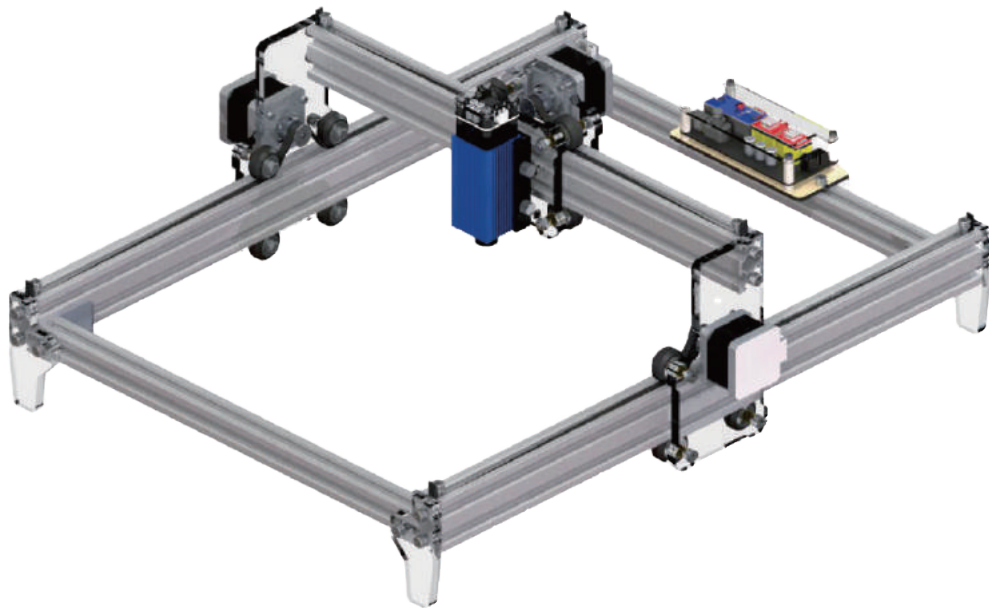


B19\2419
3040\4050\5060
Laser Engraving Machine



Precautions

Please refer to the attached USB flash drive to assemble and operate. If the USB flash drive not work, please contact us and leave the email address. We will send it to you .

Precautions:

- 1) All parts in this description just for illustrative purposes . If there is any difference, please refer to the actual part shape.
- 2) Please pay attention to the order in the installation steps to avoid repeated disassemble or assemble .If the laser need to work long time, please be sure to disable the sleep function of the computer And please don't make laser continuously emitting light in the out of control to avoid burning the engraved items or the desktop.
- 3) Please don't use item without anybody here.
- 4) Be sure to wear protective glasses before operating the laser.



<http://dwz.date/Ar3>

Follow our Channel to get help about assemble, operation, software and technical staff suggestion.



Laser Machine Install Video

If you have any suggestions, feel free to contact me!



1319/2419/3040/4050/5060 Laser Machine Install Video

This video is for 1319/2419/3040/4050/5060 Laser Machine The video shows machine is 3040 ,work area is 3040

User Guide

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Safety Guide



Caution: Avoid eye or skin exposure to direct radiation



Away from children



Always wear protective glasses when use the machine



Prohibited from use in flammable objects or gases .



In case of emergency, cut off the power immediately



Shutdown steps : When you are not using the machine, first cut off the power, then turn off the software, at last dial out the USB cable

	1319	2419	3040	4050	5060
Package Weight	4kg	5kg	5kg	6kg	7kg
Working Size(MM)	130*190	240*190	395*285	400*500	500*600
Product Size(MM) L*W*H	328*337*216	378*389*214	538*487*216	638*599*216	738*699*216
Package Size(MM) L*W*H	510*400*120	510*400*120	510*400*120	660*300*100	760*280*100

Attention

1319/2419/3043/4050/5060 has same assemble steps just size different, please refer to the form below. Here is the assemble manual for 3040:

Name	Serial number	Type	1319	2419	3040	4050	5060	Number
	001	2040V	300mm	350mm	510mm	610mm	710mm	2
	002	2040V	253mm	305mm	403mm	515mm	615mm	1
	003	2020	210mm	262mm	360mm	472mm	572mm	2
	006	GT2-6mm	1.2m	1.5m	1.8m	2m	2.3m	1
	026	3P-3P	80mm	80mm	80mm	80mm	90mm	1
	027	4P-6P	60mm	60mm	60mm	80mm	90mm	3

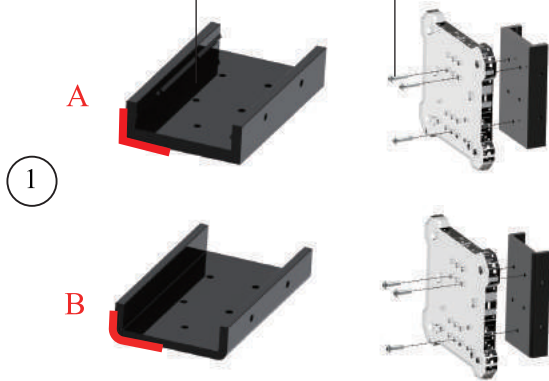
Packing List					
001	Aluminum profile	2040V-510mm	2	Piece	
002	Aluminum profile	2040V-403mm	1	Piece	
003	Aluminum profile	2020-360mm	2	Piece	
004	Acrylic	PAMA-4050	1	Set	
005	Stepper motor	42HS34	3	Piece	
006	Synchronous belt	GT2-6mm	1.8	Meter	
007	Pulley	5mm	12	Piece	
008	Corner code	2028	4	Piece	
009	Controller	GRBL1.1	1	Piece	
010	Power source	12V 5A	1	Piece	
011	Hexagon socket cap screw	M5*8	16	Piece	
012	Hexagon socket cap screw	M5*12	4	Piece	
013	Hexagon socket cap screw	M5*20	12	Piece	
014	Hexagon socket cap screw	M5*30	8	Piece	
015	Hexagon socket cap screw	M5*50	4	Piece	
016	Hexagon socket cap screw	M3*12	12	Piece	
017	Slide nut	M5	8	Piece	
018	Self-Locking Nut	M5	12	Piece	
019	Square nut	M5	12	Piece	
020	Synchro wheel	GT2-20 5mm	3	Piece	

021	Copper nut	M5*6	8	Piece	
022	Copper nut	M5*8	8	Piece	
023	Socket wrenches	2/2.5/4/8	1	Set	
024	Hand screw	M3*6	4	Piece	
025	Pan head screw	A:M3*12 B:M3*10	3	Piece	
026	Laser wire	80cm	1	Piece	
027	Stepper motor wire	60cm	3	Piece	
028	Screw box	/	1	Piece	
029	coil bobbin	8mm	2	Piece	
030	Aluminum heat module	A/B	1	Piece	
031	USB flash drive	/	1	Piece	
032	Package	/	1	Piece	
15W Lifting module					
Acrylic		Thickness:8mm	1	Piece	
Hexagon socket cap screw		M3*12	4	Piece	
Optional					
0.5W	1W	1.6W	2.5W	3.5W	
5.5W	7W	10W	15W		

3040 Assemble Manual

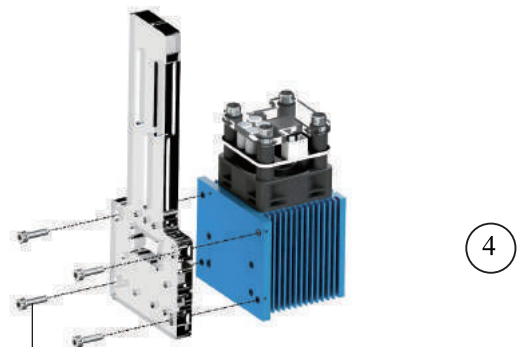
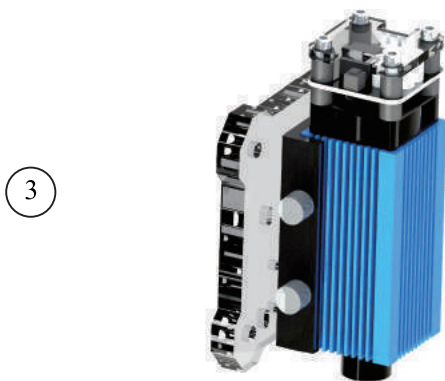
025 : M3*12 Pan head Screw 3pcs

030: A/B 1pc



024: M3*6 Hand Screw 4pcs

500mw/2.5W/3.5W/5.5W laser



016: M3*12 Screw 4pcs

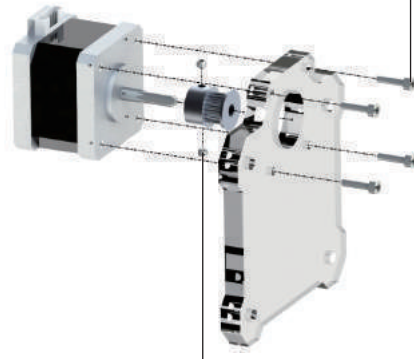
15W Laser



7



016: M3*12 Screw 4pcs

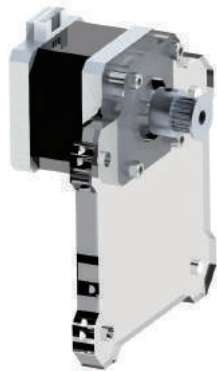


8

020: GT2-20 Synchro Wheel 1pc

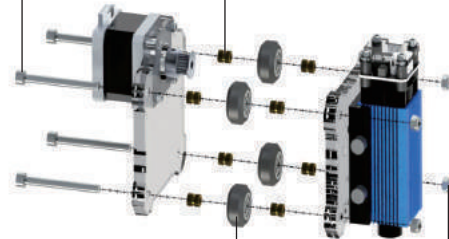
9

Finish



015: M5*50 Screw 4pcs

022: M5*8 Copper Nut 8pcs



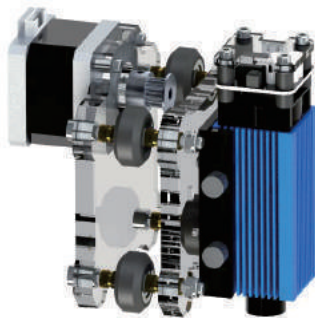
10

007: 5mm Pulley 4pcs

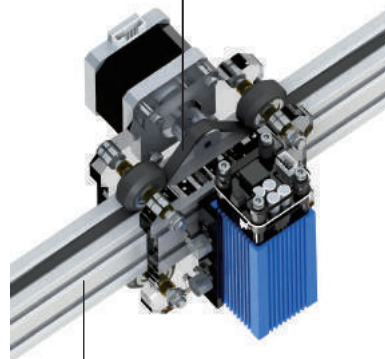
018: M5 Self-Locking Nuts 4pcs

11

Finish



006 : GT2-6mm Belt



12

002 : 2040V-403mm Frame

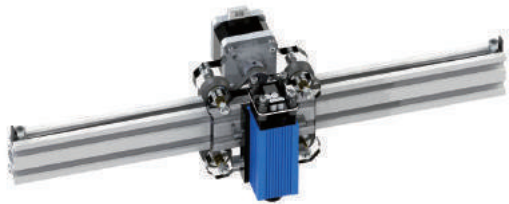
13



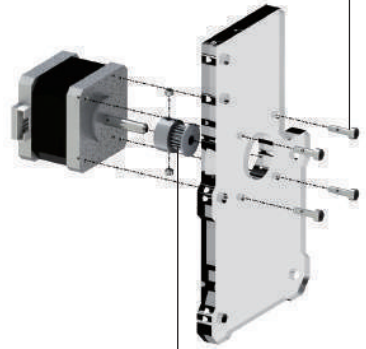
011: M5*8 Screw 1pc

019: M5 Square Nut 1pc

14



016: M3*12 Screw 4pcs



15

020: GT2-20 Synchro Wheel 1pc

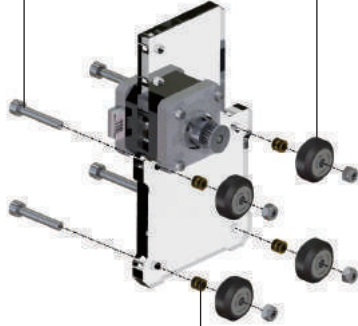
16

Y axis Motor Finish



014: M5*30 Screw 4pcs

007: 5mm Pulley 4pcs

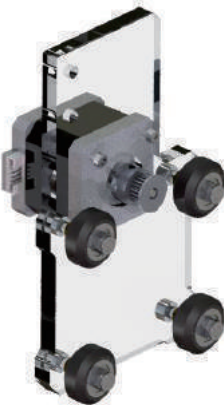


17

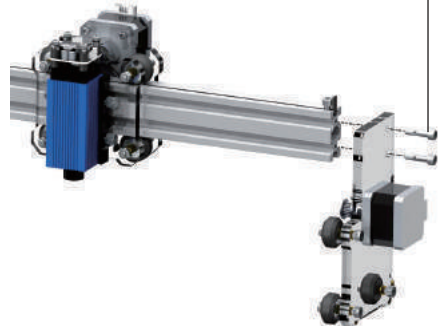
021: M5*6 Copper Nut 4pcs

18

Y axis Finish



013: M5*20 Screw 2pcs

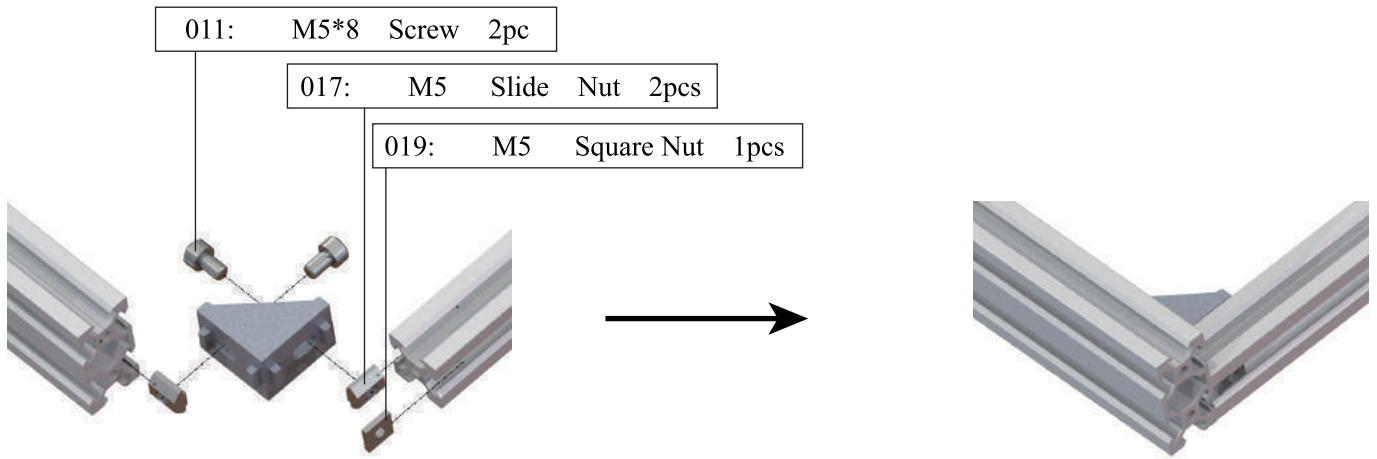


19

Double Y axis motor

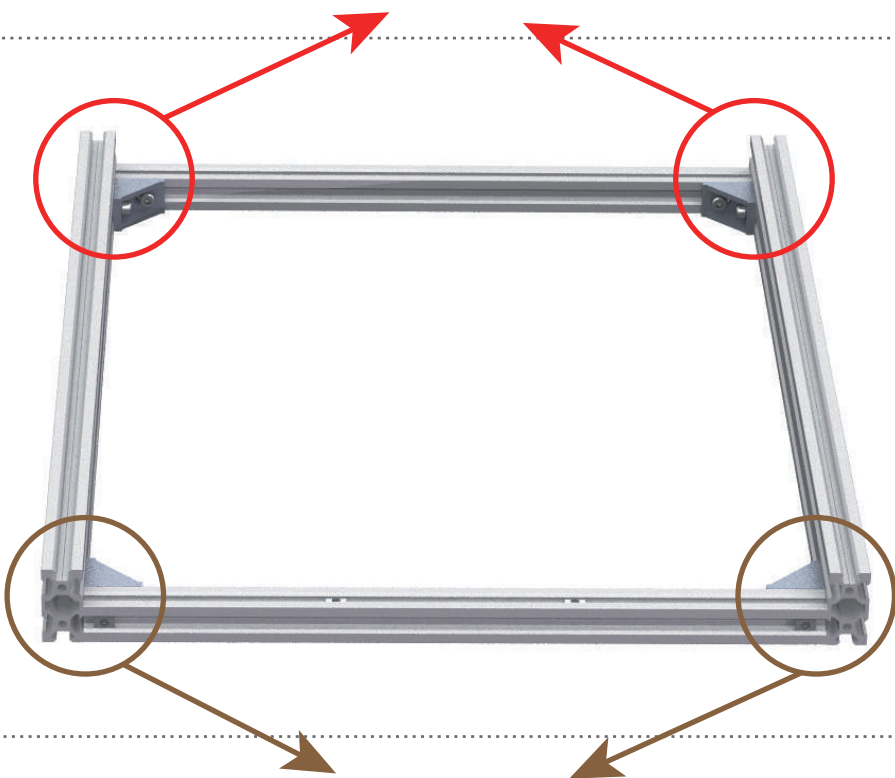
20



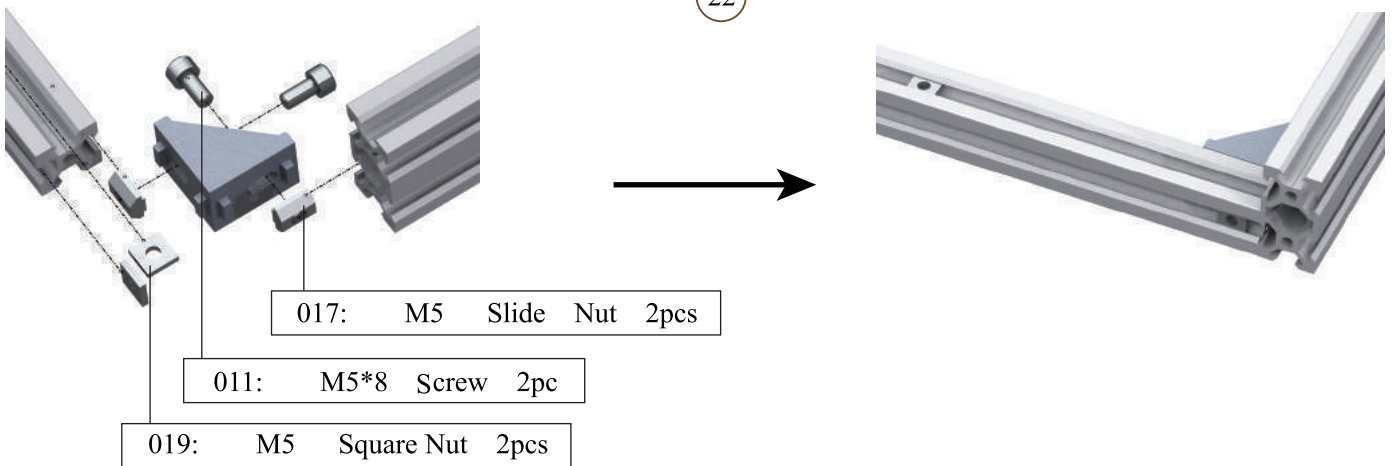


21

23 Finish

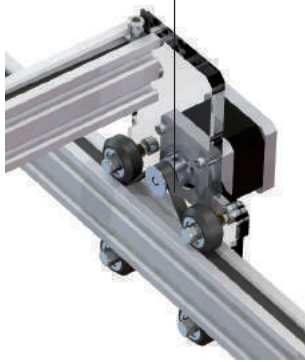


22



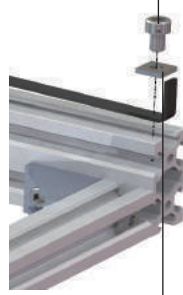
24

006: GT2-6mm Belt



25

011: M5*8 Screw 1pc

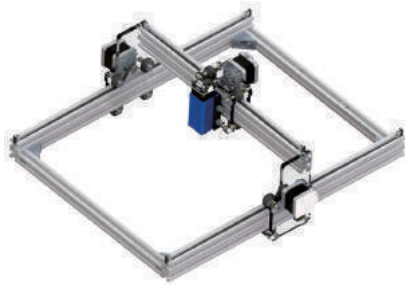


019: M5 Square Nut 1pc

26

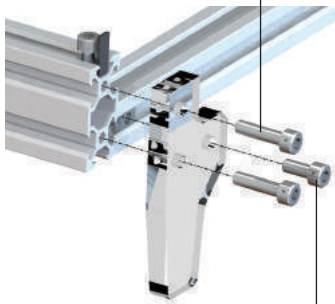


27



28

013: M5*20 2pcs



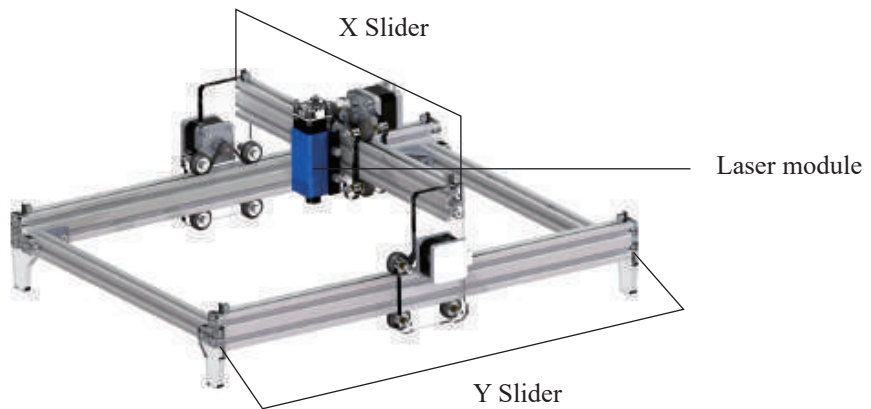
012: M5*12 1pc

29

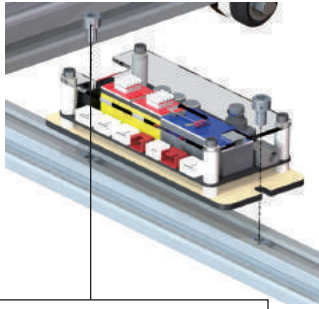


Finish

30
Finish

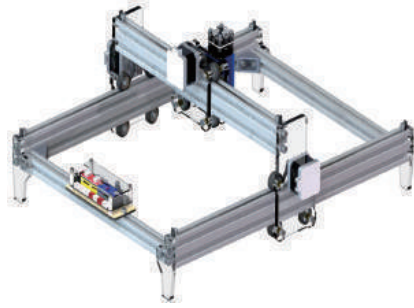


31



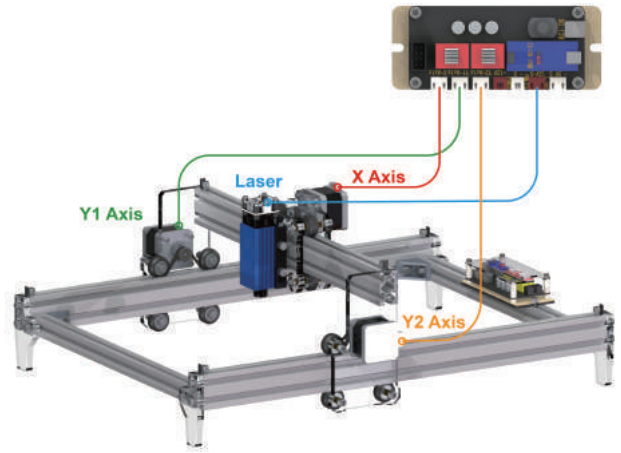
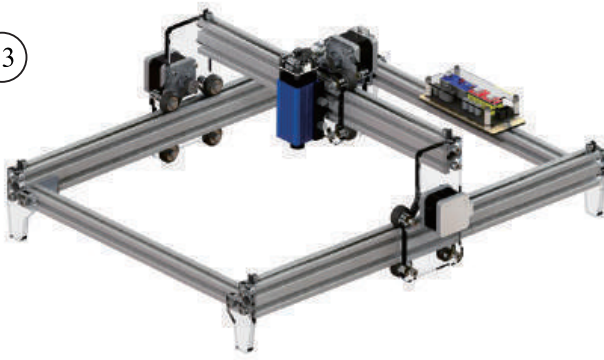
011: M5*8 Screw 2pcs

32



Controller Assemble

33



Assemble Finish

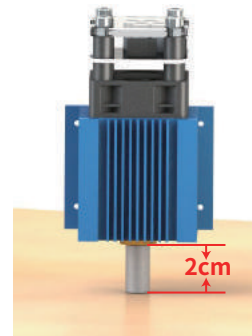
Package



Laser on Machine



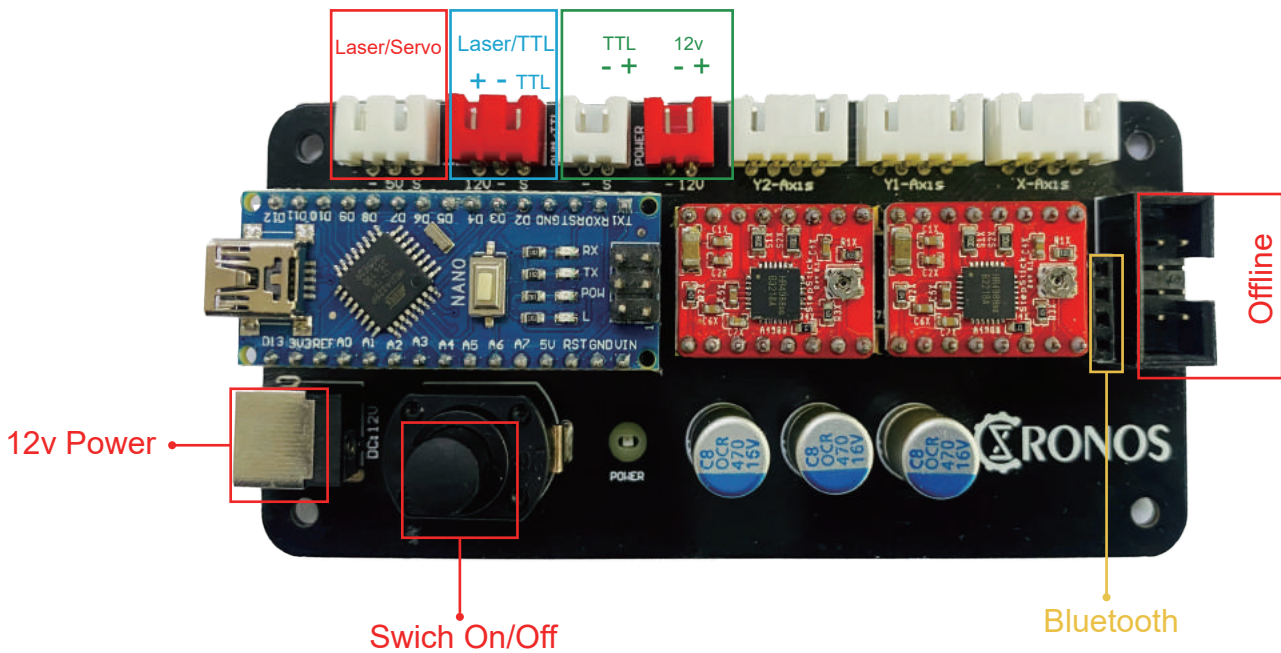
500mw/2500mw/3500mw/5500mw is adjustable



How to adjust focus please refer to FAQ

15000mw laser is fixed-focus laser can not be adjust focus

Controller and Offline



Software Installation Manual

Support: LaserEngraver

1. Introduction

Laser Engraver is a engraving machine control software developed by VigoTec independently. It supports text editing ,image import and Gcode file. It supports the outline engraving, point engraving, Black-White and gray mode engraving. And it supports the adjustable of engraving rate, laser intensity, engraving time per point in the process of engraving.

Supported desktop operating system: **Support Win7 and above.** (MacOS, XP and earlier systems are not supported yet.)

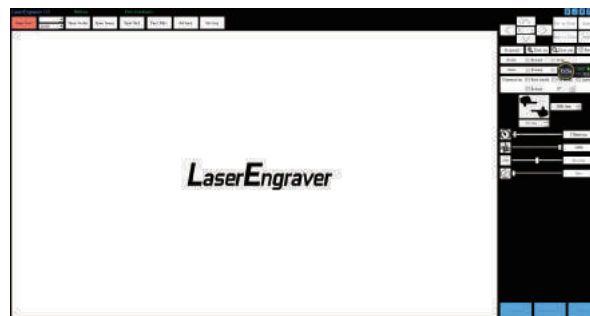
2. Installdriver



For the first time, please connect the device to the computer by USB cable, and click CH341SER.exe to install driver. the Win10 system can automatically identify and install the driver and the Win7 and Win8 systems may need to install manually.

3. Running program

may need to install manually .



The program will automatically search for the available equipment and connects automatically after it is started. Please confirm that the device has been properly connected to the computer. If there are multiple devices connected to the computer at the same time, please select the correct COM port manually. If the connection is disconnected in case, the program will not automatically connect to the device again. If you want to reconnect, please click **Connect Device** manually.



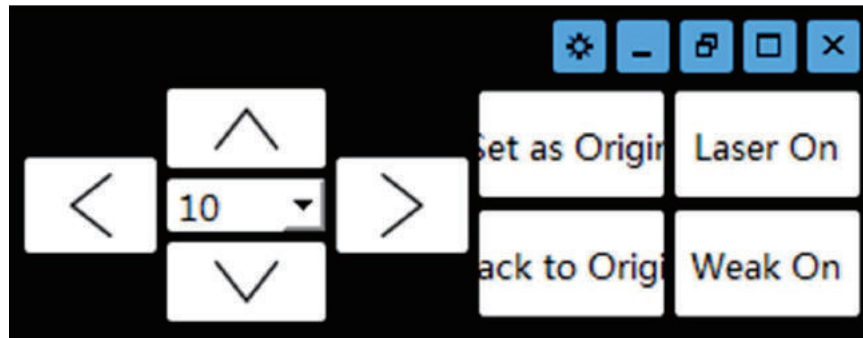
After opening the program, you can select the language interface. Click on the upper right corner of the program, and open the language selection box. You can choose a Chinese or English interface and set as default.



After connecting the device, you can select the G code, edit text, picture, or select the picture in the gallery.

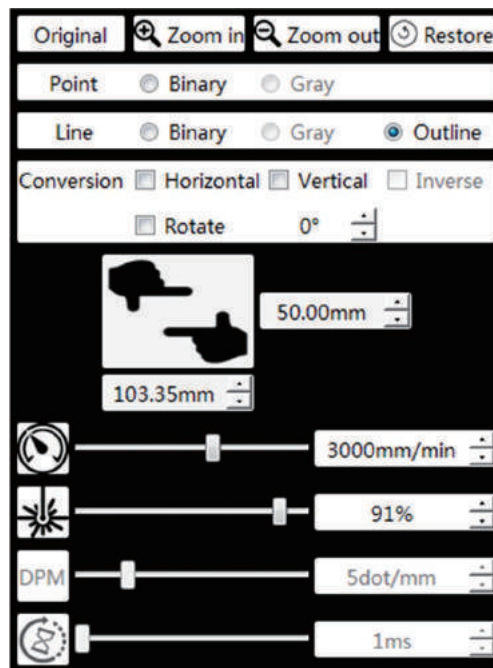
Please note that there will be a more detailed description for some buttons when putting the mouse on these buttons for a moment!

4. Device Control



Device Control Panel: The device control buttons are on the top right corner of the program. After connecting the device, the device can be moved manually along the X axis or Y axis by the direction buttons. It also can be controlled by the direction keys on the keyboard. The motion distance can be changed in the middle box (unit: mm). Users can also control the laser on and off by **laser**, **weak on** and **Turn Off**. Please note that these buttons are not available after the start of engraving.

5. Basic Setting



The basic settings are located on the right side of the program.

Original: Display the original image has chosen.

Zoom In, Zoom Out, Restore: Click these buttons to zoom in, zoom out, and restore the converted image.

Engraving Mode: The optional modes are Black-White Point, Black-White Line, Gray Point, Gray Line and Outline.

Image Transformation: Provide horizontal and vertical mirror image, color inverse and rotate.

Image Size: Setting the engraving size. Total height of engraving can be changed, and total width is just show.

Other Settings:

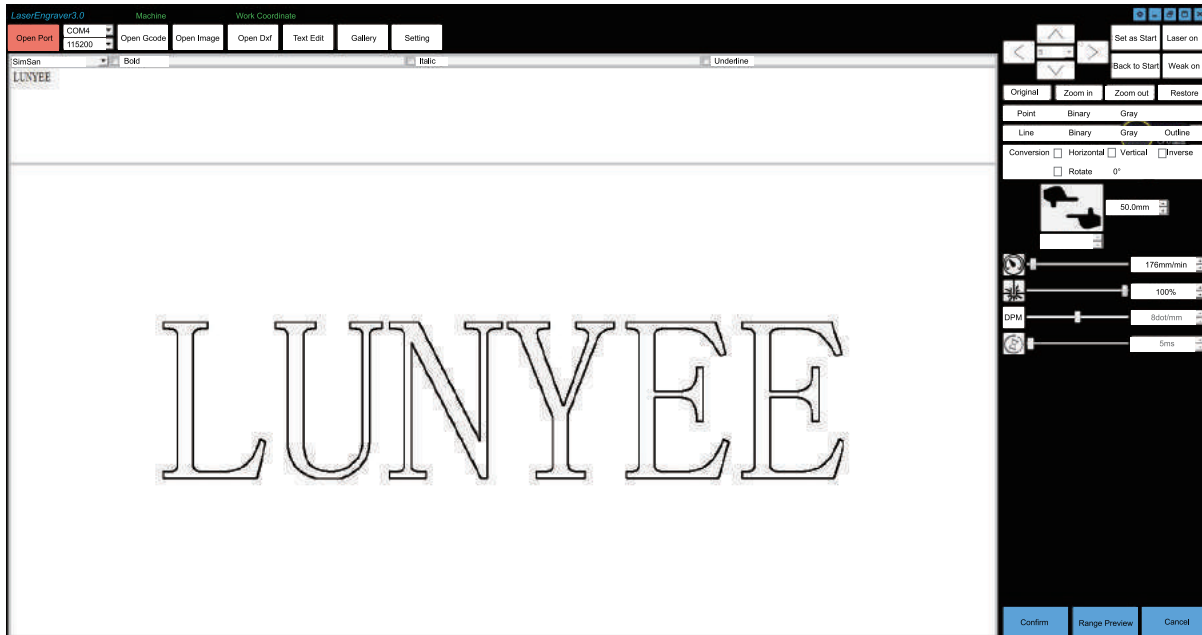
Engraving Rate: The unit of engraving rate is millimeters per minute. For the dense case, Note that the actual speed will be reduced with higher engraving point density or small size of engraving range.

Laser Intensity: Set the intensity of laser power, the unit is percentage of full power.

Dots per millimeter (DPM): Set the dots per millimeter on Point and Line Engraving Mode, the unit is Number of dots per millimeter.

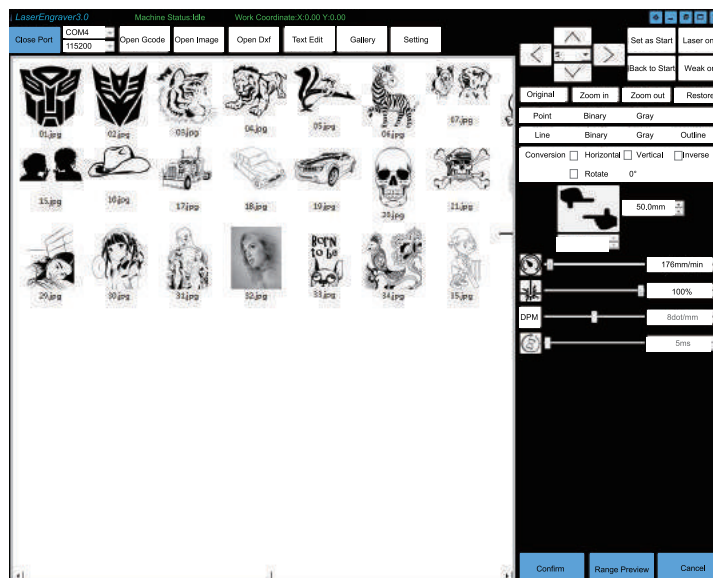
Engraving time per point: Set the engraving time per point, the unit is millisecond.

6. Text Edit



Text Edit: Click the **Text Edit** to open the text edit box which is located in the display area of the program. The text can be entered in the text edit box and it provides basic font settings such as **Bold**, **Italic** and **Underline**. The actual height of the word can be modified in **Height** box in the **Image Size** panel at the right side.

7. Gallery



Gallery: Click **Gallery** to display the pictures in the folder of **Program directory\Gallery**. The picture can be inputted into the program for painting by double click. Users can call their favorite pictures like *.jpg and *.bmp quickly by putting them into the folder of **Program directory \Gallery**. And users may click **Gallery** again to update display without close and restart the program when putting new pictures into the gallery.

8. Advanced Settings

Motion Parameters Steps per mm(step/mm) 80 Max rate(mm/min) 8000 Accelerated rate(mm/sec ²) 500		Starting point <input type="radio"/> Upper left <input type="radio"/> Upper right <input checked="" type="radio"/> Center <input type="radio"/> Lower left <input type="radio"/> Lower right	
Movement Direction <input type="checkbox"/> X Axis Reversal <input type="checkbox"/> Y Axis Reversal <input type="checkbox"/> Set origin coordinates after moving		Repeat(time) 5 Weak Intensity(‰) 1 Stabilise Delay(msec) 0	
<input type="button" value="Reset"/> <input type="button" value="Unlock"/>		<input type="checkbox"/> Parameters adjustable after beginning <input type="checkbox"/> Z Scan Acutance Correct 0.00mm Binary Threshold 1%	
		<input type="button" value="OK"/>	

The advanced settings are located in the display area of the program, and click the upper button **Settings** to open it.

Motion parameters: Users can set the maximum rate and accelerated rate of the device. In general, please use the default value.

Movement Direction: This will set the coordinate directions of X and Y axis. **Motor R** and **Motor L** are both checked by default and the painting will right at the users. If none of these is checked, the painting will rotate 180 degrees. If the painting is required to rotate positive or negative 90 degrees, one of **Motor R** and **Motor L** need to be checked and one not, meanwhile please exchange the two motor wines on the main control board. In general, please use the default setting.

Set origin coordinates after moving: The program automatically sets the original position when the device stopped in a new position by manual control if checked; otherwise the original position is still the location before moving.

Reset and Unlock: In some cases, wrong code may cause the device to work abnormally. At this time, the device is in the state of protection. Please restart all the hardware and software devices, and click the **Unlock** and **Reset** to restore the device.

Starting position: This will set the position of the device's original coordinates relative to the actual painting. The default is in the middle of the painting.

Repeat: Set the repeat time of engraving.

Weak Intensity: Set the intensity of weak laser power.

Stabilise Delay: Eliminate the vibration after the movement stops. Delay some time before opening the laser.

Parameters adjustable after beginning: When checked, users can adjust the engraving rate, laser intensity and engraving time per millimeter, and related buttons are available at the lower right corner of the program in writing.

Z scan: Fold line scanning is available when not in Outline Mode.

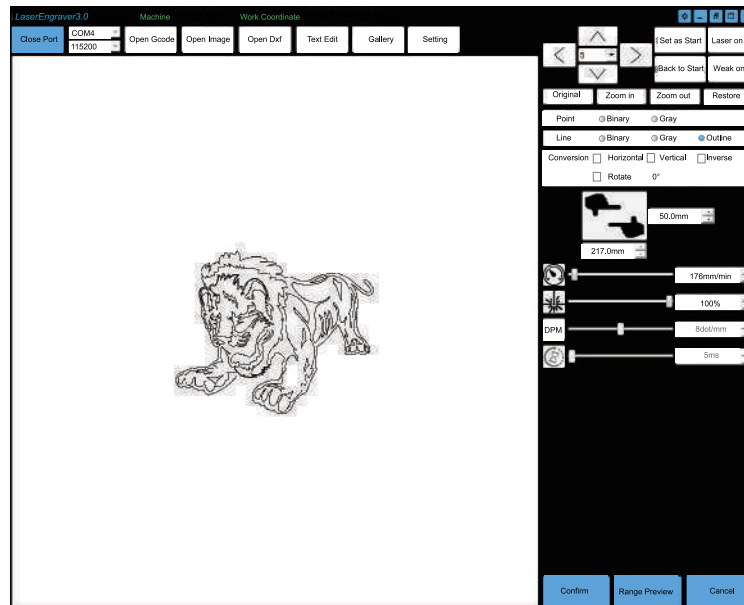
Acutance Correct: When selecting Z scan and Line Mode, it may reduce the edge sharpness. Users can change this value to make the sharpness correction by the actual carving effect. Usually, the value will not larger than 0.2mm.

Binary Threshold: It's the threshold value when converting to the Black-White image. The low value is white, and the high value is black.

OK: If OK is clicked, the last interface will be returned

9. Engraving control

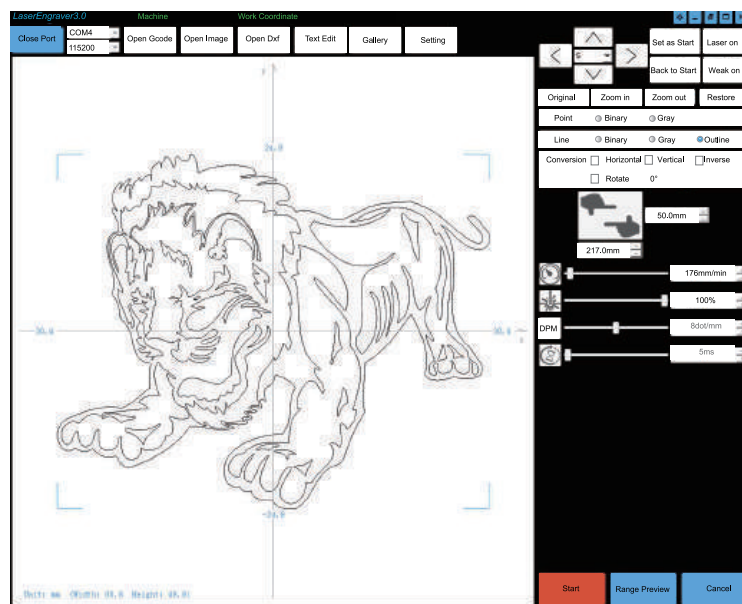
The engraving control buttons are located at the lower right corner of the program.



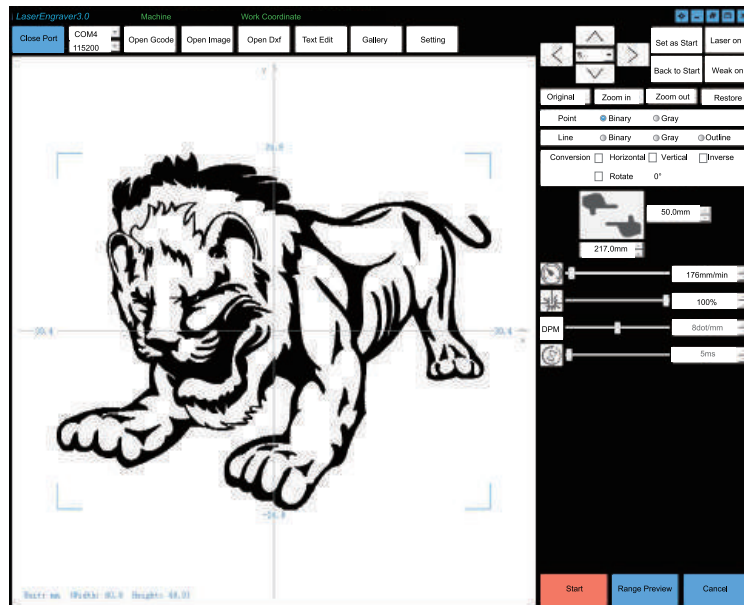
Range Preview: Users can preview the range of the engraving range by click **Range Preview**. When in preview, the button **Range Preview** is changed to **Stop Preview** and users should click this button to stop preview. Please note that there may be a small time's delay for completely stop after click the button. Users should wait for the device stops completely before other operations.

Confirm: When **Confirm** is clicked, the main part of the program will display the actual engraving, and the button **Confirm** is changed to **Start** while the **Preview** and **Cancel** are available. If **Parameters adjustable after beginning** is not clicked, there will be the **Device Control** buttons, **Start**, **Pause**, **Stop** and **Disconnect Device** available yet. Users may preview the range of the painting by click **Range Preview**, start writing by click **Start** or return the image selecting state by click **Cancel**.

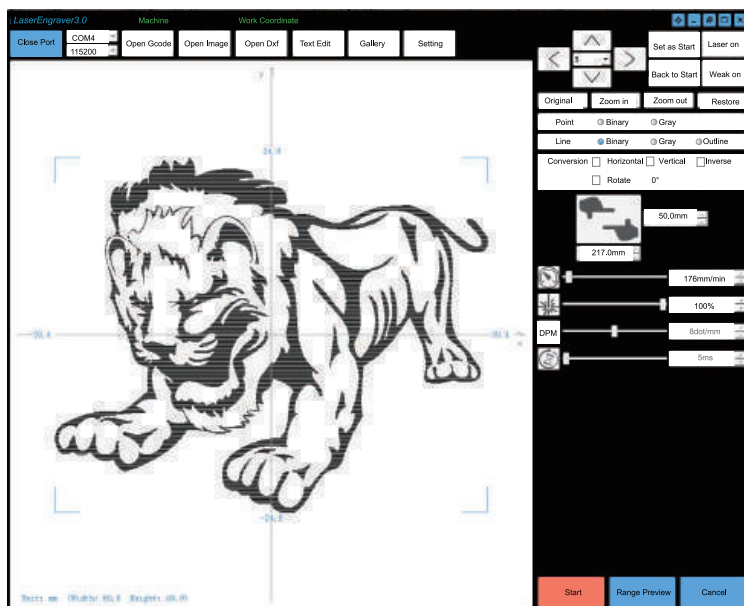
The followings are examples of various engraving modes.



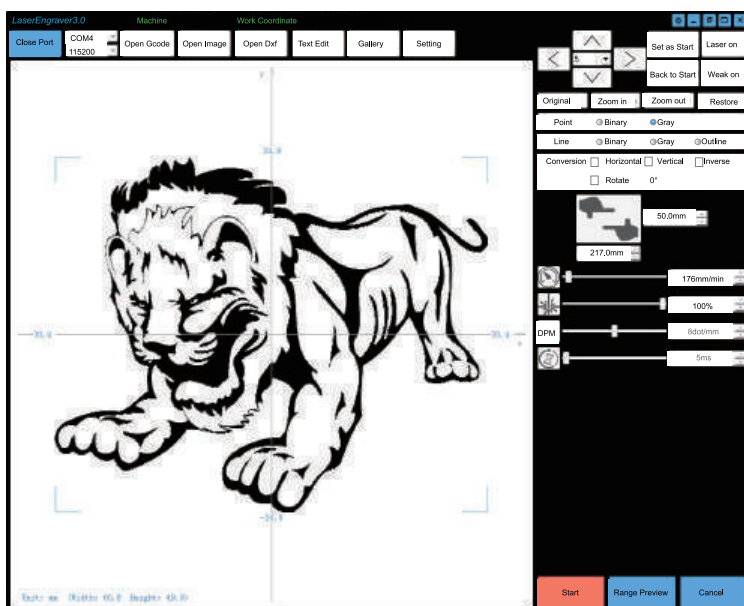
Outline Mode



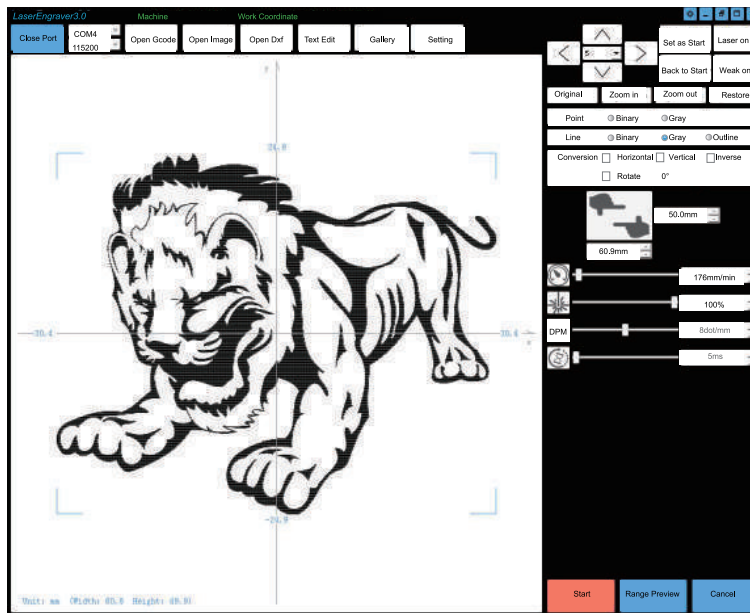
Black-White Point Mode



Black-White Line Mode

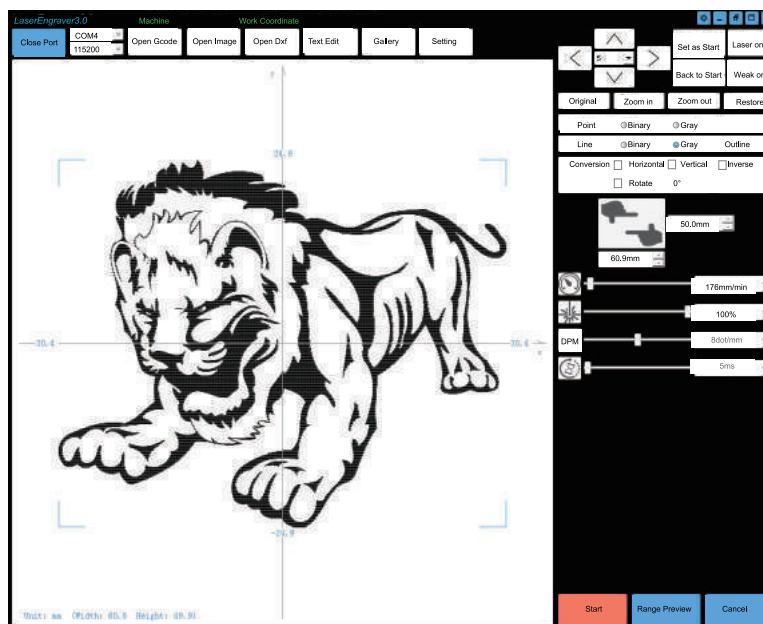


Gray Point Mode

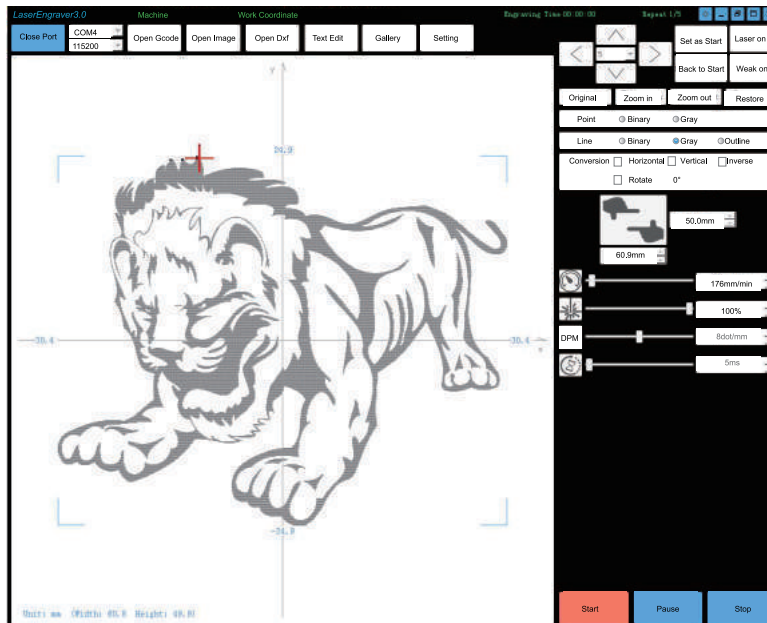


Gray line Mode

The following is the interface after **Start** is clicked



Start: The engraving will start by clicking **Start**. The status bar will show the overall engraving progress, and the engraving time will be showed on the title bar. When it started, **Start** is not available while **Pause**, **Stop** and **Disconnect Device** are available. The painting show as red with the completed parts, and the rest parts which are not finished show as gray. If **Parameters adjustable after beginning** is clicked, the **Engraving rate**, **Laser Intensity** and **Engraving time per point** will be available when engraving.



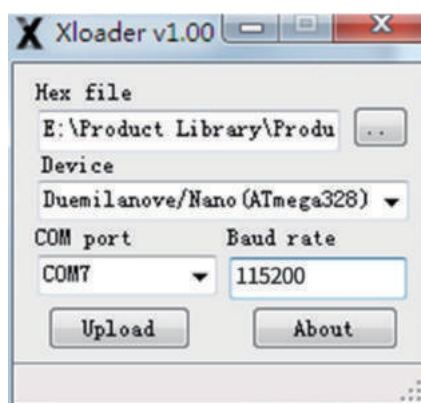
If **Repeat** is larger than 1, time of engraving and total repeat time will be showed on the title bar.

10. Firmware

Under normal circumstances, the control board has already burned the firmware. After connecting the device, the user can use it according to the software instructions.

In special cases, if the user needs to burn the software firmware by himself:

1. Link the control board to your computer and close the [Laser Engraver 3.0] program.
2. Use the firmware burning software X Loader program to upload the firmware. Please select the firmware file [LaserEngraver_Firmware_V1.1*.hex]
3. Select the control board chip [Nano (ATmega328)]
4. Select the [COM*] port where the control board is located
5. Select Baud rate control board for [115200]
6. Click Upload, the control board [T, R] lights continue to flash
7. Tips [30666 bytes uploaded] uploaded successfully



Warning:

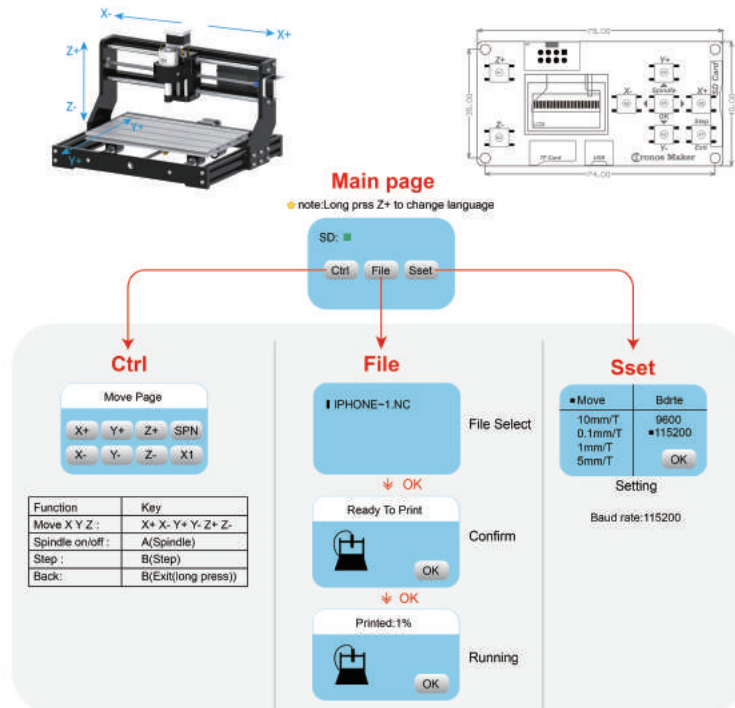
Strictly forbidden for laser irradiation of the eyes!

Strictly forbidden for watching laser without wearing protective glasses!

Strictly prohibit the use of children!

Powered by Laser Engraver 2019.

1 inch offline instructions



1. Boot page:

X+: right

X-: left

Y+: Send \$X to the grbl motherboard to unlock the grbl board.

Y-: Send \$H to the grbl motherboard to achieve automatic zero return of the grbl board.

OK/SPN: Confirm button.

Move the page: Manually move each axis to the desired position.

X+: The X axis moves in the positive direction. If there is a problem, the corresponding button on the screen turns gray.

X-: The X axis moves in the negative direction. If there is a problem, the corresponding button on the screen turns gray.

Y+: The Y axis moves in the forward direction. If there is a problem, the corresponding button on the screen turns gray.

The Y-: Y axis moves negatively. If there is a problem, the corresponding button on the screen turns gray.

Z+: The Z axis moves in the positive direction. If there is a problem, the corresponding button on the screen turns gray.

Z-: The Z axis moves in the negative direction. If there is a problem, the corresponding button on the screen turns gray.

OK/SPN: Spindle test switch, press to open the spindle (corresponding to SPN gray on the screen), press again to close the spindle (the corresponding SPN on the screen returns to normal).

Exit/STP:

Function 1: Tap on each axis button of XYZ to change the movement distance by 0.1, 1, 5, 10 cycles each time.

Function 2: Press and hold for about 2 seconds to exit, and reset grbl, the current position of the machine is set to absolute 0.

2. File page:

File list Select the file to be engraved. Support documents include: NC, NCC, TAP, TXT, Gcode, GCO, NL, CUT, CNC.

Y+: up

Y-: down

OK/SPN: Confirm the selection and enter the confirmation engraving page.

3. Confirm the engraving page:

Confirm that the engraving file is started without errors.

OK/SPN: Confirmation starts, ready to print becomes the progress display percentage, the OK button on the screen turns gray, and the file selection page is returned after the engraving is completed.

File tool setting: If the file contains G38.2 Z-100, Grbl will perform the tool setting process. After the spindle touches the tool block, the screen will limit the tool value returned by the board.

4. Settings page:

Settings

X+: right

X-: left

Y+: on

Y-: next

Left side of the screen / Move: Set the manual page XYZ Each axis button changes the distance by 0.1, 1, 5, 10 each time.

Right side of screen / Bdrte: Set the communication baud rate to adapt to the grbl of different communication baud rates. Power off save settings.

OK/SPN: Save the current settings.

FAQ

► Q: How to use 500mw -15000mw laser

A: 1. 500mw-3500mw laser , please place the material flat under the laser, and make the distance between them within 5~10cm ;5500mw laser within 3-5cm (less distance will not be able to focus). Press the power switch on the laser driver, then the blue light on . Open the software click weak power, there will be a point on engraved material, just turn around the focus ring on laser to adjust the smallest which is the best focus.

2.15000mw laser is fixed focus laser which is not adjustable. The fixed focal length is about 20mm. Please use the attached focusing column to determine the distance from the engraved object to the light exit.

► Q: Assemble problem

A: Please refer to the assemble video on Youtube.

► Q: The software can not be open.

A: 1. Please use Win7 and above system
2. Please refresh the firmware.

► Q: The stepper motor can not move.

A: 1. The current not enough, please adjust the screw on controller.
2. Please check the wire order.
3. Please change the A4988 driver module to check whether has problem

► Q: Laser module can not burn anything, no light, weak power

A: 1. Please check power,speed setting on software and adjust focus length for laser[refer to above to adjust focus].

2. Please connect the laser to power supply directly ,if it work normal, it means laser is ok, just check connection.

3.After step 2, and confirm laser not work, please contact us to get the solution, if the laser has Quality issues, we support resend or refund!

► Q: The picture engraved is the opposite of the original picture

A: Just need to adjust on software [Reversal X/Y axis]

► Q: The picture engraved distortion.

A: 1. Synchronous belt is loose.
2. Synchronous wheel is loose.

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Laser Engraving Machine**



<http://dwz.date/Ar3>

Follow our Youtube channel to know
more about Laser engraving machine!