BOSSLASER™

Operator's Manual for LaserCAD

1.Software Installation

Enter the software installation category

Name	Date modified	Type	Size
AWCCfg	3/22/2017 11:14 AM	File folder	
AWCDoc	3/1/2017 8:26 PM	File folder	
AWCLanguage	3/22/2017 11:14 AM	File folder	
AWCRes	3/22/2017 11:14 AM	File folder	
Setup.exe	3/22/2017 11:14 AM	Application	71,181 KB
SetupCfg.ini	3/22/2017 11:14 AM	Configuration sett...	1 KB

After that, double click "Setup" to start installation.

Welcome to use ✕

Install USB Driver

Type: LaserCAD V7.91 ▼

Lanuage: English ▼
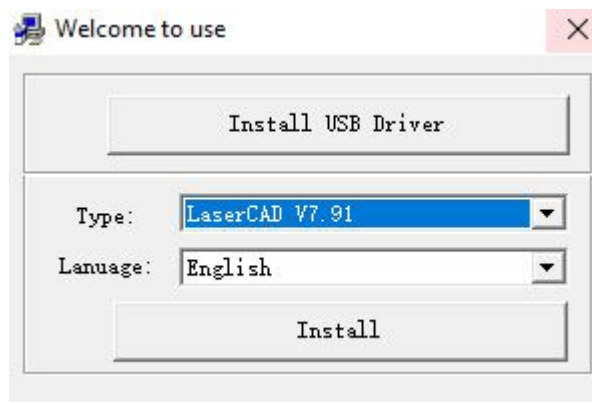
Install

	"LaserCAD"option means installation for LaserCAD
	"CoreDraw_LaserCut"option means installation for CoreDraw plugin
	"AutoCAD_LaserCut"option means installation for AutoCAD plugin

Select installation path

Install the USB driver. Once installed successfully, you will have this message appear (as shown below)
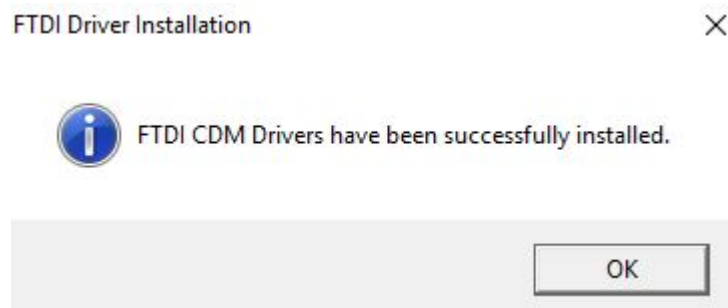
  Please turn off any anti-virus software or the software may be considered as virus and not run correctly. It will cause installation to fail (this software is NOT a virus of any sort). If it has been stopped by your anti-virus system, there would be some warning words like "Error" or "Can't Copy Files". Please try to remove the relative items from your anti-virus files blocked list. Then try again.

2. Software Application

2.1 Software Main Interface Introduction
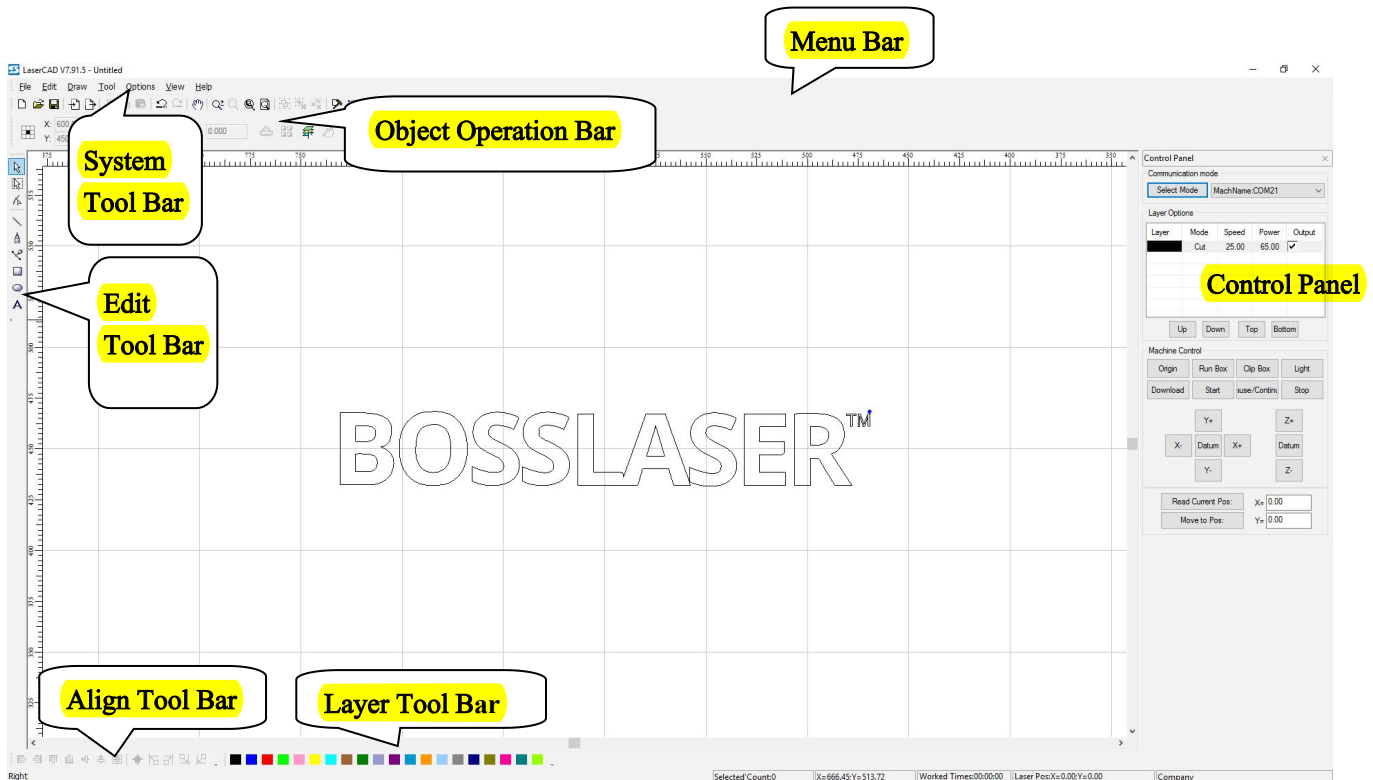
- **Menu Bar**: All main functions which includes File, Edit, Draw, Tool, etc.

- **System Tool Bar**: Some of the most frequently used options are placed in the system tool bar and presented by command buttons.

- **Object Operation Bar**: Providing relative properties of object selections and tool applications; Changes of the objects can be controlled.

- **Edit Tool Bar**: Located in the left of working area (default). All regular edit tools are placed in the edit bar to make operation easier and flexible.

- **Align Tool Bar**: To make multiple objects aligned; Improve the layout of page.

- **Layer Tool Bar**: Change the color of the selected object.

- **Control Panel**: Use to finish multi-tasks of laser processing; Setting the communication port, setting layer parameters, loading graphic(s), etc.
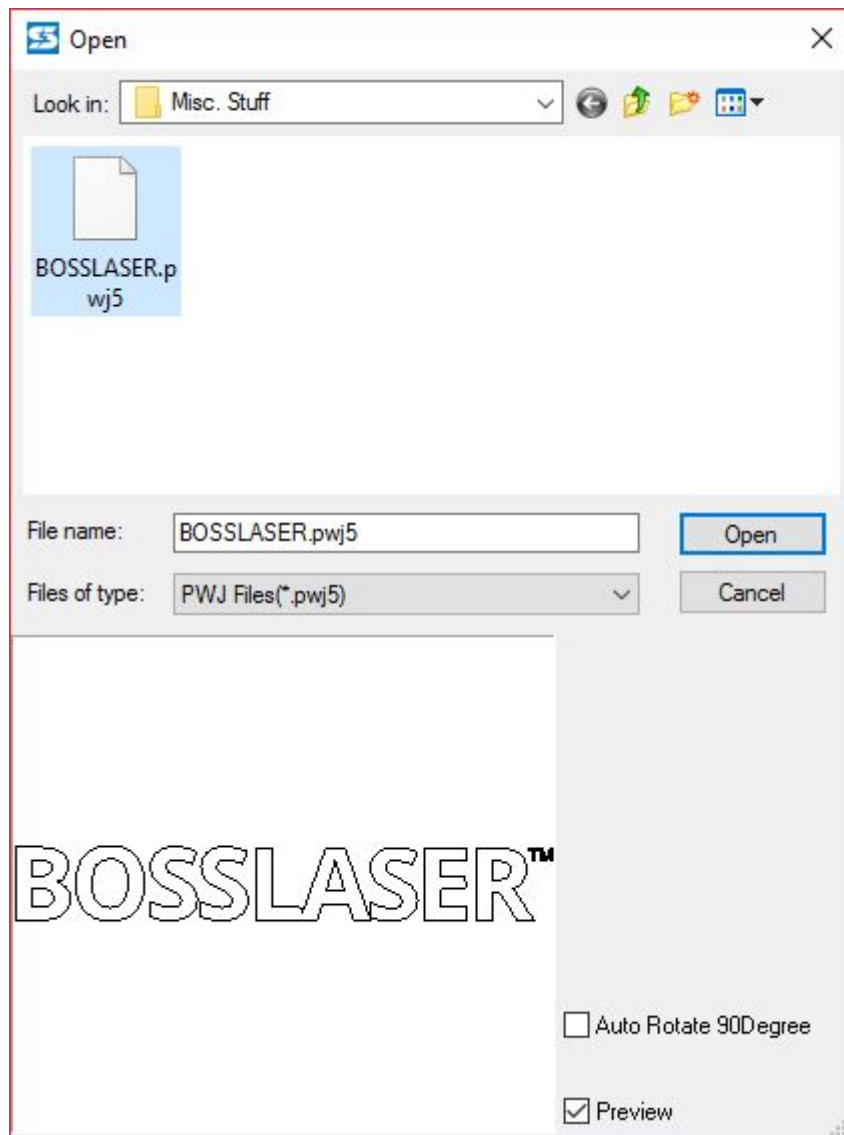
2.2 File Management

2.2.1 New File

Click the File menu and select "New File" option or click the system tool bar icon ▯ to create a new file.
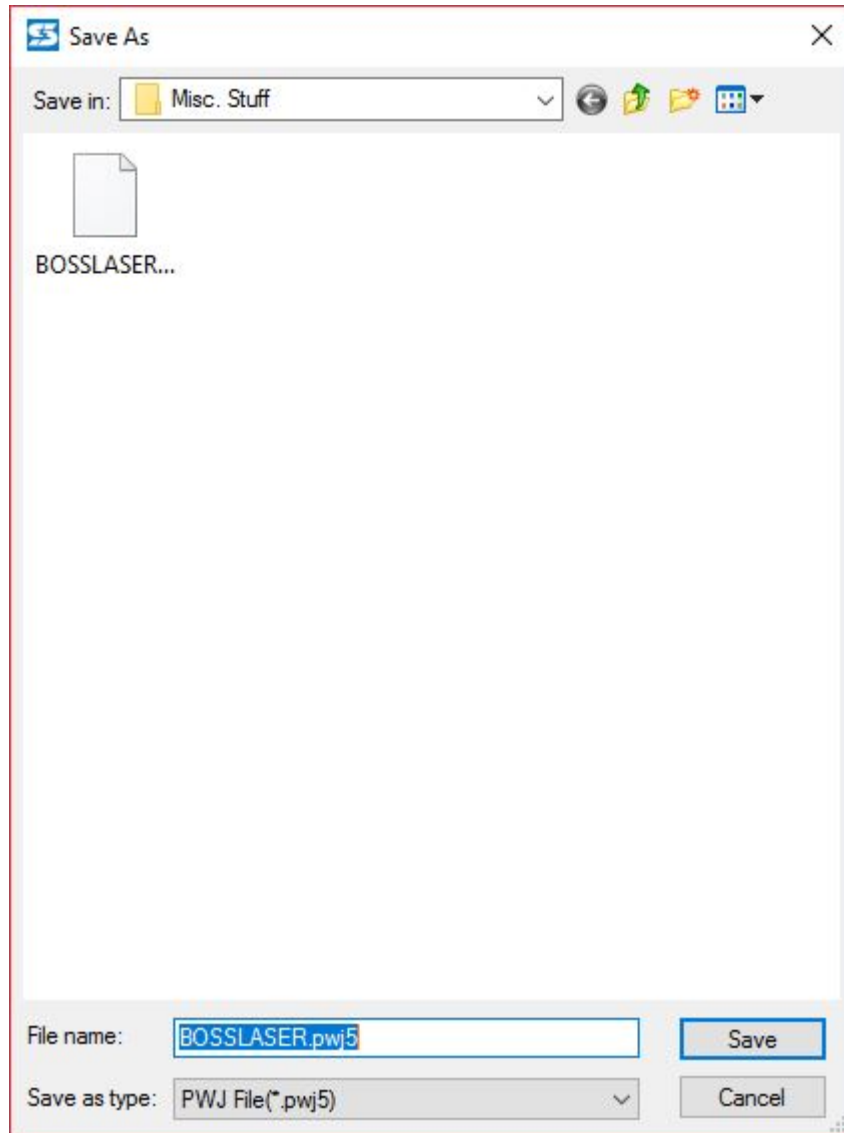
2.2.2 Open File

Click the File menu and select "Open"option or click the system tool bar icon 📂 to find file category then select the file and double click. The opened file suffix is **pwj5**.

- The preview graphic option helps you to preview the file you selected.

2.2.3 Save File

Click the File menu and select "save" option or click the system tool bar 🖫 to find the file saving icon category. Then import the file's name and click to save it. The saved file suffix is **pwj5**.


2.2.4 Save as...

Click the file menu and select "save as" option to find the file saving category. Then import the file's name and click to save it. The saved file suffix is **pwj5**.

2.2.5 Import file

Click the File menu and select "Import" option or click the system tool bar icon ⊕ to find the file saving category. This software support files with the following suffix: **AI, DXF, PLT, DST, DSB, BMP, GIF, JPEG, PNG, MNG, ICO, TIF, TGA, PCX, JBG, JB2, JBC, PGX, RAS, PNM, SKA, and RAW.**
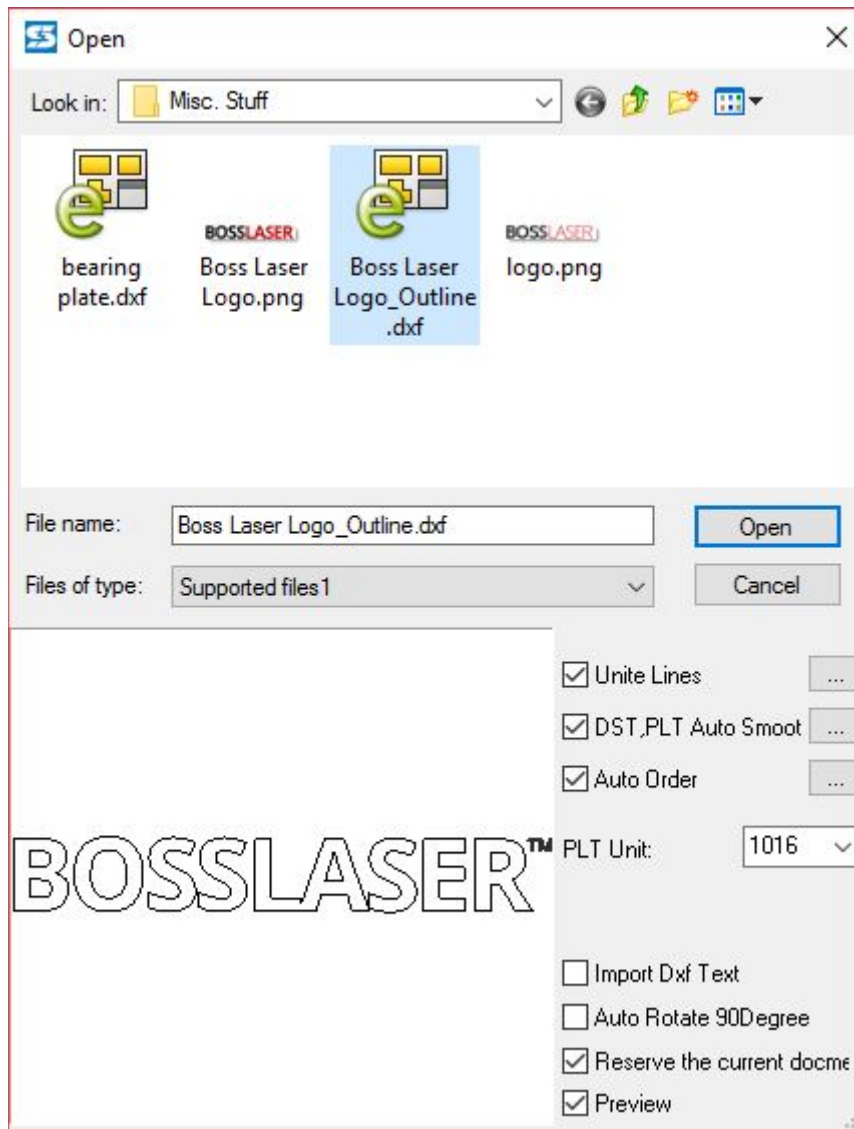
- **Unite Lines**: Multiple connecting segments in a graphic can be merged into a segment while importing the file.

- **Smoothing the curve** to improve the cutting speed and stability while importing the graphical parameters of DST and PLT files.

- **Auto Order**: The graphic data objects will be automatically sorted while importing the file. After auto order, the laser head will process through the shortest path.

- **Reserve the current document**: The file is retained before importing the new file. After importing file, the graphic data includes original graphic data files before and after importing.

- **Preview**: Displaying the graphic while a file is selected.

2.2.6 Export file

Click the File menu and select "Export" option or click the system tool bar icon file ⬆ to find the exporting category then input the file name and click save.The saved file suffix is **PLT**.
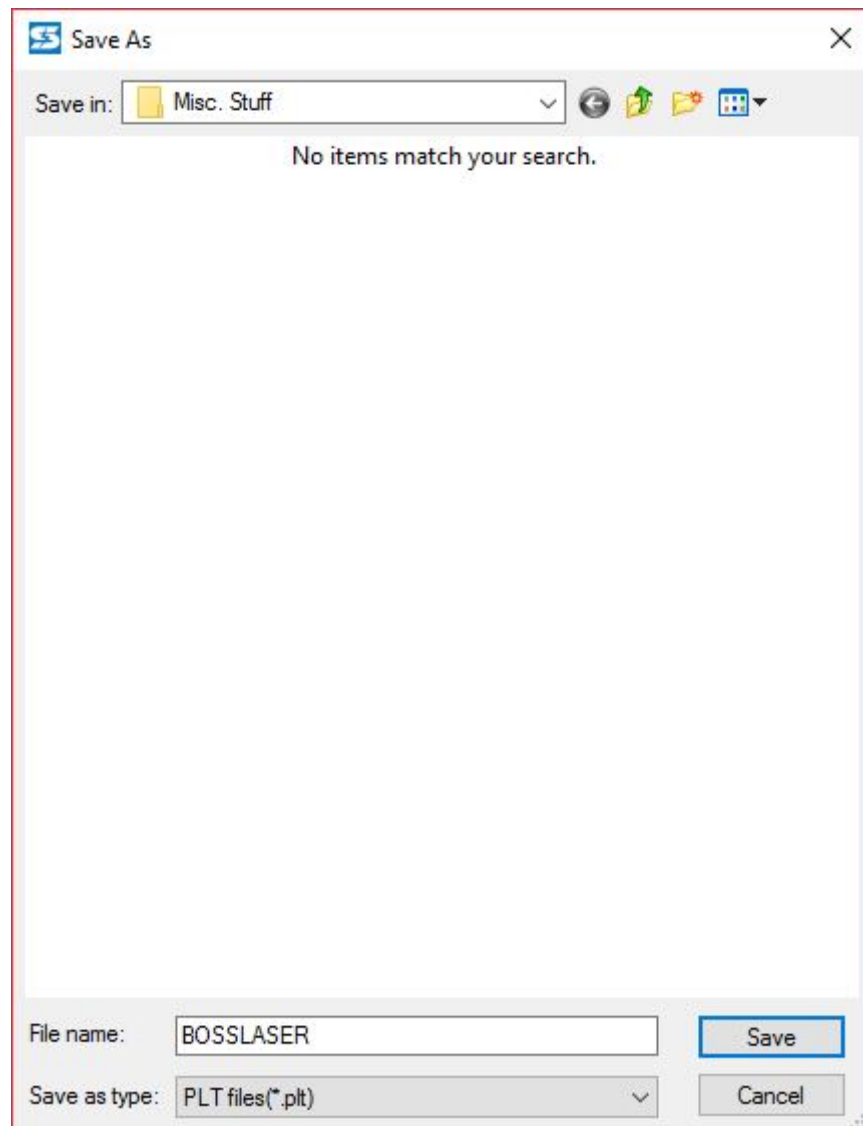
2.2.7 Import Machine Configuration

Click the File menu and select "Import Machine Configuration" option to find the path of the machine's configuration file. Then double click machine configuration file to accept the changes.
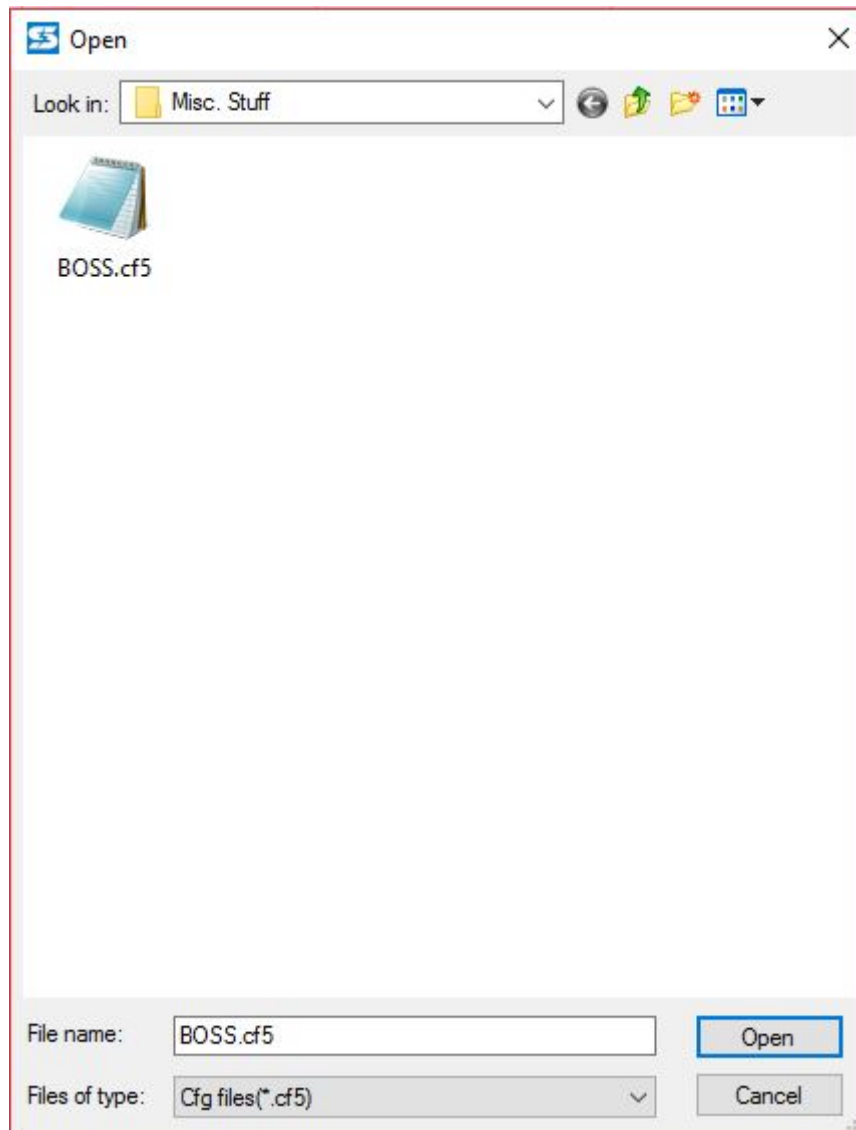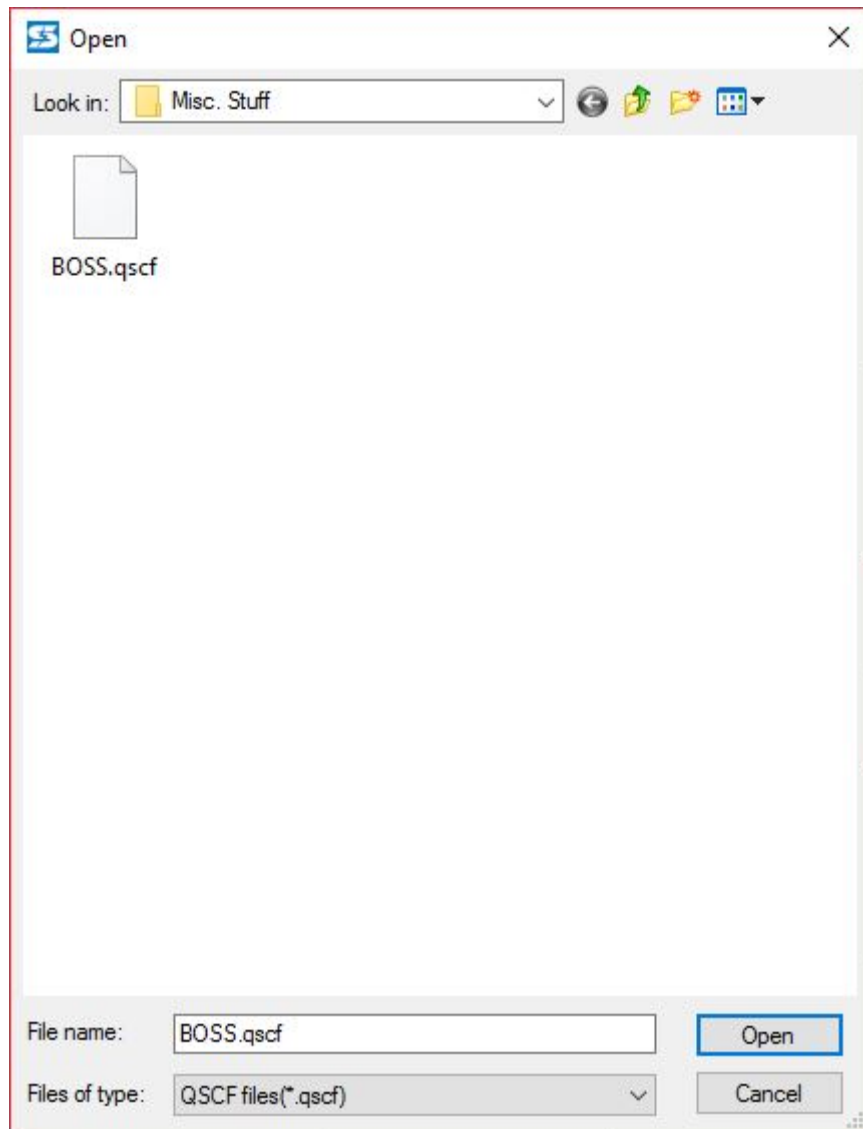
2.2.8 Export Machine Configuration

Click the File menu and select "Export Machine Configuration" option to find the path of saving the machine's configuration file. Then name the file, click save to save it on the destination you have chosen. The exported file suffix is **CF5**.

2.2.9 Import Software Configuration

Click the File menu and select "Import Software Configuration" option to find the path of the machine's software file. Then double click software configuration file to import it. The suffix of the software configuration is **qscf**.

2.2.10 Export Software Configuration

Click the File menu and select "Export Software Configuration" option to find the path of saving the machine's configuration file. Then name the file, click save. The exported file suffix is **qscf**.

2.3 Object Selection And Conversion

2.3.1 Object Selection

The first thing is selecting the object when drawing and editing the graphic. When the object is in a selected state, there will be a "×"sharped mark in the center. Around it is 8 control points with the color of 【Selected Object Color】

Click the 【Select】in the 【Draw】list or click edit tool bar � to switch into "Selection"state. In this state you can select object. Five objects selection way are as follow:

1) Click【All Select】in【Edit】list (Shortcuts Ctrl+A) to select all objects.

2) Click to select single object

Click object with mouse as follow:
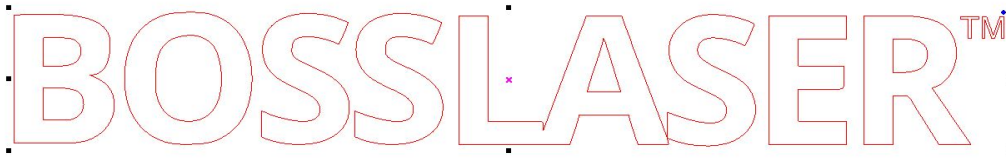
3) Frame selection

Hold down the mouse and move. All objects touched by the cursor will be selected.

4) Add /Reduce selection objects.

Add: First, select the first object and hold down shift. Then click (or frame select) other objects which you need to add.

Reduce: Press shift and click (or frame select) the selected graphic files. Then the clicked (or frame selected) object will be reduced from selected objects.

5) Select object by layer color

Click object operation bar and a dialog as follow:
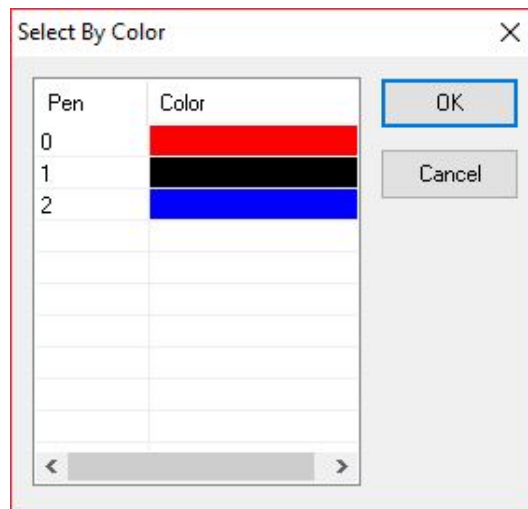
Select the object color and press【OK】. It means all objects with this color layer will be selected.

### 2.3.2 Change Object Color

Object color is the outline colored of object.

It can be changed by clicking a random color tool button in the layer tool bar.

2.3.3 Rotate Object

1) Use the object operation bar to rotate the object. Input rotate angle you need in

. Then click to accept changes.

2) Select the Edit tool bar ▷ , double click the object which you need to rotate or tilt and enter

the relative mode. At this moment the control point around the object exchanged into ✔ Rotate
control arrow and ↔ tilt control arrow. As follow:
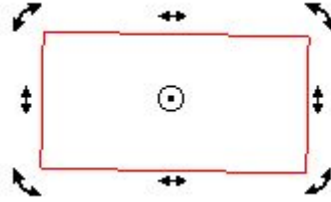
Move the cursor to rotate arrow and drag the control points along the direction of the arrow controls; during the process, some outline frame wires will follow to rotate. Like the following picture:
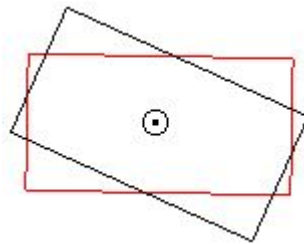
Rotate it to your desired position and release the mouse button to accept changes.

2.3.4 Change Object Size

1)   Use ▷ (Select tool) to click & select the object which needs to be zoomed or changed. Move control points of object to change the object size. This method is easy but with low precision.

2)   In the object operation bar ↔ 79.19 🔒 ↕ 41.87 (zoom size) input the

horizontal size number and vertical size number and press "Enter"to accept.

Click 🔓 to 🔒 . Any changes on one number, the other will change according to the

proportions of the object (Proportional Scaling).

2.4 Edit

2.4.1 Undo
Click 【Undo】in 【Edit】list or click ↶ to cancel the last operation.

2.4.2 Redo
Click 【Redo】in 【Edit】list or click ↷ to recover the cancel action.

2.4.3 Cut

Select one object and click 【Cut】in 【Edit】list or click ✂ to cut a file part.

2.4.4 Copy

Select one object and click 【Copy】in 【Edit】list or click 📋 to copy a file part.

2.4.5 Paste

Select one object and click 【Paste】in 【Edit】list or click 📋 to paste a file part

2.4.6 Delete

Select one object and click 【Delete】in 【Edit】list to delete a file part

2.4.7 All Select

Click 【All Select】in 【Edit】list to select all file parts in one graphic.

2.4.8 Group

Select file parts and click 【Group】in 【Edit】list or click with 🔲 to build a graphic group separated selected graphics.

2.4.9 Ungroup

Select needed graphic group and click【Ungroup】in【Edit】list or click 🔲 to split a completed graphic file group into separated graphics.

2.4.10 All Ungroup

Select needed graphic group and click 【Ungroup】in 【Edit】list or click 🔲 to split All file group into separated graphics.

2.4.11 Move

Click 【Move】in 【Edit】list or click 🖐 and cursor changes into🖐 size. Hold down mouse left button and you can move the graphic.

2.4.12 Zoom
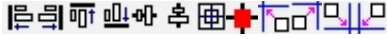
Click 【Zoom】in 【Edit】list or click 🔍 . Click the graphic with the left mouse button to enlarge it; right click button to narrow it.

Click 【Zoom to selected】in 【Edit】list or click 🔍 to make the selected objects completely displayed.

Click 【 Zoom to all】in 【 Edit 】list or click 🔍 to make all objects completely displayed.

Click 【 Zoom to page】in 【 Edit 】list or click 🔍 to make the whole page in graphic completely displayed.

2.4.13 Align

Select graphic and click 【 Align 】in 【 Edit 】list on relative list options or click ![align toolbar icons] to accept changes.

2.4.14 Nudge Offset

Select graphic and click 【 Align 】in 【 Edit 】list on relative options to make a tiny adjustment for the graphic.

2.4.15 Convert To Leftover

Convert to leftover belongs to affiliated graphics of an array file. It is used for to add other graphics in empty places in array layout. In the blank area of an array graphic, add cutting box file to save materials.

2.4.16 Convert Last Row To Leftover

This option is used to add other graphics in the last row of an array of typesetting.

2.4.17 Light Guide Panel

2.4.18 Clothing Mark

2.4.19 Manual Notch

When the work piece is being cut, a part of it will be remained in the edge in case that it falls down. We call this part as Notch.

Select graphic and click 【Manual Notch】in 【 Edit 】list. Input notch width. Then move cursor to graphic edge. After the cursor become "+", double click to add notch.
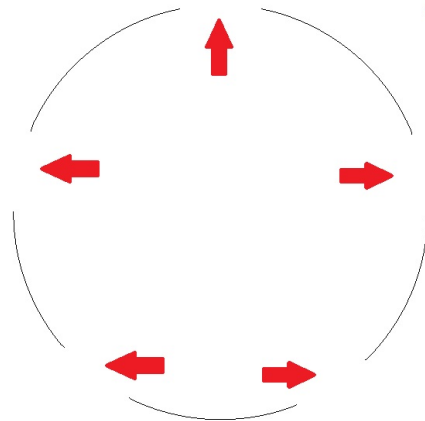
2.5 Draw

2.5.1 Select

Select graphic and click 【 Select 】in 【 Draw 】list or click ![cursor icon] button to change edit state into select mode.

2.5.2 Edit Node

➢ Click 【 Edit Node 】 in 【 Draw 】 list or click ⟨icon⟩ button. In the right side of object

operation bar will show tools : ⟨icon⟩（add node） ⟨icon⟩ (delete node) ⟨icon⟩ (connect node)

⟨icon⟩(separate node).

Use your mouse to select items. Node point of selected file will be presented as small rectangle
"▫". A selected rectangle as follow:
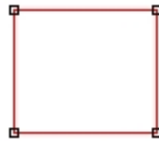
➢ Select points of file
Click selected file or select one point of this file.It is marked as "✱".
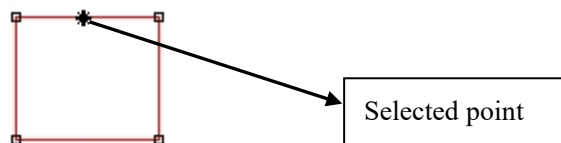
Selected point

➢ Select node of file
Click the node point of file to select it. It will be marked as "◾"as follow:

Selected node
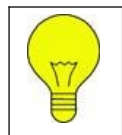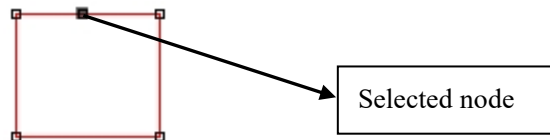
| ⟨lightbulb icon⟩ | Click the selected node of a file. At the same time, press "Shift" button to select multi nodes of file. |

➢ Add Node
Select one point of selected file, as follow:
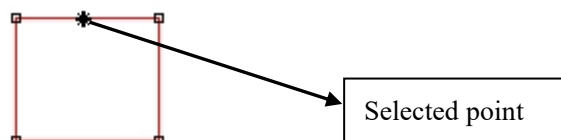
Selected point

Click 【 Add Node 】 in 【 Edit 】 list or click ⟨icon⟩ in object operation bar and the selected point

becomes the added node of the file. As follow:

Selected point added as node
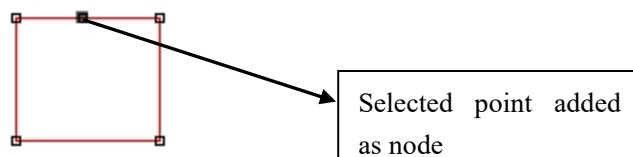
➢ Delete Node

Select one node in the selected file as follow:
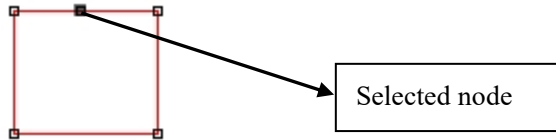
Selected node

Click 【 Delete Node 】in 【 Edit 】list or click ⊡ in object operation bar and the selected point becomes the deleted node of the file. As follow:

Node has been deleted
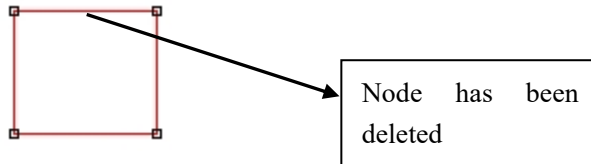
➢ Separate Node

Select one node in selected file, as follow:
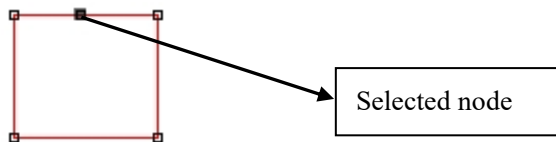
Selected node

Then click 【Separate Node】 in【Edit】list or click object operation bar to separate the node. As follow:

Node has been separated. Graphic is cut off here
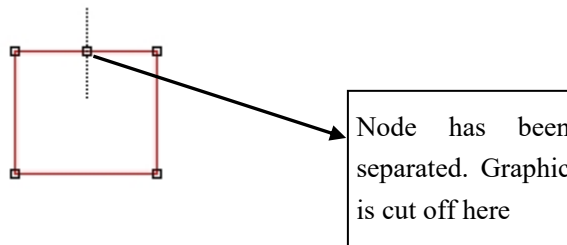
➢ Unit Node

Select start node and end node in selected file, as follow:

Then click 【Unit Node】 in【Edit】list or click object operation bar to unit the node. As follow:

Two nodes connected and unit one.
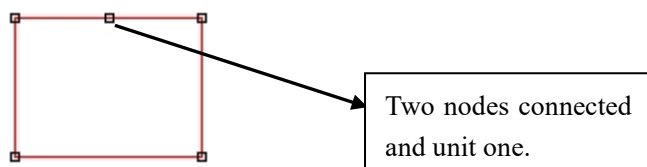
2.5.3 Line

Click 【Line】in【Draw】list or click Edit Tool Bar . Then drag the mouse to draw any line.

💡	When drawing a line, press "Ctrl"and move mouse to draw a level line.

2.5.4 Polyline

Click 【Polyline】 in【Draw】list or click Edit Tool Bar . Then drag mouse and click it to draw any line.

2.5.5 Rectangle

Click 【Rectangle】 in【Draw】list or click Edit Tool Bar . Then drag mouse to draw any rectangle.

💡	When drawing a rectangle, press "Ctrl"and move mouse to draw a cube.

2.5.6 Ellipse

Click 【Ellipse】in【Draw】list or click Edit Tool Bar .Then drag mouse to draw any ellipse.

💡	When drawing a ellipse, press "Ctrl"and move mouse to draw a circle.

2.5.7 Bezier

Click 【Bezier】 in【Draw】list or click Edit Tool Bar . Then drag mouse to draw a Bezier.

2.5.8 Text

Click 【Text 】 in 【Draw】list or click Edit Tool Bar . Then Double click mouse left button in screen, a dialog as follow:
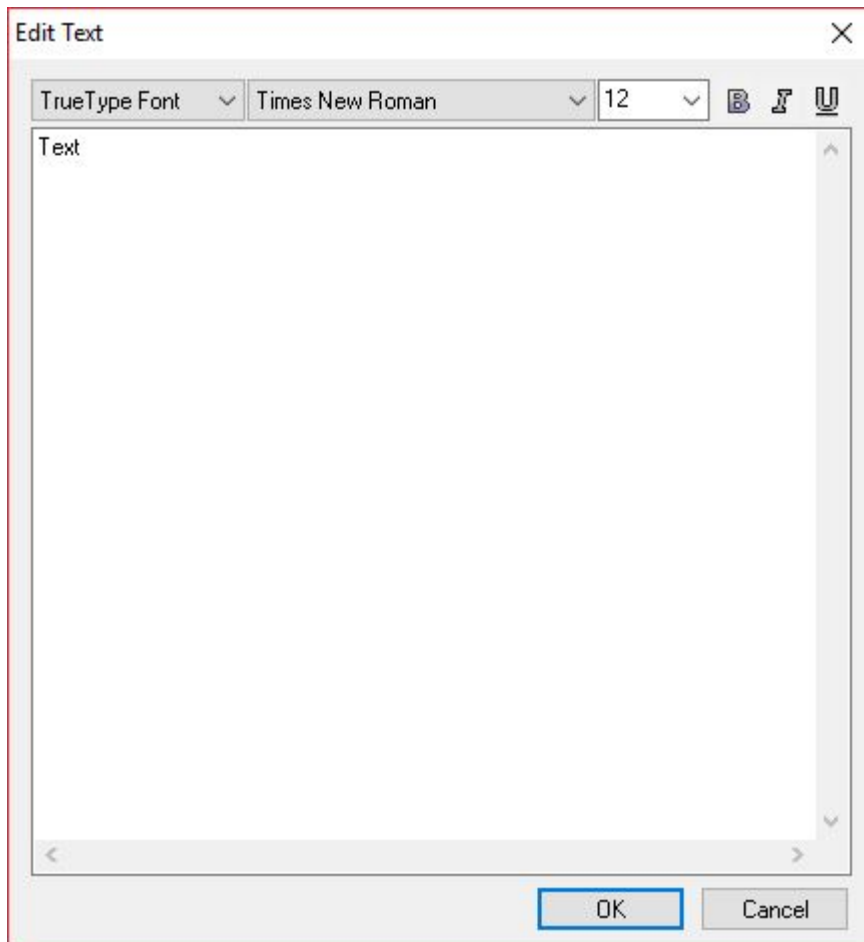
Input characters in dialog and set font and size. Then press OK to add a text to graphic.

2.6 Tool

2.6.1 Array Clone

Select edit tool bar ⬚ .Then select the clone file and press object operation bar ⬚⬚ and a dialog as follow:
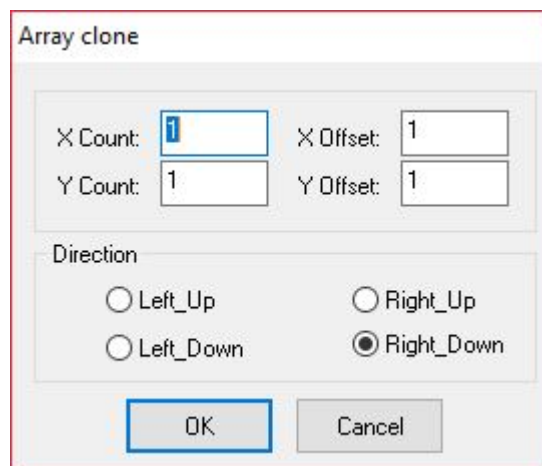
Input 【X Count】,【Y Count】,【X Offset】,【Y Offset】 and select 【Direction】.

Then Press OK to accept changes.

2.6.2 Select by Color

Click object operation bar .A dialog as follow:
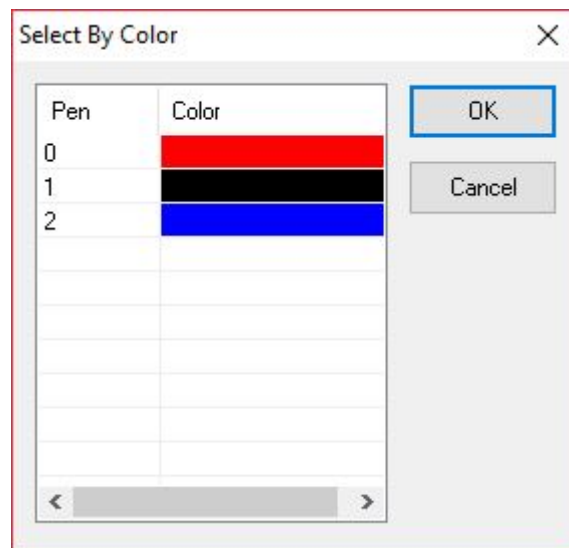
Select relative file color and press【OK】. Then all the files belong to this color will be selected.

2.6.3 Mirror Horizontally

Select a file and click 【Tool】/【Mirror Horizontally】or click to accept a mirror horizontally graphic.

2.6.4 Mirror Vertically

Select a file and click 【Tool】/【Mirror Vertically】or click to accept a mirror Vertically graphic.

2.6.5 Manual Order

Select a file and click 【Tool】/【Manual Order】 to enter interface as follow:
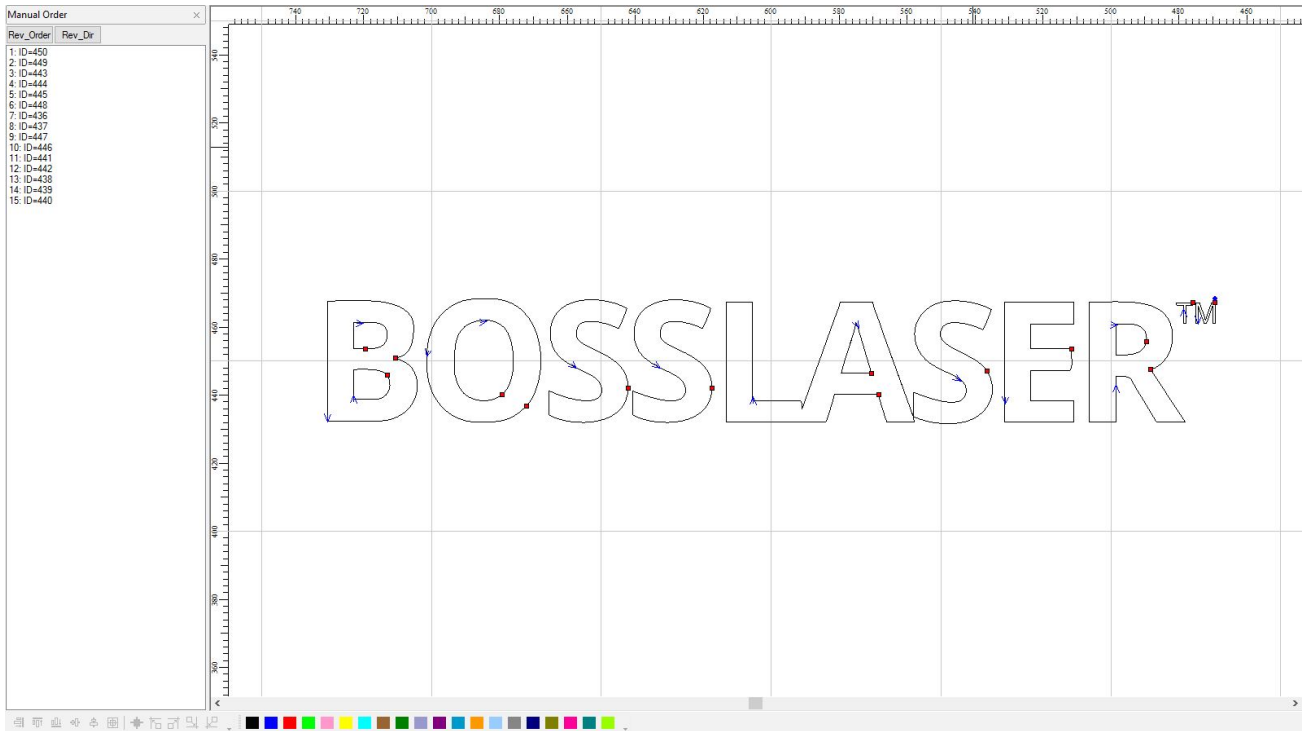
1) Change serial number of cutting object.

- Mouse drag option in 【Manual Order】. Then you could move this option to the position of the cursor.

- Mouse double click option in 【Manual Order】. Then it could be moved to the top position.

- Click 【Rev_Order】in【Manual Order】will list all items in reverse order

💡	Each Serial Number are different file numbers in 【Manual Order】. The lower the number is, the earlier the file will be processed.

2) Change The Start Point

Start point in the file is marked as "■". Click anywhere along the file to change the position.

3) Change Arrow Direction

Cutting direction of object is marked as "⇐".Click【Rev_Dir】in【Manual Order】to make the cutting direction opposite to origin.

2.6.6 Automatic Order

【Automatic Order】tool is used for automatically ordering all the objects in the current document. After that, the motion path of output processing will be the theoretical shortest way.

Click 【Tool】/【Automatic Order】. A dialog is as follow. Then Press【OK】
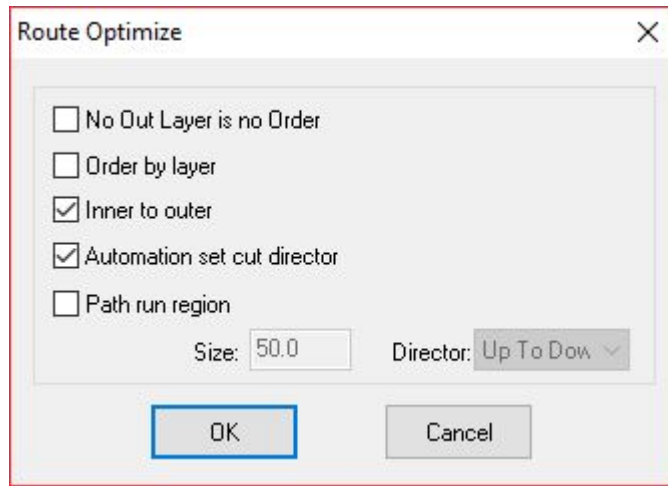
- **Order by layer**: All file items with the same color will be continuously ordered. (This means the same colored files will be processed all together before the next colored items.)

- **Inner to outer**: Inner files (or included) will be ranked priority on outer files (includes). (This means the inner files will be processed first, before the outer items.)

- **Automation set cut director**: Automatically ensure start point and cutting direction of the processed file when order graphics.

- **Path run region**: Files will be ordered as 【Size】with setting 【Director】.【Path run region】 is normally used for an arrangement of a regular array pattern (eg: circular array, a rectangular array). For these, the 【Size】setting is the height of a single graphic in the ordered files.

2.6.7 Smooth Object(s)

To Smooth the curve and improve the cutting speed and stability.

Click 【Tool】/【Smooth Object(s)】.A dialog is as follow.Then Press 【OK】
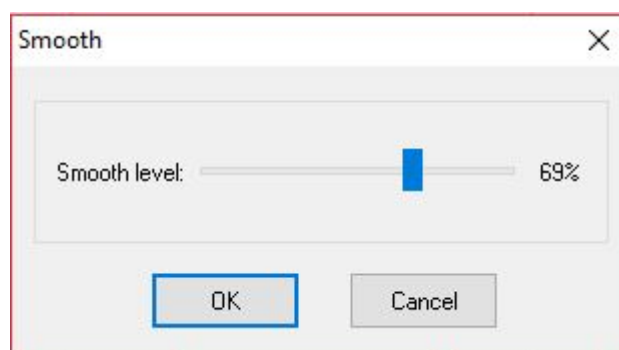
💡	The higher the smoothing parameters, the smoother the curve is. However, with more file deformation.

2.6.8 Delete Repeated Lines

【Delete Repeated Lines】can delete overlapping graphics in case of any repeating cutting.

Click 【Tool】/【Delete Repeated Lines】. A dialog is as follow. Then Press 【OK】
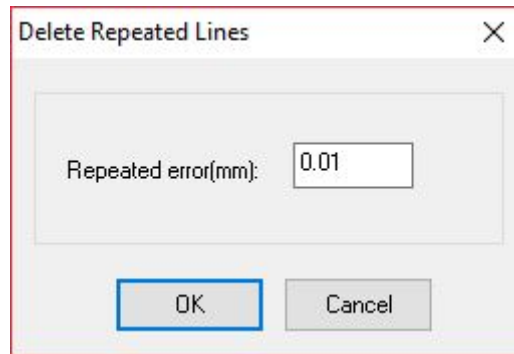
2.6.9 Unite Lines

【Unite Lines】tool combine multiple segments into one segment.

Click 【Tool】/【Unite Lines】. A dialog is as follow. Then Press 【OK】
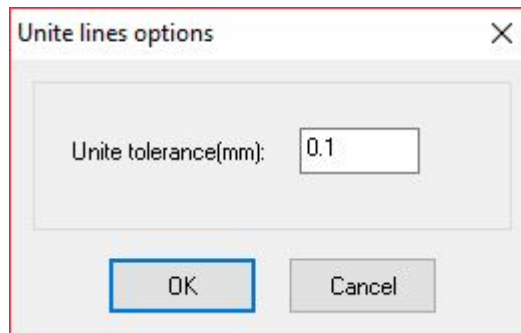
- **Unite Tolerance(mm):** Between two segments, if their distance is less than their unite tolerance, they will be merged together.

2.6.10 Edit Cutting Guide Line

Click 【Tool】/【Edit Cutting Guide Line】to enter the interface as follow:
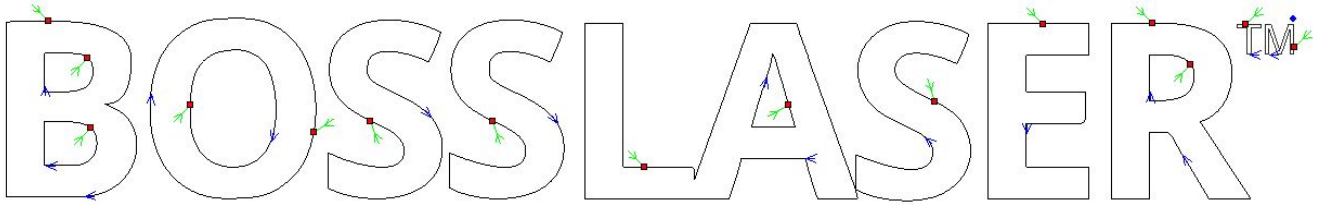
Object cutting starting point will be marked as "▪". Clicking the object could change the start point. Cutting direction will be marked as "⇐". Arrow direction will show the cutting direction.

2.6.11 Auto Cutting Guide Line

When drawing or importing graphics, by default, the curve has no cutting guide line.
Click 【Tool】/【Auto Cutting Guide_Line】. A dialog is as follow:
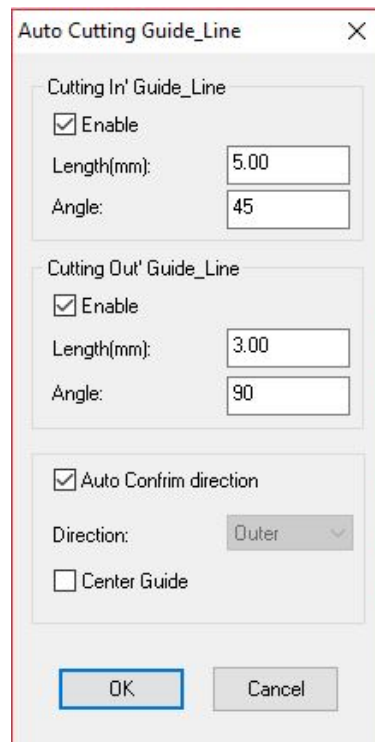
- **Cutting In & Out Guide Line**: Angle of cutting guide line and starting line. Counterclockwise with positive numbers.

- **Auto Confirm direction**: When it's not being chosen, you can select guide line direction by hand. When choosing direction inner, lines will be guided from graphic inside. Otherwise will be from out of graphic.

- **Center Guide**: Cutting guide lines will be guided from center of graphic.

2.6.12 Image Invert

Select edit tool ![cursor] .Then the select file which needs to be inverted.

Click 【Tool】/【Image Invert】or click object operation bar ![icon] .

![BOSSLASER logo normal and inverted]

2.6.13 Image Dither

Select edit tool bar ![cursor] . Then select the bitmap object to be treated. Click

【Tool】/【Image Dither】in list or click object operation bar ![icon] . A dialog as follow:

![Image Dither dialog with Dot Size(mm): 0.40, OK and Cancel buttons]

![BOSSLASER logo normal and dithered]
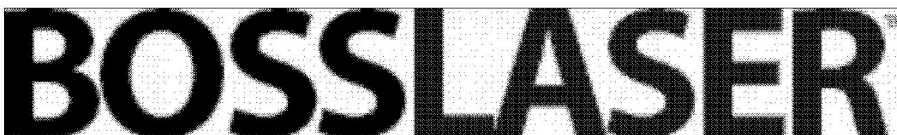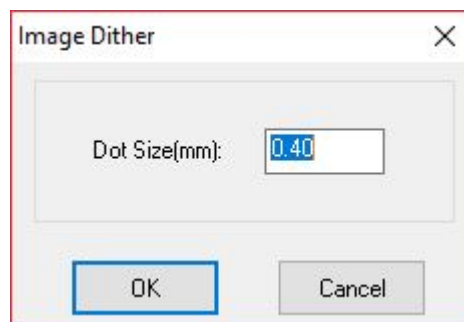
2.6.14 Create Image Block

2.6.15 Create Image Outline

Select edit tool bar ⬉ and select the file graphic to begin creating an image outline. Then click 【Tool】/【Create Image Outline】as follow:

Note: Results may vary depending on the quality of the original image.

2.6.16 Close Check

Select edit tool bar ⬉ .Then select the vector object which need to do a close check. Click【Tool】/【Close Check】in list as follow:
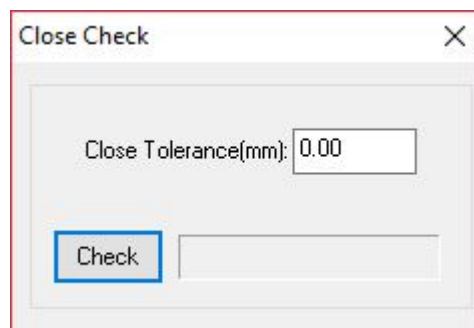
2.6.17 Parallel Offset

Parallel offset is a external expansion or internal contract. Select the graphic and click 【Tool】/【Parallel Offset】 or click object operation bar 🖱. A dialog as follow:

Select necessary parameters and click 【OK】to create a parallel line. Also it will be automatically created as a new layer with the color you have selected as. As follow:

2.6.18 Measure Length

Select edit tool bar 🖱.Then select relative file. Click 【Tool】/【Measure Length】. As follow:
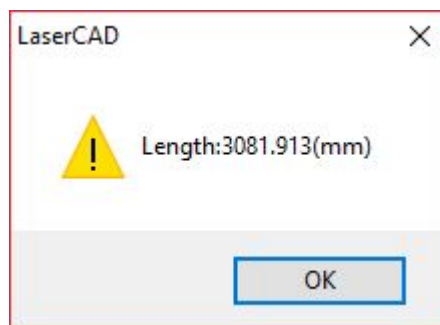
2.6.19 Estimate Work Time

Select edit tool bar ⬚. Then select relative file. Click 【Tool】/【Estimate Work Time】 or click system tool bar ⊕ to show the working time of processing. As follow:
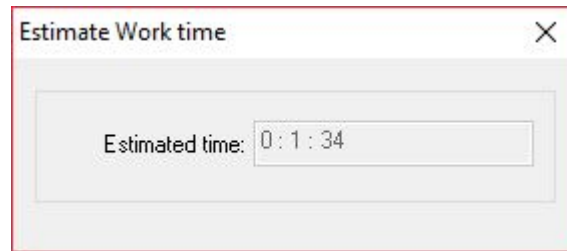
2.6.20　Simulate

Select edit tool bar ⬚. Then select the relative file. Click 【Tool】/【Simulate 】or click system tool bar ▱ to analog output the machining process. As follow:
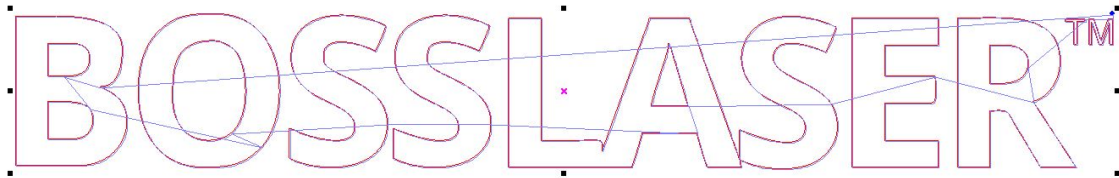
2.7 Options

2.7.1 System Options

Click【Options】/【System Options】or click system tool bar ⚒ to enter the system parameters setting interface.

2.7.1.1 Work Space
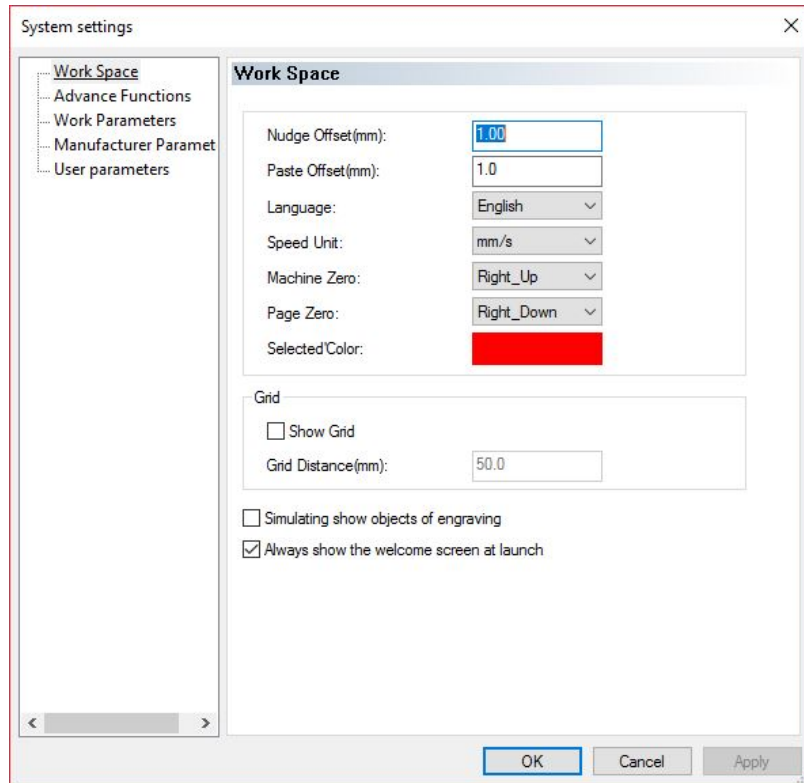
- **Nudge Offset(mm)**: The single movement distance when the pressing keyboard "←", "→", "↑", "↓" to move the selected file.

- **Paste Offset(mm)**: The offset distance of pasting a copy of selected object to current view.

- **Language**: The language used in the type of software

- **Speed Unit**: The unit type used for all items in software related to speed.

- **Machine Zero**: The current machine zero point (Or limit switch position). This parameter should be the same as actual machine zero point. Otherwise the processed file may be left-right or up-down reversed.

- **Page Zero**: Zero point in software graphic. Or when the mouse is moved to the right bottom corner of the workspace, the state bar presents X=0, Y=0.

- **Selected' Color**: Outline color of the selected object.

- **Show Grid**: Graphic will be shown with grid model.

- **Simulating show objects of engraving**: Simulating shows layer with stuffed engraving way.
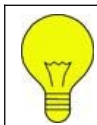
💡	When the amount of data in the graphic sculpture is large, it will lead a slower speed of software display. Regularly not recommend this option.

- **Always show the welcome screen at launch**: When it is selected, there will always be a software default welcome interface after starting.

2.7.1.2 Advance Functions:
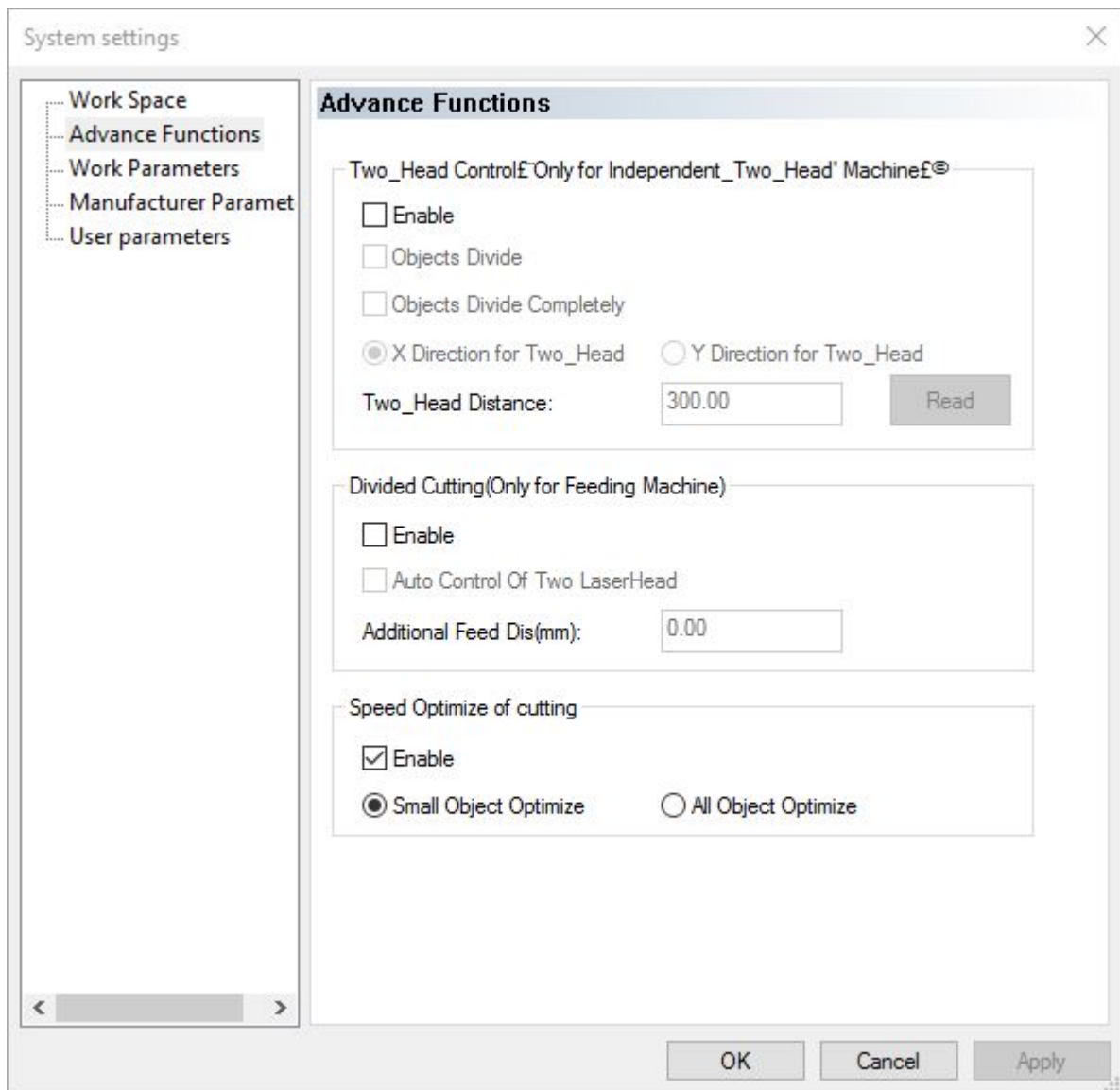
1) **Two Head Configuration**

2)   **Divided Cutting**

- **Enable divided cutting**
- **Auto control of two laser head**
- **Max Divide Height (mm)**

3) **Speed Optimize Of cutting**

- **Enable**

2.7.1.3 Work Parameters
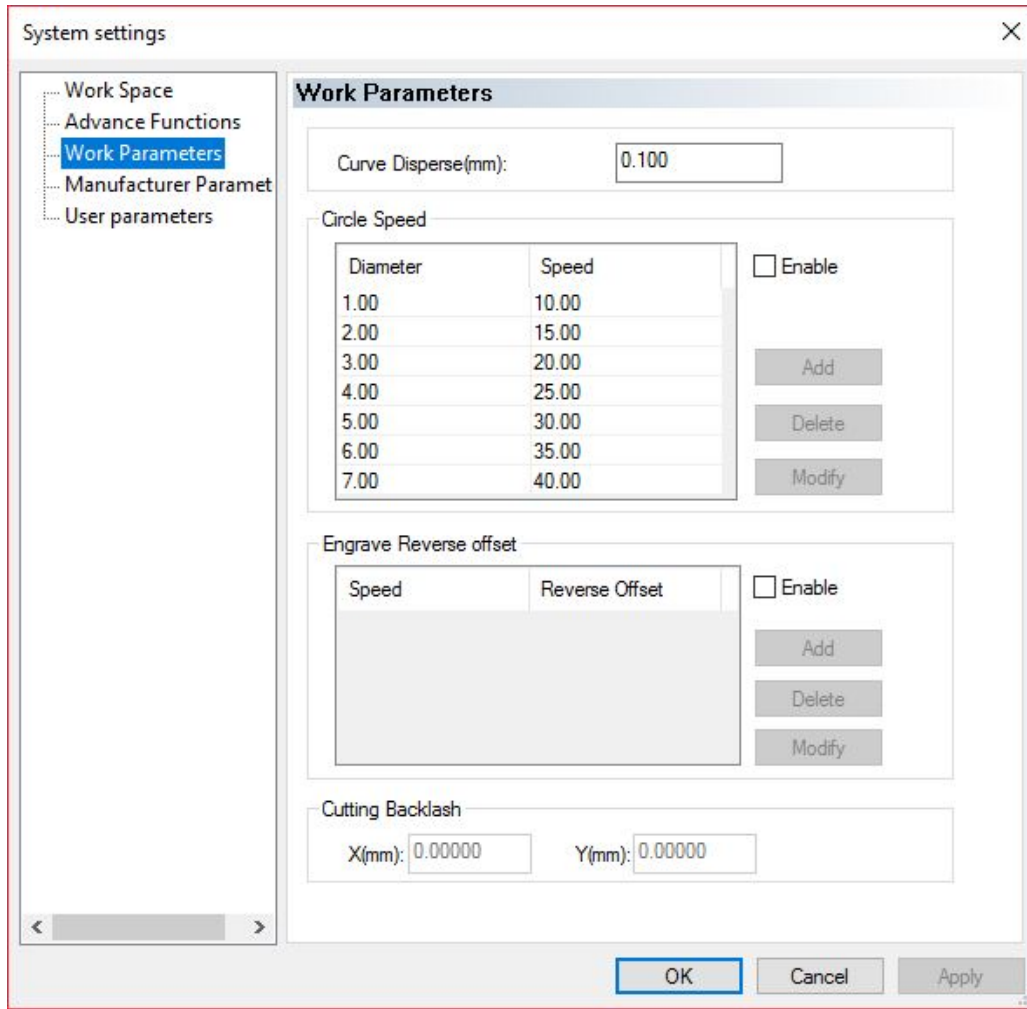
1) **Curve Disperse(mm)**

- **Curve Disperse(mm)**: Parameters of curve smooth. The smaller it is, the higher graphic precision, but the slower computing speed. It effects the processing speed. Normally for materials like acrylic, you can choose a smaller number. Otherwise please use default 0.10.

2) **Circle Speed**:

- **Circle Speed**: System automatically determines if the processed circle is limited on cutting speed. Then process it by relative diameter date with different speed. Under the right parameter settings, the cutting effect of the circle will be greatly improved. To Click【Add】【Delete】【Modify】and set the parameters.

3) **Engrave reserve offset**:

- **Engrave reserve offset**: During the double-way engraving graphics and due to the mechanical backlash, it may lead to a uneven edge graphics after scanned. So using the engraving reserve offset to fix it. A specific speed can relate to specific engraving reserve offset. Normally speaking, more speed is needed with the higher engraving reserve offset. This parameters could be positive or negative.

① When speed is 200mm/s, reserve offset is 0.3mm; When speed is less than 200mm/s, the relationship between speed and reserve offset is proportional. So when speed is 100mm/s, reserve offset is 0.30*(100/200)=0.15mm

② When speed is 300mm/s, reserve offset is 0.50mm; When speed is within 200~300mm/s, the relationship between speed and reserve offset is proportional. So when speed is 250mm/s, reserve offset is 0.30+(300-250)/(300-200)×(0.5-0.3)=0.40mm

③ When speed is more than 300mm/s, reserve offset is the same as when speed is 300mm/s (or 0.5mm)

2.7.1.4 Manufacturer Parameters
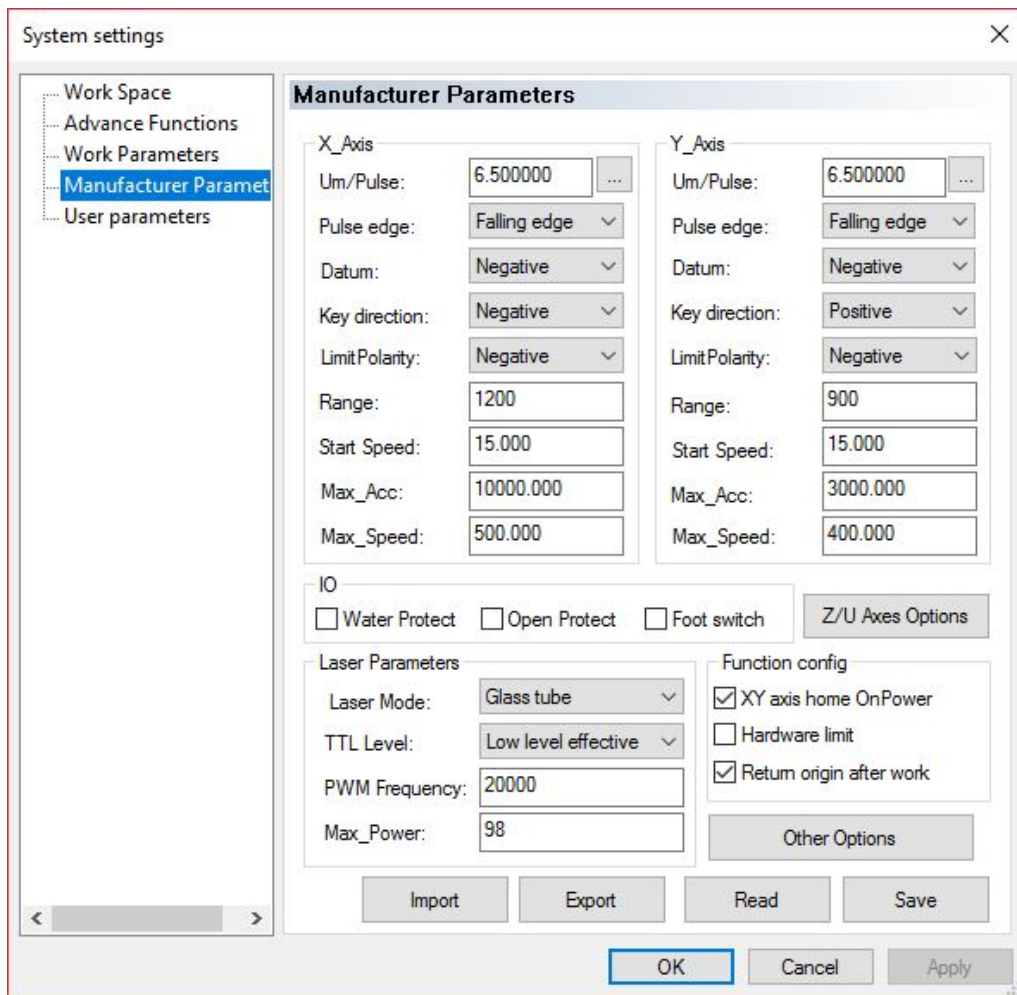
1) X,Y axes parameters

X,Y,Z,U axes parameters (Z axis is for up down axis,and U axis is for auto feeding axis).
Click【Z/U Axes Options】you can set up parameters of Z and U axis.

- **Um/Pulse(um)**: The absolute distance value (unit: um) that a signal sent by the motor relate to motion axis movement. The processed graphic size with error Um/Pulse setting will not the same as expected.

- **Pulse Edge**: The trigger edge of the motor driver making the motor spin. It will lead a cutting dislocation if it has the wrong parameter settings.

- **Datum**: Axis movement direction during reset. When the machine datums and does NOT move the top right corner of the machine, please rewrite this parameter.

- **Key direction**: Direction of LCD panel button movement. If the direction is reversed, rewrite the parameter to correct the direction.

- **Range**: Working area of machine; Axis max working distance.

- **Start Speed**: Speed of motion axis from still state to starting state. The more numbers, the higher the starting speed, but will increase the instability of the machine. Please adjust accordingly. Classical setting ranges in 5~20mm/s.

- **Max_Acc**: Acceleration of motion axis doing adding or reducing speed. If too high of an acceleration, it will cause the motor to skip steps and/or shake. If too low of an acceleration, it may cause a low working speed and slow down whole program. For an axis with a big inertia, like beams corresponding to the Y-axis, a classical setting parameters range from 800 to 3000mm/s^2. For an axis with small inertia, like the X-axis, a classical setting parameters range from 10000 to 20000mm/s^2.

- **Max_Speed**: The max speed motion axis could be up to which decided by motor driving ability and inertia. When doing engraving task,the engraving speed could not beyond the max speed of relative axis. When doing cutting task,the max cutting speed could not beyond the max speed of X and Y axes. Controller will protect speed within the max speed limitation if met any over-high speed requirement.

2) **I/O Switches**
   - **Water Protect**: Controller board water protection interface for Laser 1-Protect and Laser-Protect. Enable【Water Protect】and the system will, in real-time, monitor the two water protection signals. When one of them presents in a high level state, the processing task will be paused and laser will be turned off. "Water protection error"will be shown in LCD display.

   - **Open Protect**: Controller board open protection interface is IN1. Enable【Open Protect】and the system will, in real-time, monitor the signal. When it changes into low level state, the processing task will be paused. When it is in a high level state, the paused task will be continued.

   - **Foot Switch**: Controller board foot switch interface is IN2. Enable 【Foot Switch】system will, in real-time, monitor the signal. When the signal exchanges from high level to low level, the states will be switches (from pause to work or from work to pause).

3) **Laser Parameters**
   - **Laser Mode**: Select this parameter as an out-connected laser source type. Normally the three main types are glass laser tube, RF tube (Pre-ignition pulse) and RF tube (Non-ignition pulse)

   - **TTL Level**: Select this parameter as an out-connected laser power supply. The laser switch signals are Laser1-TTL and Laser2-TTL. When you choose【Low level effect】and start your optics, the system will output two road signals with low level and when you stop using your optics, the system will output two road signals with high level.
   When you choose【High level effect】and start your optics, the system will output two road signals with high level and when you stop using your optic, system will output two road signal with low level.
   - **PWM Frequency**: Pulse frequency of control signal of an out-connected laser source. Normally, it ranges from 20000 to 80000 Hz. If it is too small of a parameter, it will lead a possible output imbalance during working and come out as a "black point."

   - **Max Power**: Peak power percent of laser source. During processing, working power cannot exceed beyond this parameter.

4) **ZU Axes Options**
   - **XY axis home OnPower**: If enabled and when the machine is powered on, the X axis and Y axis will do reset motion at the same time.

   - **Z axis home OnPower**: If enabled and when the machine is powered on, the Z axis will do reset motion at the same time. (**This is normally not used and disabled**).

   - **U axis home OnPower**: If enabled and when the machine is powered on, the U axis will do reset motion at the same time. (**This is normally not used and disabled**).

   - **U axis for feeding**: Enables the U axis auto feeding function. Without it, all feeding crafts in software will be invalid. (**This is normally enabled**).

5) **Manufacturer Parameters Import and Export**
   - Manufacturer Parameters Import can use files which has been set up. Click 【Import】to accept changes. Parameters files suffix is cf5.

   - Manufacturer Parameters Export can create current copy files as backup. Click 【Export】to accept changes. Exported manufacturer parameters file could change current main board manufacturer parameters with U disk interface.

6) **Manufacturer Parameters Read and Save**
   - Manufacturer Parameters Read: Read parameters that had been saved into controller board into software interface. Click 【Read】to accept changes. Parameters files suffix is cf5.

   - Manufacturer Parameters Save: Click【Read】 and 【Save】, Manufacturer Parameters will be read and saved into software.

2.7.1.5 User Parameters
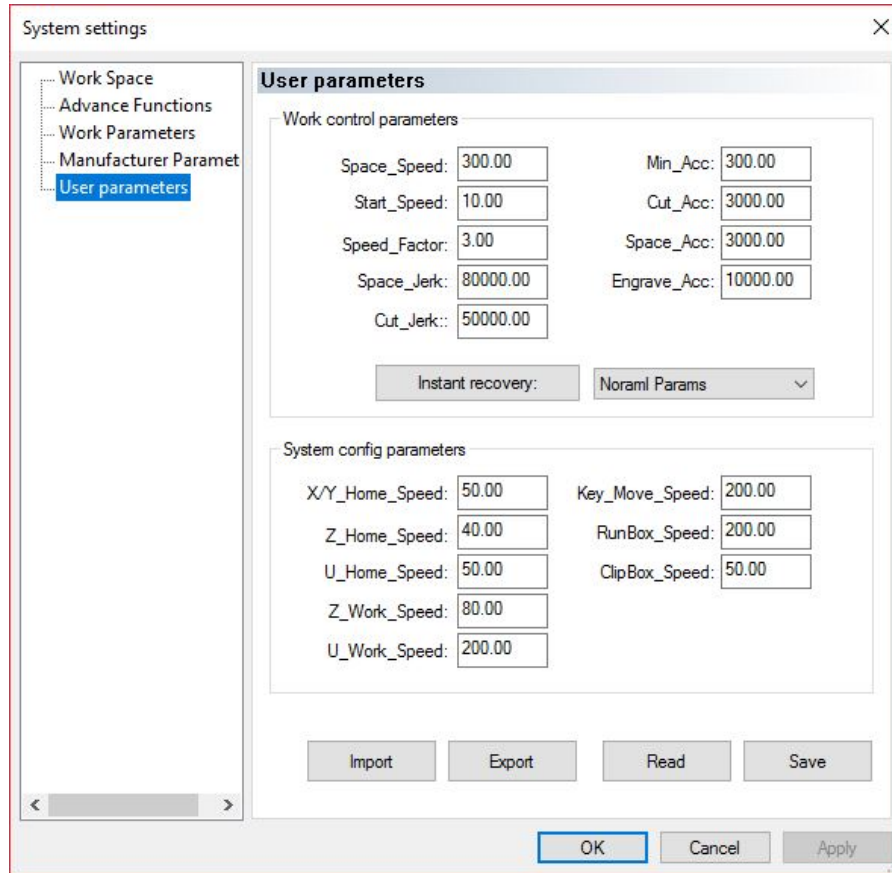
1) Work Control Parameters

- **Space_Speed**: Laser head motion speed when the laser is not outputting during working process. This parameter is limited by 【Max_Speed】in manufacturer parameters.

- **Start_Speed**: Laser head motion speed from running to still-phase during working process. This parameter is limited by 【Start_Speed】in manufacturer parameters.

- **Speed_Factor**: Rounding speed item during working process. The bigger it is ,the faster working speed, but can increase instability to the machine. It ranges between 0 to 5. **The current default 2**.

- **Space_Jerk**: Changing speed of space acceleration during working process. The bigger it is, the faster space speed, but can increase instability to the machine. **It is normally set as 10000 to 60000**.

- **Cut_Jerk**: Changing speed of cutting acceleration during working process. The bigger it is, the faster space speed, but can increase instability to the machine. **It is normally set as 5000 to 50000**.

- **Min_Acc**: Mini acceleration of axis motion during working process.

- **Cut_Acc**: Max acceleration of motion laser head when the laser is outputting during working process. **Normally set below 1500**.

- **Space_Acc**: Max acceleration of motion laser head when the laser is NOT outputting during working process. **Normally set below 2000**.

- **Engrave_Acc**: Max acceleration of laser head when engraving. Normally set higher than 8000. If it is too small of a parameter, it will lead a long distance between starting speed increase to engraving speed and cause the engraving oversize to fail.

- **Instant recovery**: One press button to set user parameters. You can choose "Slower Params", "Normal Params", "Faster Params" and "Fastest Params".

2) **System Config Parameters**
- **X/Y_Home_Speed**: Machine speed reset to origin point. Normally ranges between 40 to 80. If it is too large, it will lead a overload impact and probably damage the limit switch(es).

- **Z_Home_Speed**: Z axis (up & down axis) reset to origin point.

- **U_Home_Speed**: U axis (feeding axis) reset to origin point.

- **Z_Work_Speed**: Z axis motion speed during working process.

- **U_Work_Speed**: U axis motion speed during working process.

- **Key_Move_Speed**: Axis movement speed when pressing keys on LCD panel.

- **RunBox_Speed**: Laser head motion speed along graphic outline box.

- **ClipBox_Speed**: Cutting speed on graphics outline box.

3) **User parameters import and export.**
- User parameters import could be used for all adjusted user parameters files. Click【Import】to accept changes.

- User parameters export can create current copy files as backup. Click【Export】to accept changes. Exported user parameters file could change current main board manufacturer parameters with U disk interface.

4) **User parameters read and save.**

User Parameters Read: Read parameters saved in controller main board to software interface. Click【Read】to accept changes. Click【Save】, user parameters will be saved into software.

2.7.2 Array output options

Graphics needed to do an array process will be dealt with the array parameters setting.
Click【Option】/【Array output options】to enter it as follow:


Click 【Auto_conver Calculation】software will do automatic array as the working area and graphic size with the most economical way of materials and make graphics filled in whole working size.

2.7.3 Position relative

【Position relative】 means a relative position relationship between laser head and processed graphics. Click 【Options】 / 【 Position relative 】 or click system tool bar [icon] . A dialog as follow. Then click 【OK】 to accept changes.
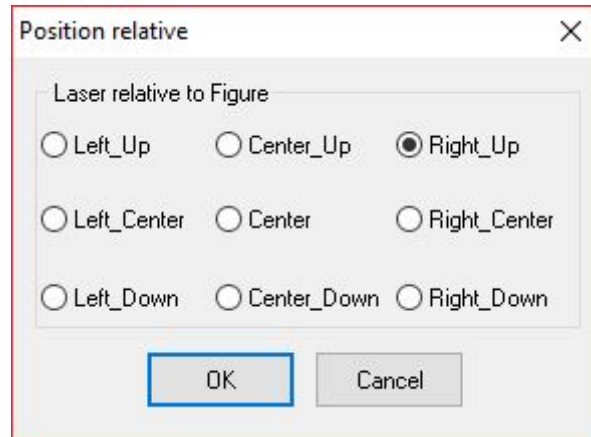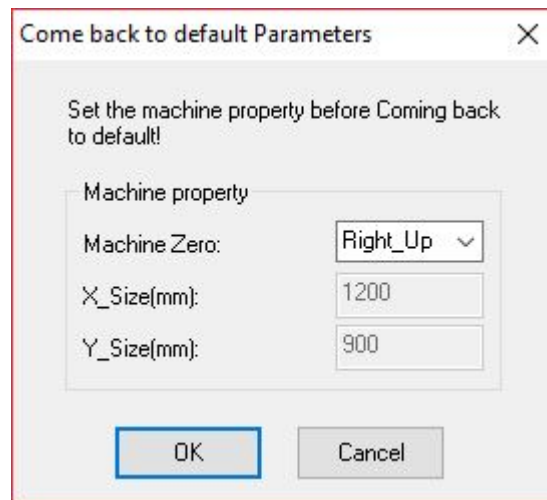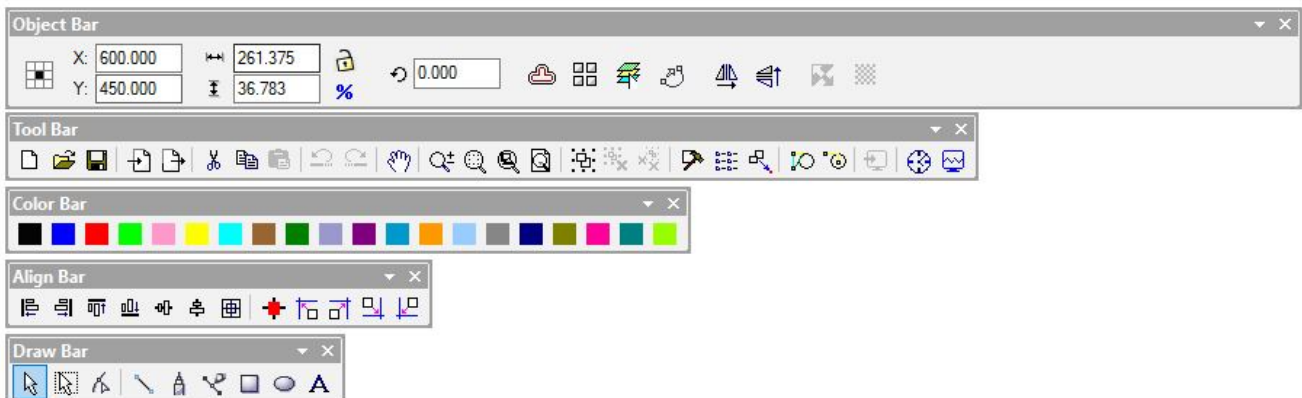

Graphic relative position as follow:

2.7.4 Default Parameters

Back to default software parameters. When it is selected, reset machine property parameters will be required.

2.8 View

View list is used to tune out or hide the toolbar

2.8.1 How to tune out the hidden tool bar?

When the menu bar is not hidden, you can choose relative tool bar in 【View】 list to tune them out. When the menu bar is hidden, click the mouse right button in the space area of state bar and select the relative tool bar to accept changes. Press the mouse right button down on the tool bar title and stay held. Then drag it to software top to fix the toolbar. As follow:
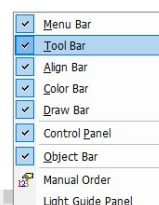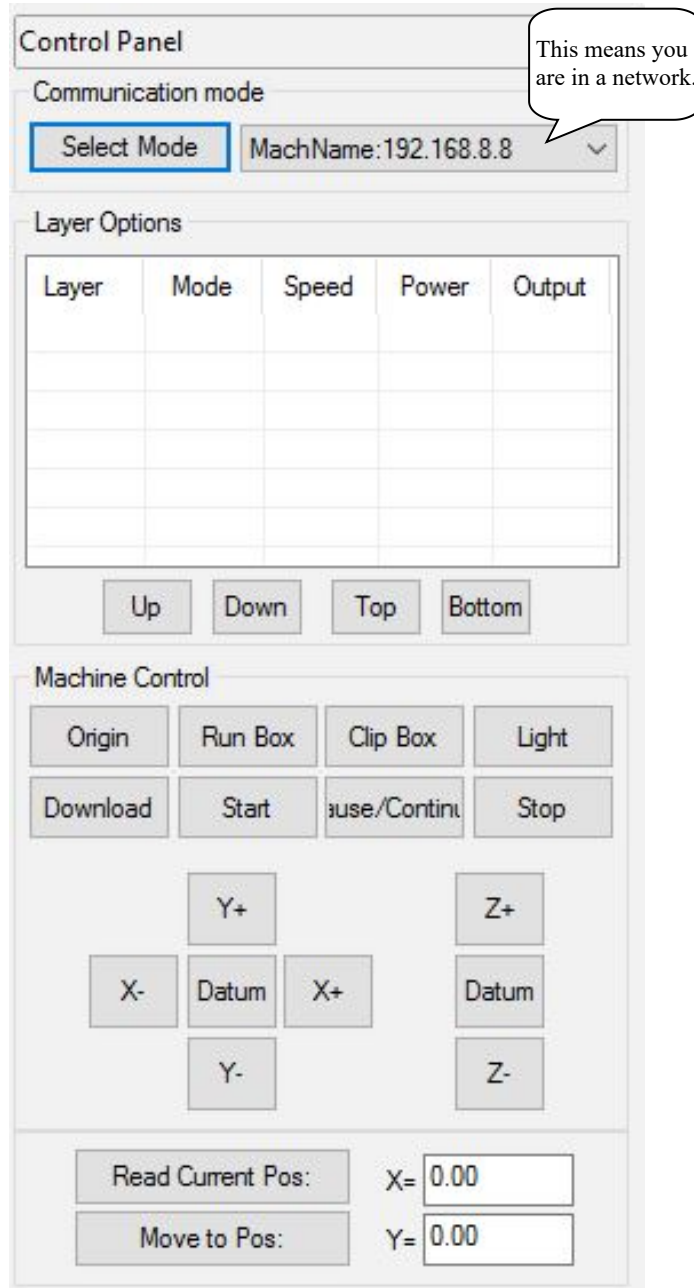
3. Control Panel

Your computer can communication with AWC series controller (main board) with a USB & a network (two different modes) and operate your laser machine

3.1 USB mode

Select communication mode in control panel.

Control Panel

Communication mode

| Select Mode | MachName:192.168.8.8 | ∨ |

> This means you are in a network.

Layer Options

Layer	Mode	Speed	Power	Output

| Up | Down | Top | Bottom |

Machine Control

| Origin | Run Box | Clip Box | Light |
| Download | Start | ause/Continu | Stop |

	Y+		Z+
X-	Datum	X+	Datum
	Y-		Z-

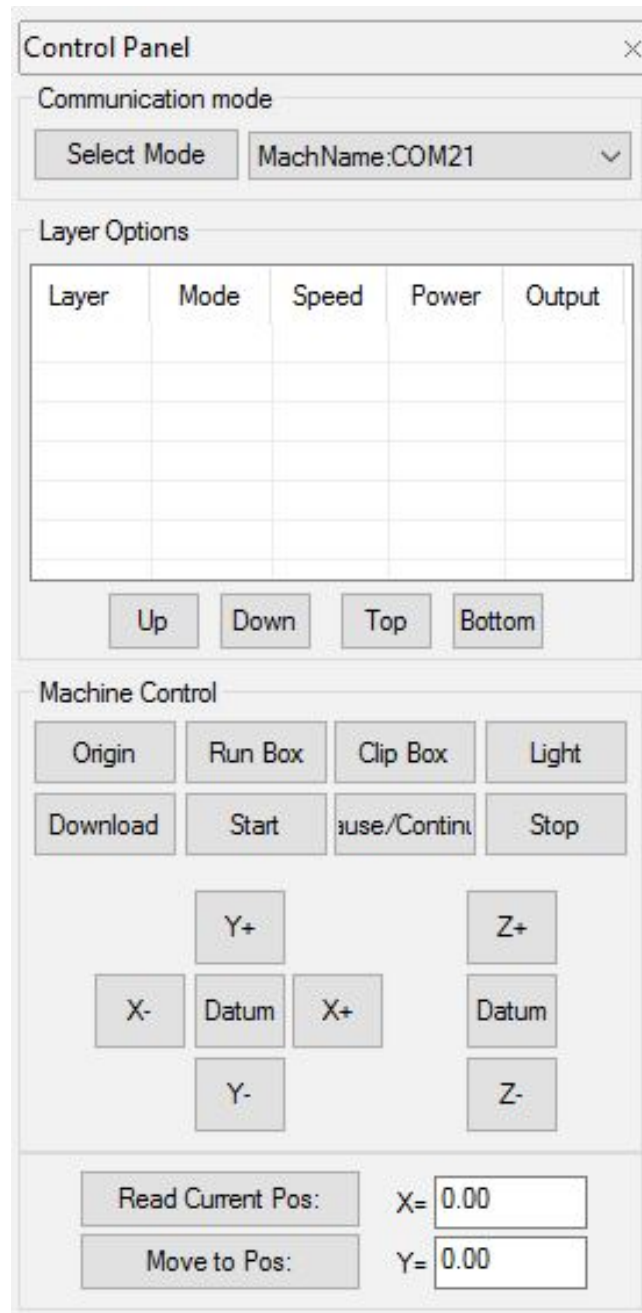| Read Current Pos: | X= 0.00 |
| Move to Pos: | Y= 0.00 |

Click 【USB Mode】

Double click

The device name can be renamed as you wish. Input device name and click **FindCom**. After successfully connecting to it, you can press OK to accept changes
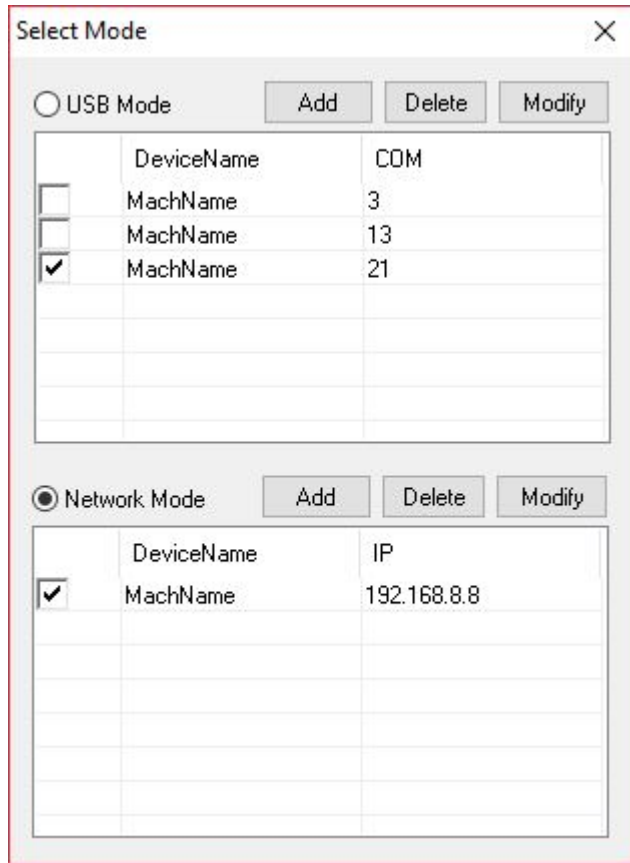
3.2 Select Network Mode
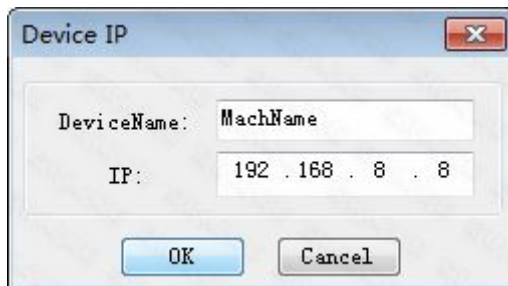### 3.2.1 Connect with network directly to main board.

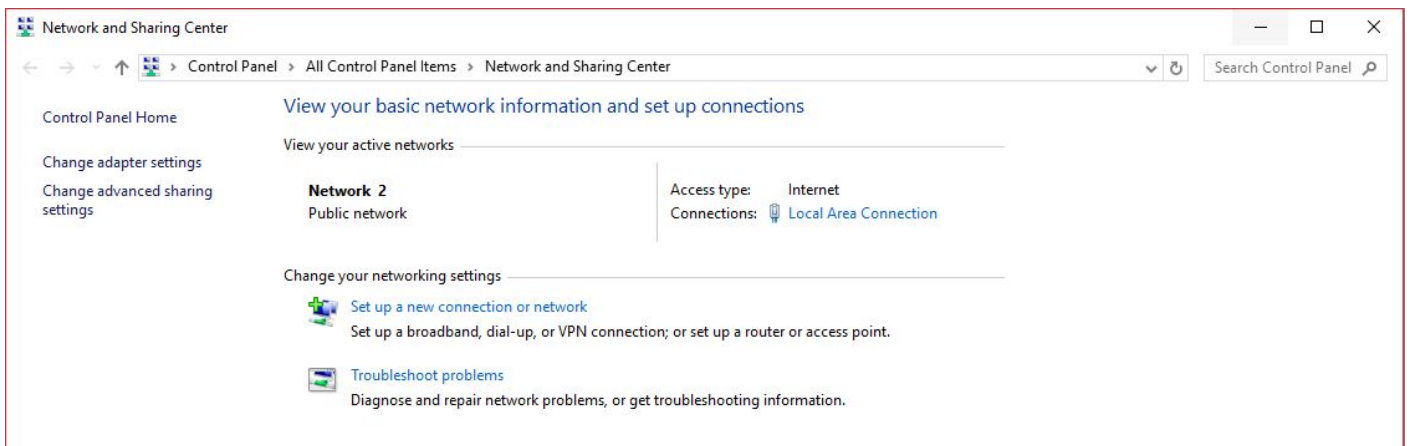Select communication mode in control panel.
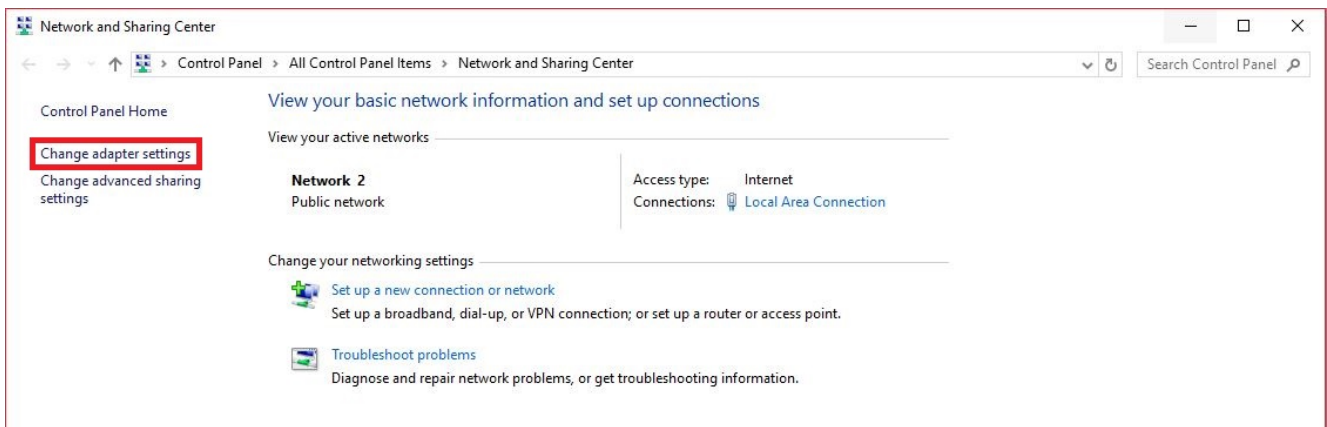

Click Network Mode.

Double click

The device name can be renamed as you wish. Input IP address in controller main board panel and press OK to accept changes.
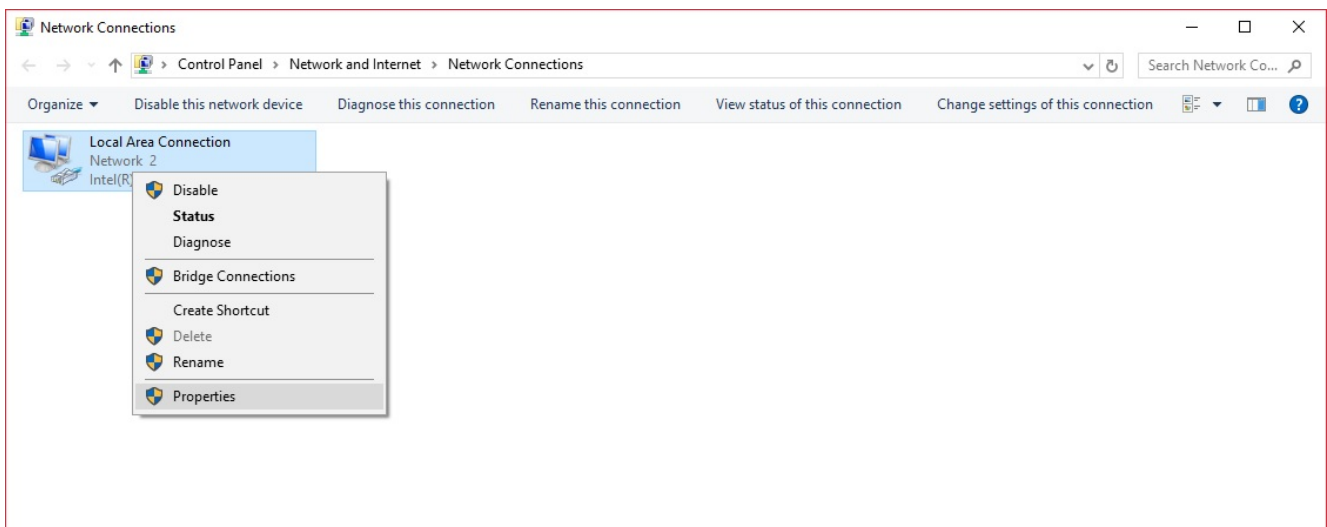
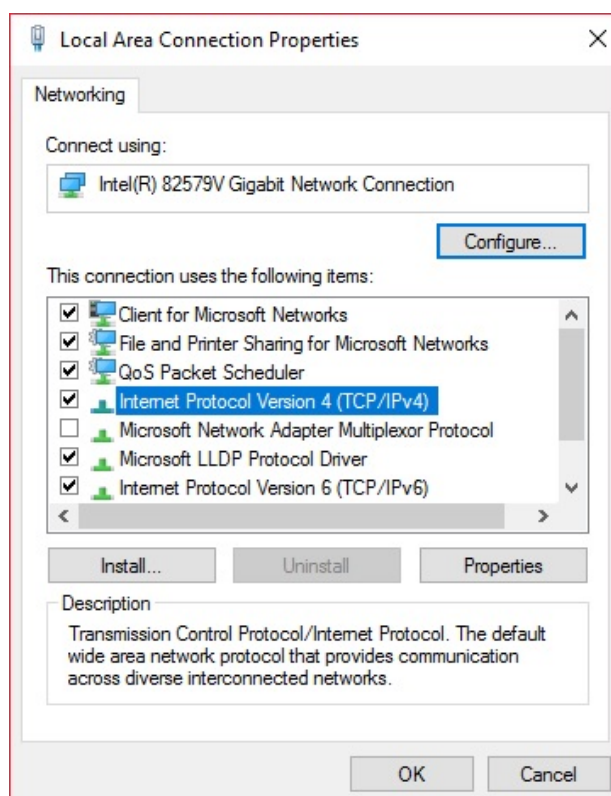Let's take Windows 10 as an example, search for **Network and Sharing Center**.
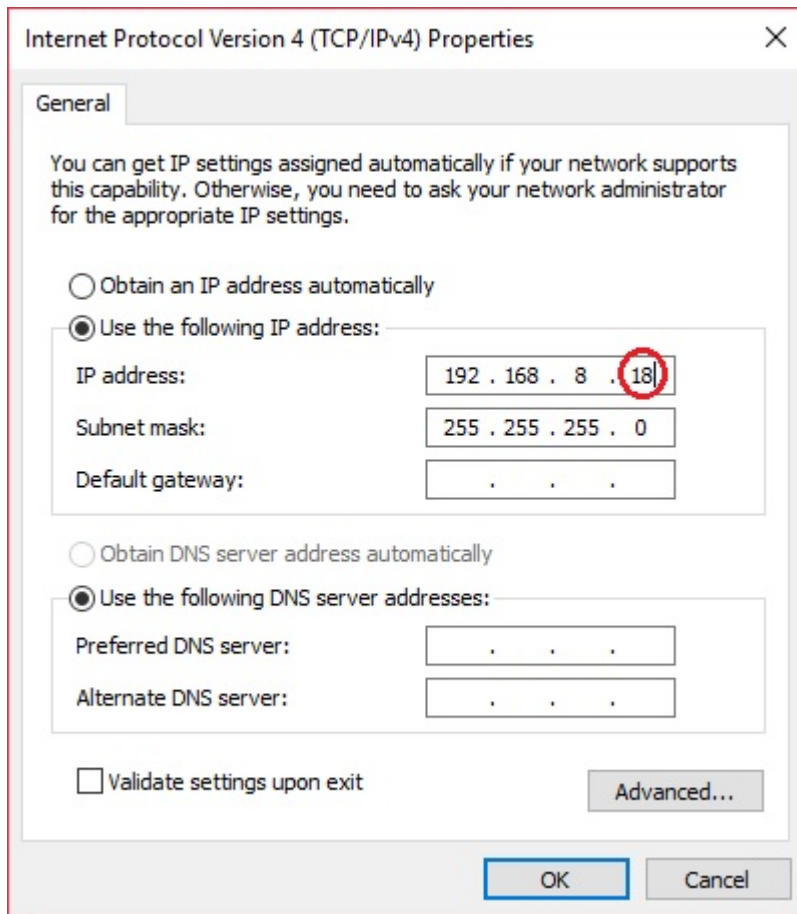
Click "Change adapter settings"

Double click Local Area Connection icon or click the right mouse button and open "Properties"

Double click Internet Protocol Version 4 (TCP/TPv4)

Select the following IP address. The former three IP addresses must be the same as what in controller main board. The number circled in red can be any one number between 0-255 except the main board's IP address. Then Click 【OK】to accept changes.

3.2.2 Connection through the router to main board.

Refer to the picture above; IP address set as obtain IP address automatically. The three IP addresses must be the same as what is on controller main board. The number circled in red can be any one number between 0-255 except main board IP address (just like the above example).
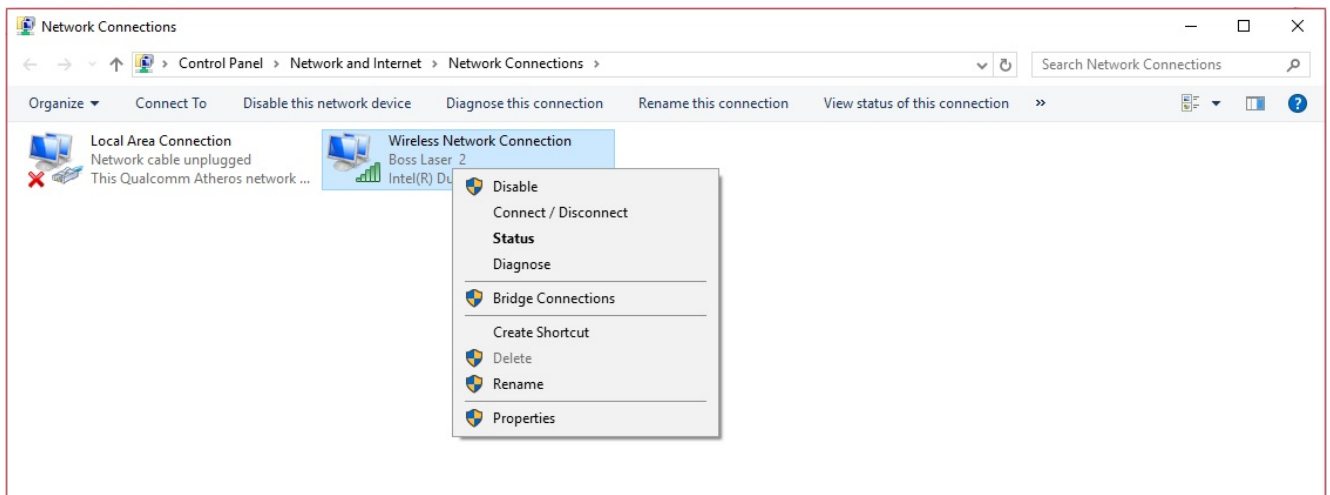
Again, let's take Windows 10 as an example, search for Network and Sharing Center.
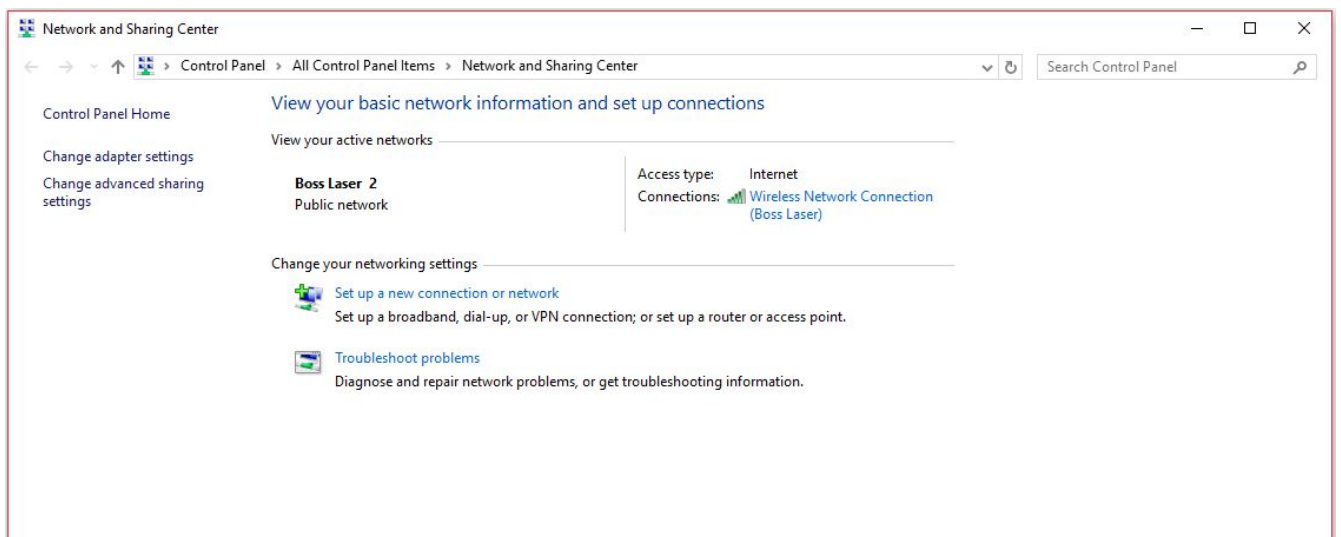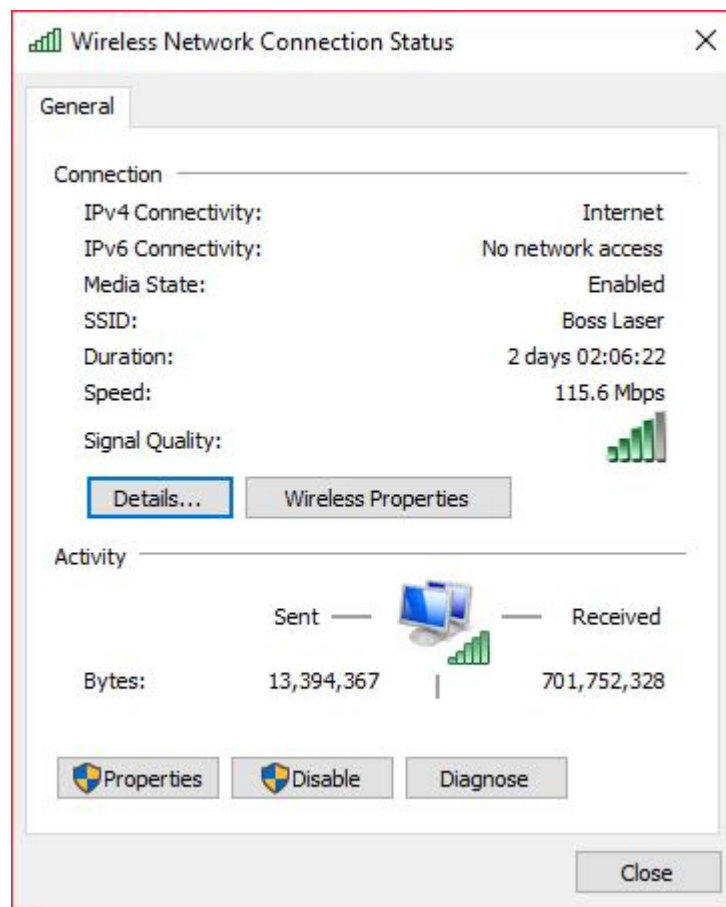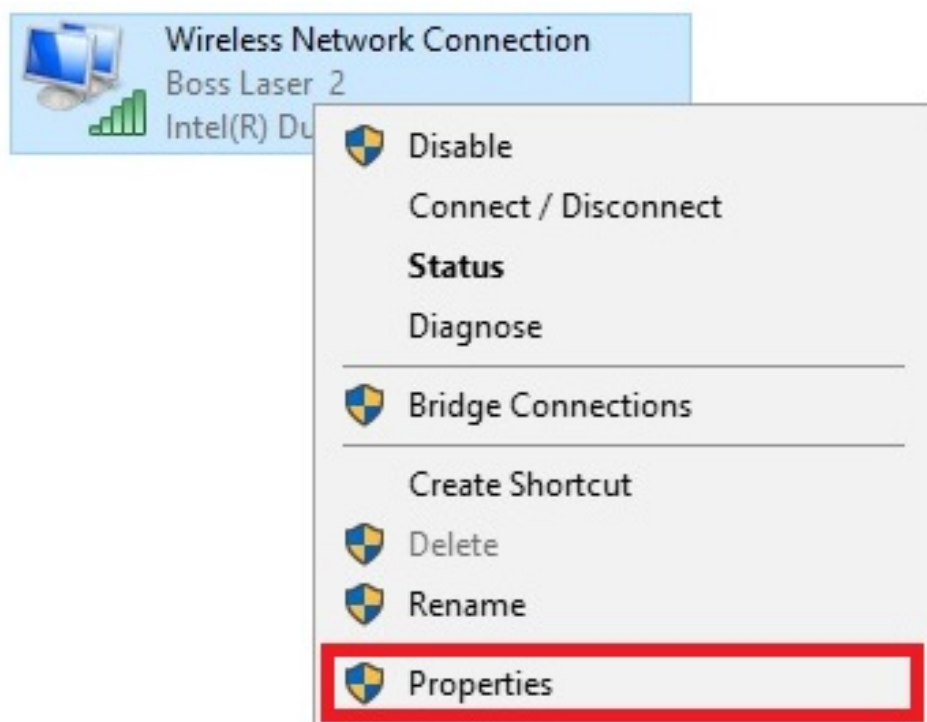
Click "Change adapter settings"
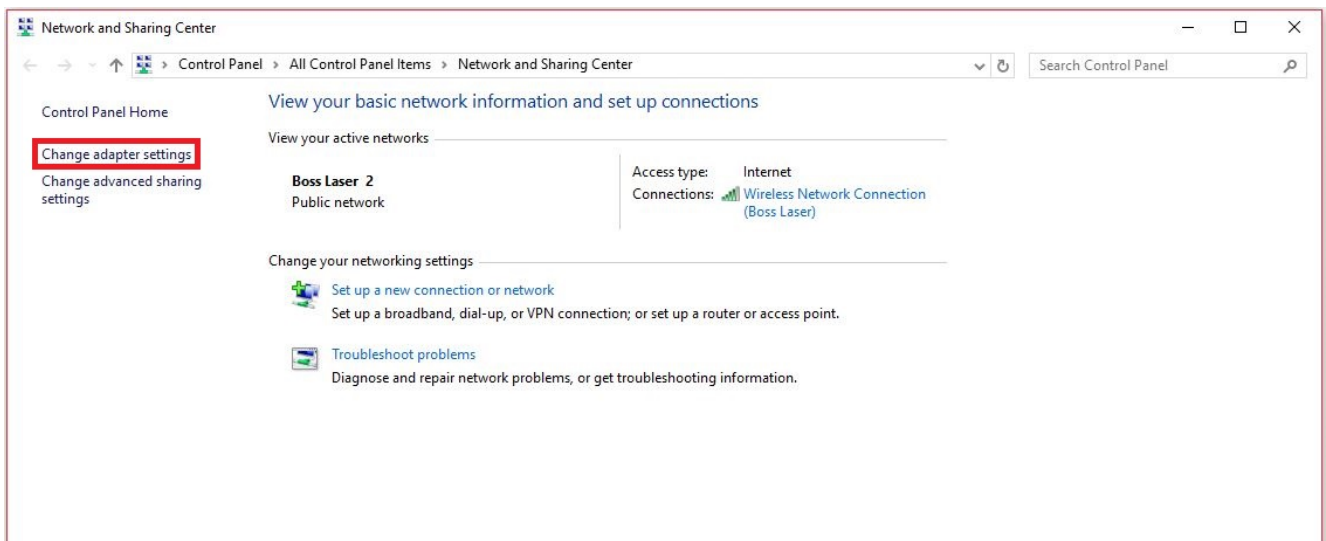
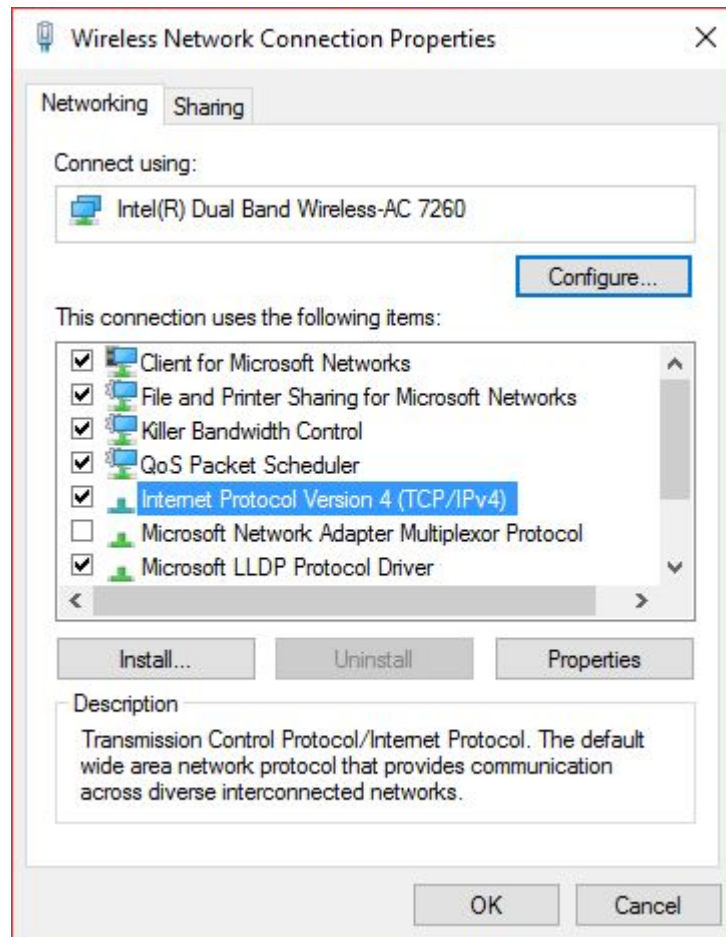Double Click the WLAN icon or click the mouse right button to open "Properties".

When you double click the WLAN icon, a window (as shown below) will pop up. Then click on "Properties."
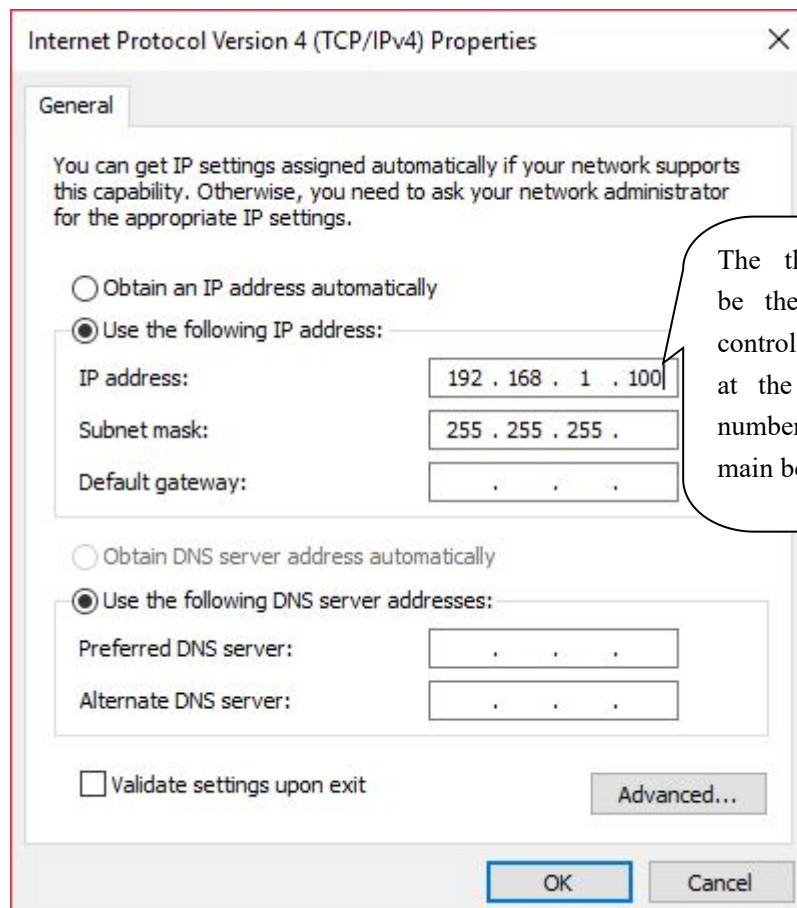

Or you can click on the right mouse button on the WLAN icon, then select "Properties."

Double click Internet Protocol Version 4 (TCP/TPv4)

Set parameters with the same rule.

The three IP addresses must be the same as what is on controller main board. This IP at the end can be any one number between 0-255 except main board IP address

3.3 Setting layer parameters.
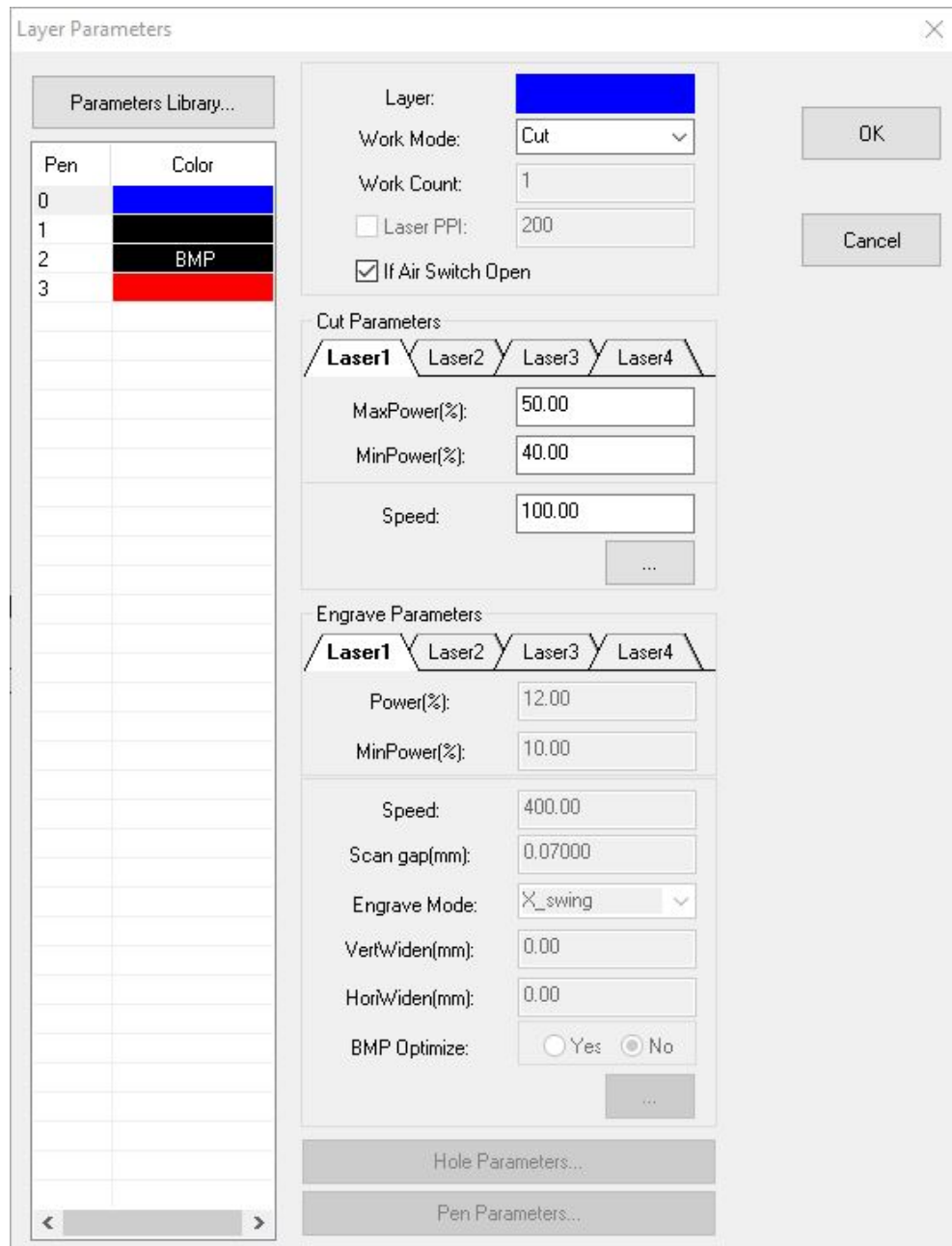
1) Layer parameters

Locate the "Output" bar (under Layer Options; located at the top right of the software), each layer will have white-check box under Output. ✔ will output the layer and ☐ will NOT output the layer.

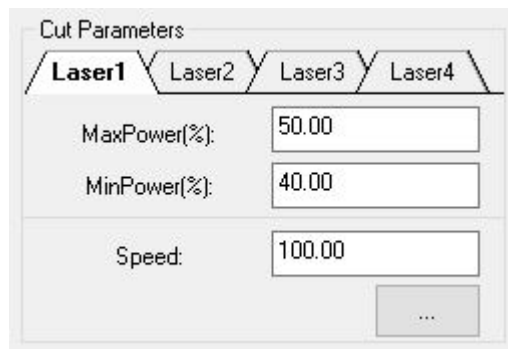Double click any row on the parameters list (such as [███ Cut   100.00   50.00   ✔])
The following window will appear as shown below:

- **Layer**: The current layer you have selected where you can change the parameters for that color. At any time, you can select the different layers on the left side to change in between.

- **Work Mode**: Includes "Cut," "Engrave," "Cut after engrave," "Hole," and "Pen Run." If the current file format is a BMP **BMP** or bitmap layer, then it will show "Engrave" under Work Mode as the only option. (A bitmap layer is only used for laser engraving).

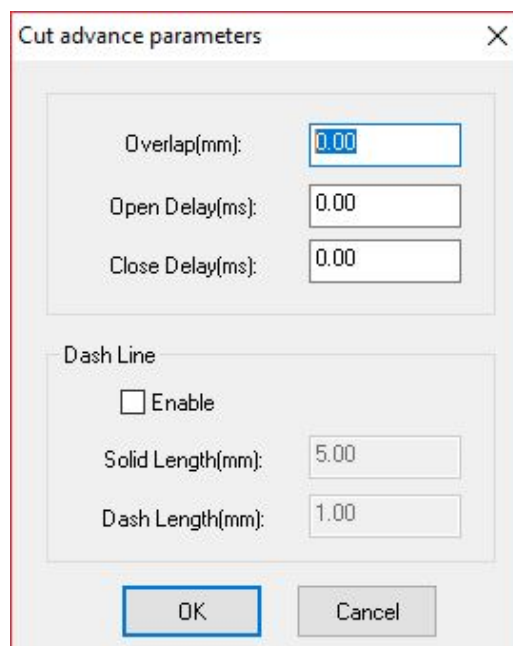- **If Air Switch Open**: Blowing air when cutting on this layer.

2) **Cut Parameters**

Select "Cut" or "Cut after engrave" in 【Work Mode】, cut parameters will be enable. As follow:

- **Speed**: Working speed of laser head during cutting.

- **MaxPower(%)**: Machine working power (unit is in percentage). Related to AWC controller panel Laser 1 power.

- **MinPower(%)**: In variable motion, this power is done at the lowest speed. Related to AWC controller panel Laser 1 power.

To set any cut advance parameters , click ⬚ and a dialog will show as follow:

- **Overlap(mm)**: The mechanical deviation; if the file did not completely close, i.e showing a gap, this parameter can help solve this problem. However, it should not be adjust too much. A suggestion might be to improve your mechanical parts' precision to fix it **OR** it might be the file itself.

- **Open Delay(ms)**: Set open delay time before laser output.

- **Close Delay(ms)**: Set close delay time after laser shut down.

- **Dash Line**: Cutting a graphic with a dash-line way. Enable it and you can set the dash line length and single solid length.
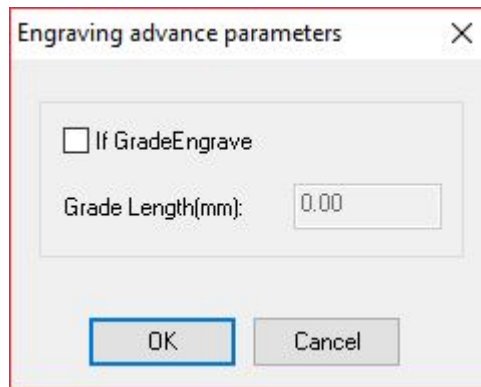
3) Engrave Parameters

Select "Engrave" or "Cut after engrave" in 【Work Mode】. Engrave parameters will be enable as follow:

- **Speed** : Scanning speed when engraving.

- **Power(%)**: Adjustable laser power of the processing layer (unit is in percentage).

- **Scan gap(mm)**: Gap distance of each scanning line

- **Engrave Mode**: Includes X_swing, X_unilateralism, Y_swing, Y_unilateralism

  o **X_Swing**: Laser head goes BACK AND FORTH; repeats laser scanning graphics in LEVEL direction.

  o **X_unilaseralism**: Laser head goes back and forth; repeats laser scanning graphics in level direction, BUT LASER OUTPUT ONLY TOWARDS TO ONE DIRECTION. For example, when the laser head outputs scanning from the right, it will not do an optic output when going towards to the left.

  o **Y_Swing**: Laser head goes BACK AND FORTH; repeats laser scanning graphics in VERTICAL direction.

  o **Y_unilaseralism**: Laser head goes back and forth; repeats laser scanning graphics in vertical direction, BUT LASER OUTPUT ONLY TOWARDS TO ONE DIRECTION. For example, when the laser head outputs scanning from top to bottom, it will not do an optic output when going towards from bottom to top.

Click [...] to enter the engrave advance parameters

Engraving advance parameters ✕

☐ If GradeEngrave

Grade Length(mm): 0.00

[OK] [Cancel]

If GradeEngrave : Choose "Yes" and enable【Grade Length (mm)】. Grade engraving schematic diagram:
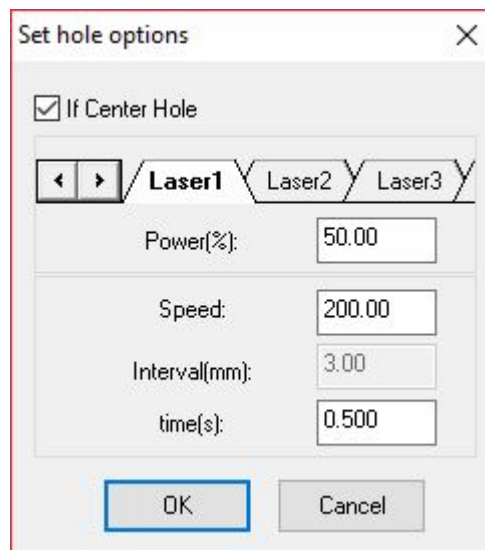
A

B

C

A:Grade width.
B:Top depth
C:Total depth
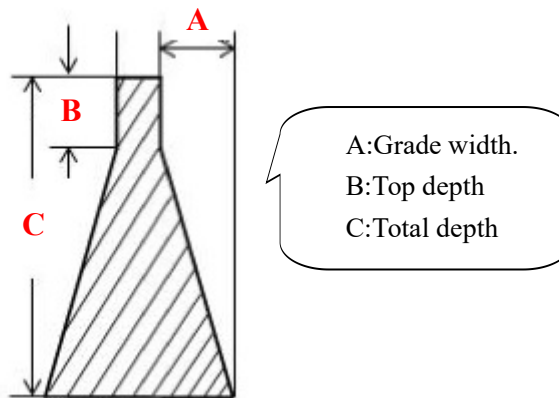
- **Grade Length(mm)**: or "slope" in diagram.

4) Hole
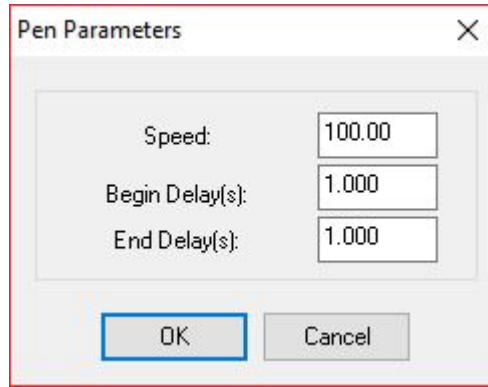
Select "Hole" in 【Work Mode】to enable hole parameters.

Look for [Hole Parameters...] .Press 【Hole Parameters】and a dialog as follow:

Set hole options ✕

☑ If Center Hole

◄ ► / **Laser1** \ Laser2 / Laser3 \

Power(%): 50.00

Speed: 200.00

Interval(mm): 3.00

time(s): 0.500

[OK] [Cancel]

- **Power(%)**: Adjustable laser power when the layer is being processed

- **Speed**: Laser head movement speed

- **Interval(mm)**: Distance of each hole

- **Time(s)**: Each period that laser head will stay when drilling

5) Pen Parameters

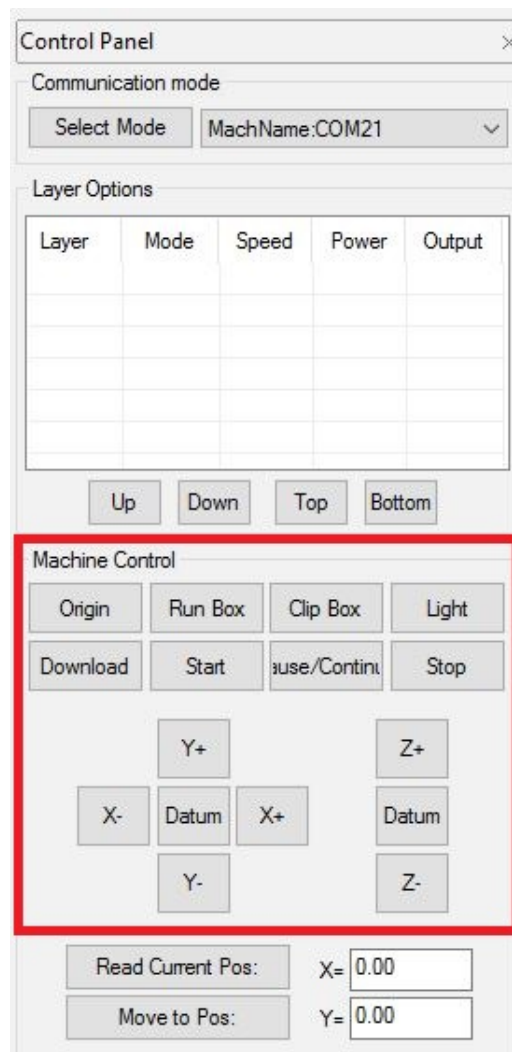- **Speed**: Movement speed of pen.

3.3.1 Adjust layers processing order

The default processing order in the layer list is from top to bottom. If you need change it, just select any one layer and press | Up | Down | Top | Bottom | to accept changes.

> Only select 【Order by layer】 in route optimization parameters, this function will work.

3.4 Machine Control

【Machine Control】includes control operations on importing graphics, starting process and other simple machine functions.

3.5 Download graphic parameters management

Click [Download] button and a dialog as follow:

1) **Current Document options**

- **Name**: Name of the file downloaded to main board.

- **Work times**: Processing time of file downloaded. After it's started, the system will do repeated processes on this file parameters.

- **Repeat Delay(s)**: Delay time after one processing program is finished during repeat processing.

[...] : Document advance options setting. Click this button and a dialog as follow. Then click 【OK】 to finish it.
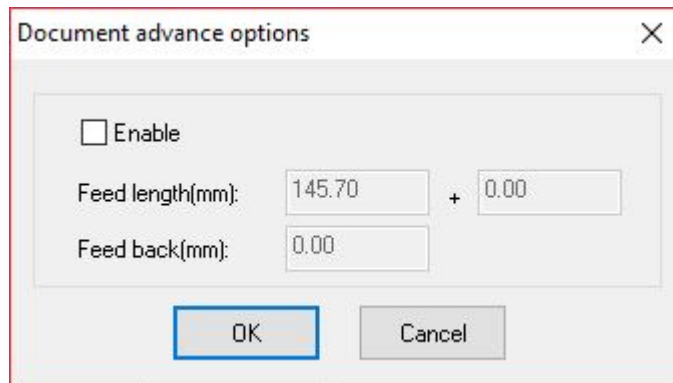

- **Feed length(mm)**: Feeding distance of feed axis (or z axis) after each process done.

Document Date Optimize

- **Auto Group Engrave**

- **Gap Optimize**: When cutting complex graphics and if this option is enable, system will decide cutting direction automatically (Mechanical backlash compensation). Normally not recommended.

- **Re-Order Objects**: When it is enabled, system will do a 【Route Optimize】 on the file graphic parameters.

2) Export file parameters

You can save it as an off-line file (or *.ud5 file). Then copy it to an U disk to the controller main board. Press【Save document to Ufile】and dialog as follow:
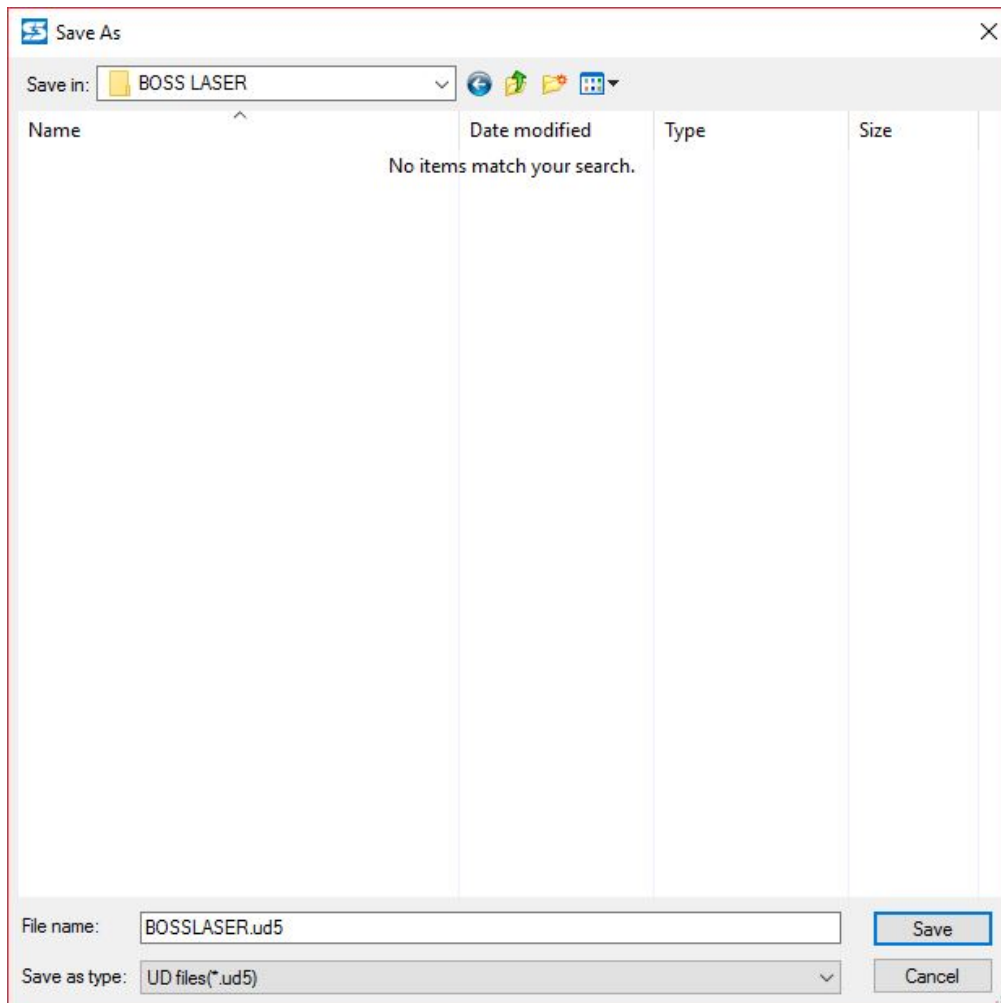
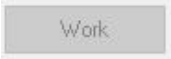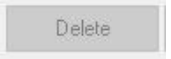Input a file name and press【Save】to accept it.

OR you can directly download the file parameters via USB or network mode to the controller main board, just click【Download Document】.
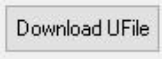
3) Device file management

Manage the files saved on main board storage.

- **Refresh**: Check all files saved on main board storage. Click [Refresh] all filenames saved here will be presented in device file list.
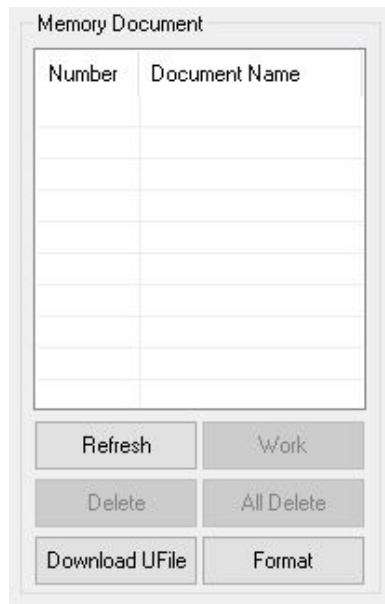
- **Work**: Select a file in files list and click [Work] to start the processing program on it.

- **Delete**: Select a file in files list and click [Delete] button. This file will be removed from main board storage.

- **All Delete**: Remove all files in the controller main board storage.

- **Format**: Format the controller main board storage. All files saved here will be lost.

- **Download UFile**: Download Ufiles saved in the computer (ud5 files) to main board.

  Click [Download UFile] and a dialog appears. Then select the Ufile (ud5 file) you need to load and click 【Open】 to open it.

3.5.1 Start processing and relative control
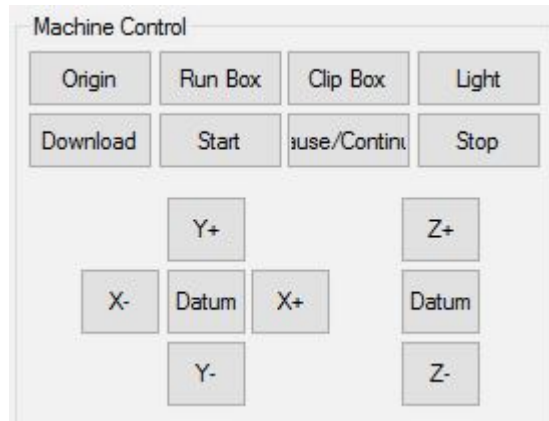
- **Origin**: Set the laser head's current position as origin point.
- **Start**: Start current selected file in controller main board.

- **Click** [ause/Continu] **to switch two states**: Pause and Continue.

- **Stop**: Machine stop current task.

- **Run Box**: Laser head will do a "space run" along a relative working parameters rectangle. This function is used for ensuring the position of processed material(s).

- **Clip Box**: Cutting a completed processed file off from materials.

- **Light**: Pressing the [Light] button will output the laser until you let go of the button.

- **Datum**: Clicking this button and the laser head (or Z axis) will move to the machine's zero point with a low speed. Once the machine's limit switch has been triggered, it will move to origin point with a fast speed. This function could reduce cumulative deviation. It is recommended to do before processing any material.

- 【X-】【X+】【Y-】【Y+】【Z-】【Z+】 : Move laser head (or Z axis). When pressing the relative button, the laser head (or Z axis) will start to move. As soon as you let go of the button, the laser head (or Z axis) will stop.
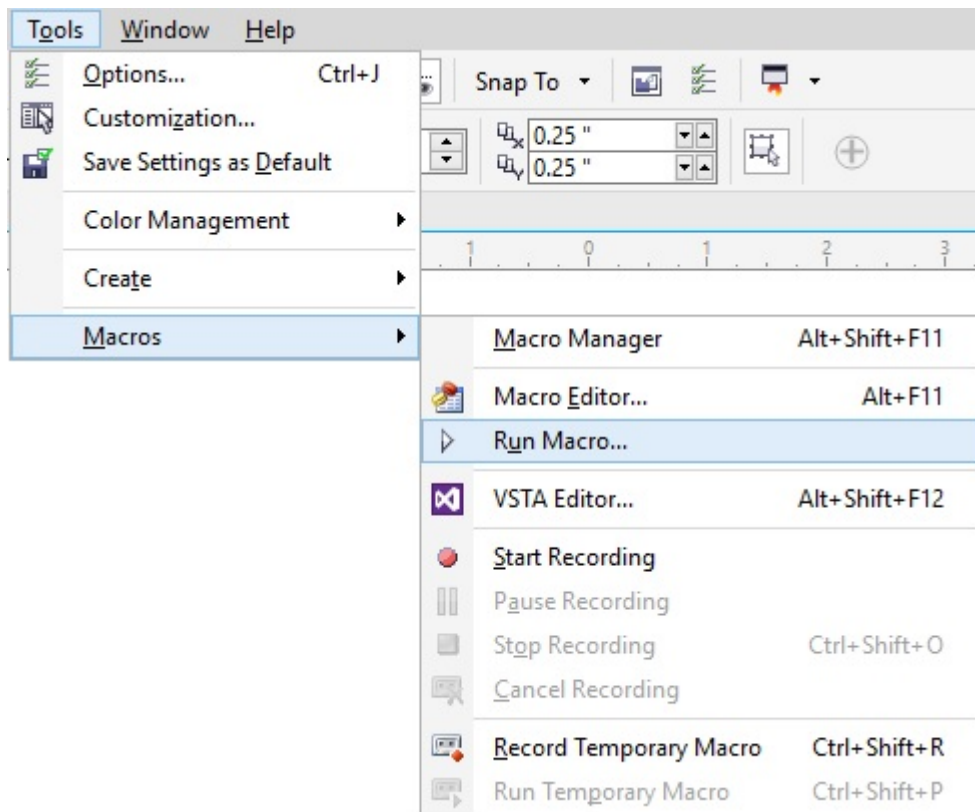
4.CorelDRAW directly output software simple manual.
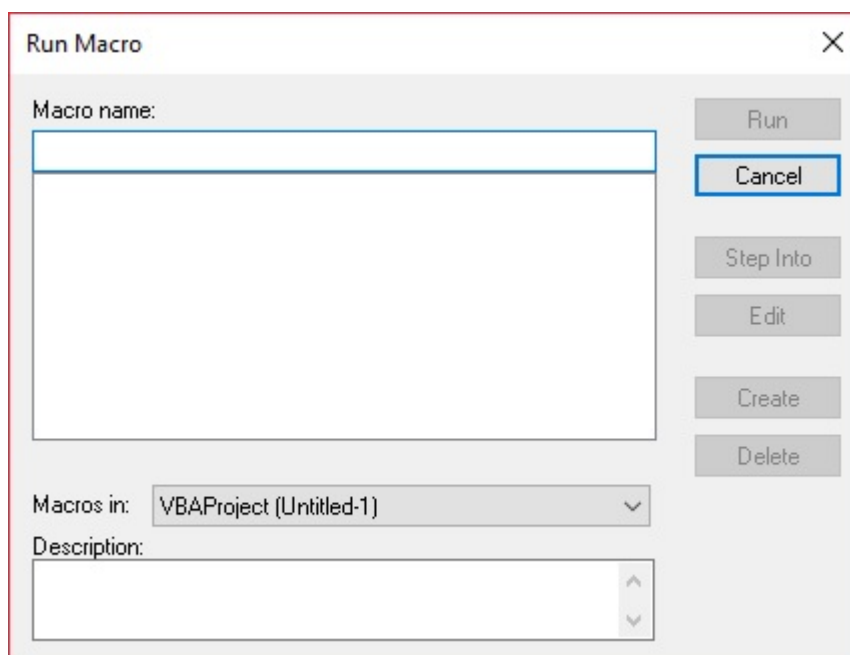
4.1 Hand install "AwcLaserCut" tool strip.

After installing the CorelDRAW direct output plugin, start CorelDRAW. CorelDRAW X7 main interface as follow:
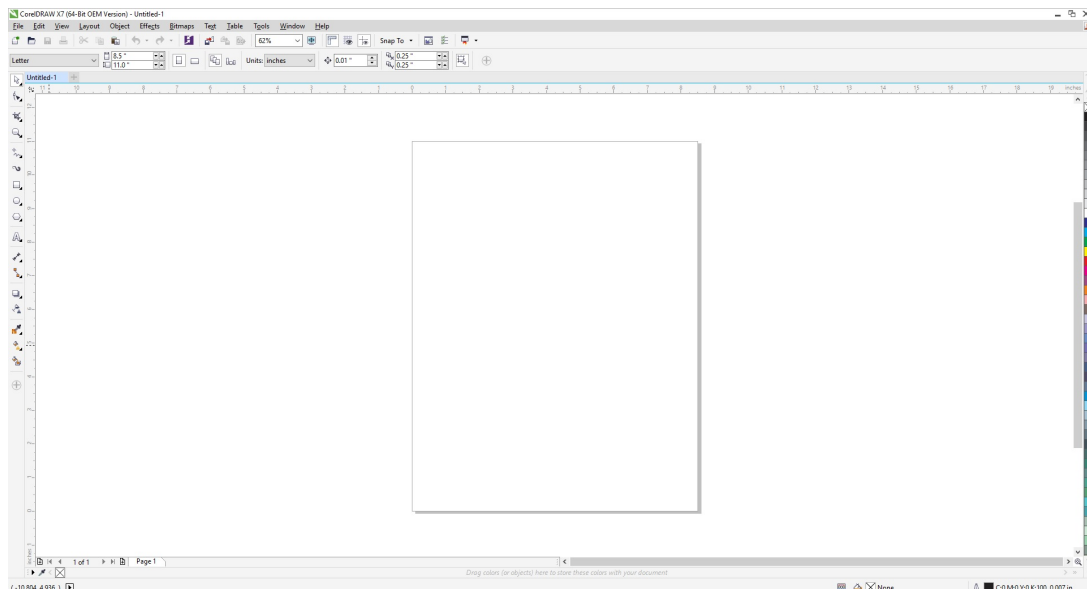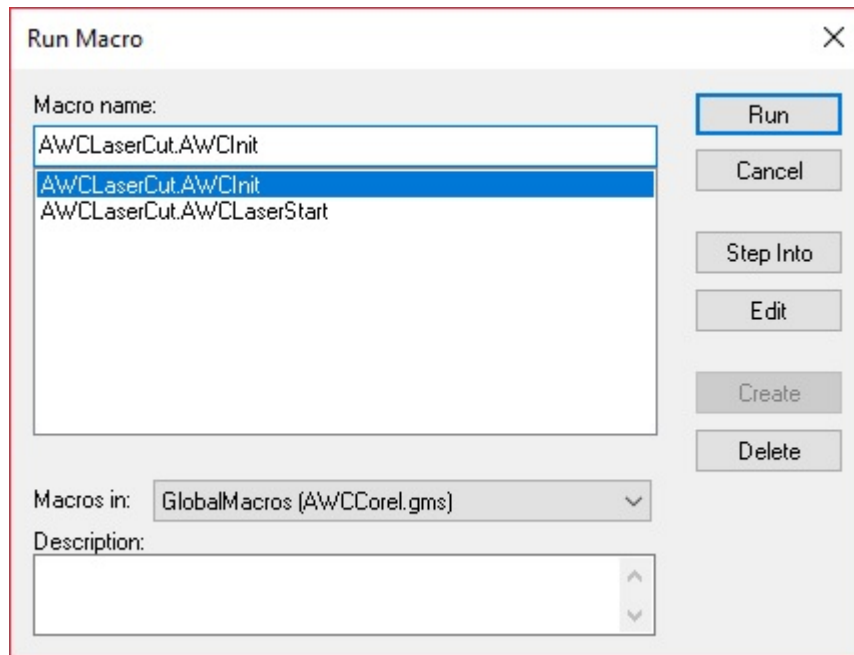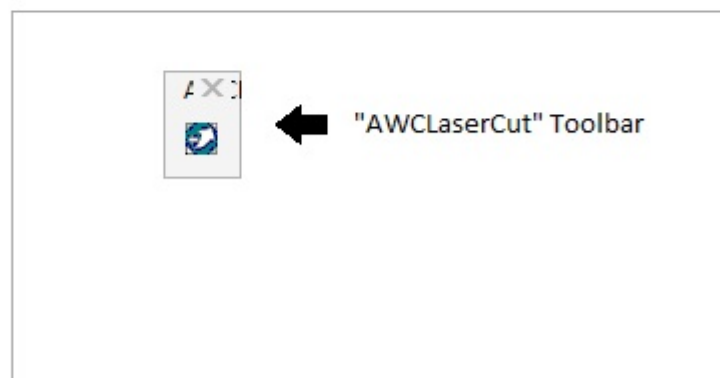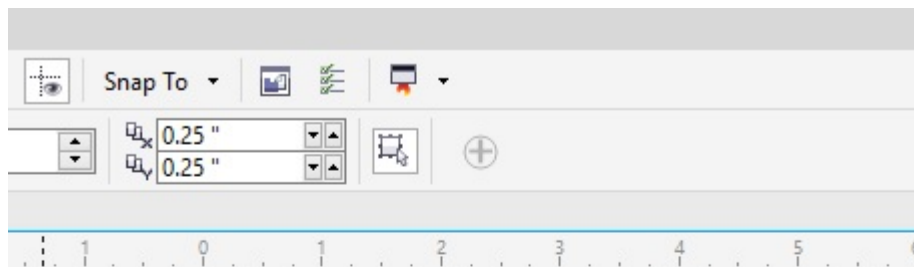

Click【Tools】/【Macros】/【Run Macro】

A dialog as follow:

Select"GlobalMacros（AWCCorel.gms)" in 【Macros in】.
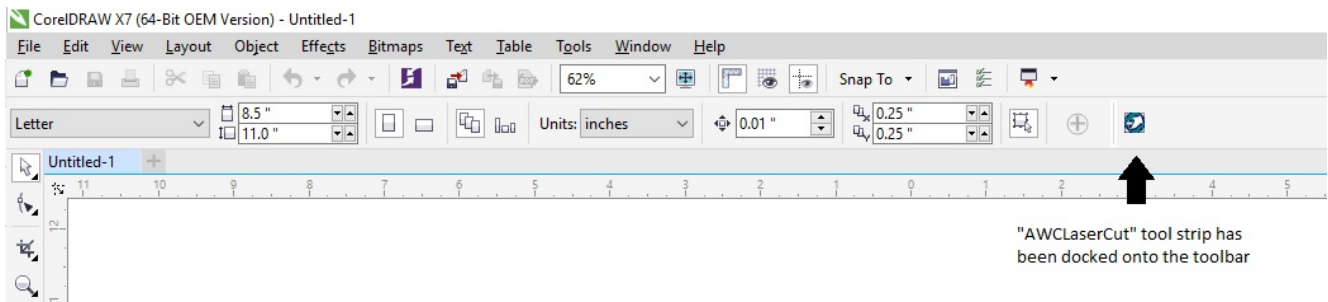Then select "AWCLaserCut.AWCInit" in 【Macro name】.

As follow:

Click 【Run】and an "AWCLaserCut" toolbar can be added into CorelDRAW's main interface as shown below:

Drag the "AWCLaserCut" tool strip with your mouse to the toolbar. As follow:

"AWCLaserCut" tool strip has been docked onto the toolbar

After it has been added successfully, when restart CorelDRAW, "AWCLaserCut"tool strip will always appear in tool bar.

4.2 Shows hidden "AWCLaserCut" tool strip

When using CorelDRAW with the LaserCAD plugin, the "AWCLaserCut"toolbar may not be visible. To make it visible again:

Click tool bar with mouse right button. A drop-down menu should appear. Click【AWCLaserCut】 as follow: