommended to install and use it in Win10 system environment, the example is as follows.



The "leisaidriver1230" entry appears under the "Jungo Connectivity" column of the Device Manager, indicating that the installation was successful.



Safety

Note: Laser beams are harmful to the human body.

Laser beams can cause serious damage to the eyes and skin. Before use, make sure that the wiring of the equipment is correct and the protective equipment is worn. Users must pass relevant training on laser safety.

Before running, ensure that the software program, control card, scanner galvo and laser are in a stable state before running the program, otherwise the reliability and safety of the entire processing process cannot be guaranteed.

Correct shutdown sequence helps to improve the stability of the software and laser, please confirm the laser shutdown in the software after each processing is completed, and the software can be closed only when the laser is down.

In case of unexpected software problems, it can be reinstalled automatically when the laser is disconnected, so as to prevent the galvo or laser from obtaining wrong instructions.

Do not disassemble and repair the control card for sudden problems. Please obtain our technical support as soon as possible after power failure.