



AURORA Series Unified User's Manual

For AURORA 8 & 8 PRO

Thunder Laser

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July 2022

DONGGUAN THUNDER LASER EQUIPMENT CO., LTD

Dongguan City, Guangdong Province, China

Introduction

This manual has been designated as a user's guide for thunder laser systems and fiber laser machine installation; The manual is divided into eight chapters, including General Information Instructions, Safety Instructions, Key Components of every Laser Systems and the Installation Steps, Operation Instructions and Maintenance Instructions from THUNDERLASER Company.

It should be emphasized that the installation of each system must meet the requirements, and be consistent with the installation requirements of THUNDERLASER. If not, the machine won't work properly, manifested as poor performance, shortened life-span, increasing maintenance costs and even damage to the machine.

The note is about some specific requirements during system installation, and we hope every customer could try to understand these notes before installation and usage, so that you can correctly install and use it. If you meet any problems during installation, you can contact our technical personnel or Customer Service.

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Chapter 1. General

1.1 General Information

Please read this documentation carefully before installation and operation.

Injury, death, property loss, fire, electric shock, malfunction, reduced performance & machine life-span, and serious failures might happen unless you read, understand, and follow the Operation Manual!

Operation of the system is permitted only with equipment and spare parts supplied or listed in the *List of Spare Parts and Consumables*. The use of components from the 3rd Party may invalidate the warranty.

Auxiliary equipment must be adjusted to the base machine (contact us for further info).

The following symbols are used throughout the Operation Manual:



Caution: When operating the laser, keep alarmed all the time.



High Voltage: Be careful to prevent injury and/or death.



Laser Radiation: Keep away from the dangers of the laser beam.



Fire Hazard: High potential for fire. NEVER LEAVE IT UNATTENDED WHEN RUNNING!



Tips: Helpful notes or info can make it easier to use or understand.

1.2 Designated

The THUNDER LASER AURORA SERIES is intended exclusively for laser marking through the supplied marking software.

Materials such as metal, anodized aluminum, and several plastics can be processed by the laser.

As part of the intended use, the following points should also be observed:



1. The engraving process must only be performed with a perfectly adjusted machine.
2. Only mark approved materials with suitable parameters.
3. Use of the system in other areas is against the designated use. The manufacturer does not admit liability for damage to personal and/or equipment resulting from such use.
4. The system must only be operated, maintained and repaired, by personnel that are familiar with the designated field of use and the dangers of the machine!
5. Non-observance of the instructions for operation, maintenance and repair described in this Operation Manual excludes any liability of the manufacturer if a defect occurs.
6. Caution when processing conductive materials (carbon fibers), Conductive dust or particles in the ambient air might damage electrical components and lead to short circuits. Bear in mind that those defects are not warranted.

1.3 Disposal remarks



Do not dispose the machine with house refuse!

Electronic devices have to be disposed along with electric waste disposal according to the regional directives on electronic. For further questions, please ask your supplier. He might handle it properly.

1.4 Technical Parameter/Device Specification

Mechanics

	AURORA 8		AURORA 8 PRO	
Max marking area	200*200mm/7.9"			
Max working area	200*200mm/7.9"			
Lens	Marking area	Max work Height	Focus Diameter	Focus length
F-160	4.3"×4.3"/110×110mm	7.9"/200mm	25.95μm	7.1"/180mm
F-210	5.9"×5.9"/150×150mm	5.7"/145mm	40.9μm	9.5"/233mm
F-290	7.9"×7.9"/200×200mm	1.2"/30mm	47μm	13.8"/350mm
Max marking speed	2m/sec, 200cps		8m/sec, 800cps	
Z-axis	Motorized Z-axis, 15.4"/390mm			
Table	Alumina table, 14.2"×10.5"/360×265mm			
Net weight	71kgs/157bs		72kgs/159lbs	
Housing dimensions(W*D*H)	27.7"×17"×32"/703mm×430mm×812mm			
PS	AURORA 8 is fitted with F-160 as standard, and 8 PRO with F-210.			

Laser Equipment

	AURORA 8		AURORA 8 PRO	
Laser power	20w		20w（MOPA）,50w	
Wavelength	1064nm			
Frequency	20W	20W(MOPA)	50W	
	30-60kHz	1-4000kHz	50-100kHz	
Pulse width	/	2-500ns	/	
Cooling	Air cooled			
Red dot pointer	Laser Power<1mW, 630-680nm			
PS	AURORA 8 is fitted with Fiber 20W as standard, and 8 PRO with MOPA 20W.			

Control System

	AURORA 8	AURORA 8 PRO
Computer	Microsoft Windows XP, VISTA, Win7, Win10	
Interfaces	USB	
Marking software	EzCad2	EzCad3
Correction software	CorFile2	Calibration Wizard
Auto-focus software	JhcSeialTools	TL-tool
Laser power	Fiber 20, 50W adjustable from 10% - 100% MOPA 20W adjustable from 0 - 100%	

Electricity, Power, Breaker

	20WATT	50WATT	20WATT(MOPA)
Electricity requirement	115 or 230Volt AC, 50 or 60Hz, Single phase		
Power consumption	230W	340W	225W
Current	2.5A, 115V 1.5A, 230V	3.5A, 115V 2A, 230V	2.5A, 115V 1.5A, 230V
Recommended circuit breaker	10A		

Ambient Conditions

Ambient temperature

Operating temperature 0°C-40°C

Humidity

Maximum humidity 80%

Laser Safety

Laser class

Class II

CE-Compliant approved by FDA

1.5 RoHS Certificate



C E R T I F I C A T E

ATTESTATION CERTIFICATE OF ELECTROMAGNETIC COMPATIBILITY AND LOW VOLTAGE DIRECTIVES

Technical file of the company mentioned below has been observed and audit has been completed successfully.

2014/30/EU Electromagnetic Compatibility Directive and
2014/35/EU Low Voltage Directives have been taken as references for these processes

Company Name : **Dongguan Thunderlaser Industrial Co., Ltd.**

Company Address : 109, Building 2, 159 Shatian Avenue, Shatian Town, Dongguan city, Guangdong Province, China, 523980a

Related Directives and Annex : **2014/35/EU Low Voltage Directive
2014/30/EU Electromagnetic Compatibility Directive**

Related Standards : **EN IEC 61000-6-4:2019, EN IEC 61000-3-2:2019
EN 61000-3-3:2013+A1:2019, EN IEC 61000-6-2:2019
EN 60204-1:2018**

Product Name : **Laser marking**

Report No and Date : **ZTL-2021121002S**

Product Brand/Model/Type : **THUNDERLASER//AURORA 8, AURORA 16, AURORA 24,
AURORA 32, AURORA 40**

Certificate Number : **M.2021.206.C69897**

Initial Assessment Date : **17.12.2021**

Registration Date : **20.12.2021**

Reissue Date/No : **-**

Expiry Date : **19.12.2026**


 UDEM International Certification
 Auditing Training Centre Industry
 and Trade Inc. Co.

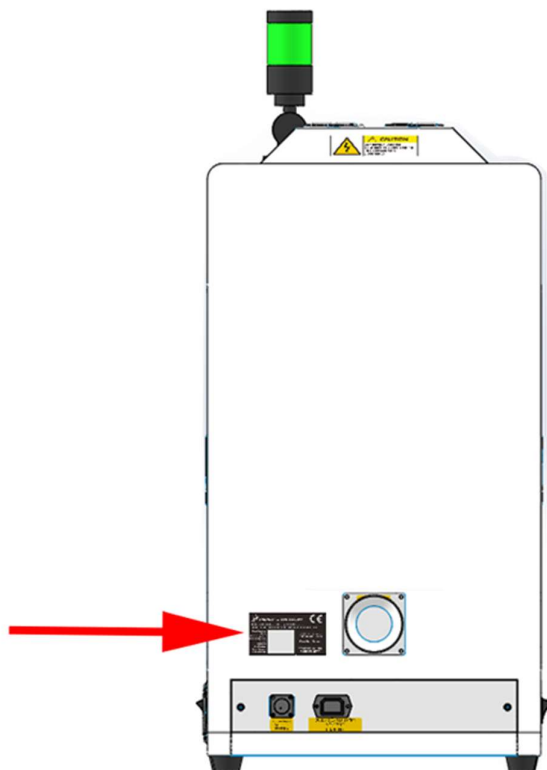
The validity of the certificate can be checked through www.udem.com.tr. The CE mark shown on the right can only be used under the responsibility of the manufacturer with the completion of EC Declaration of Conformity for all the relevant Directives. This certificate remains the property of UDEM International Certification Auditing Training Centre Industry and Trade Inc. Co. to whom it must be returned upon request. The above named firm must keep a copy of this certificate for 15 years from the registration of certificate. This certificate only covers the product(s) stated above and UDEM must be notified in case of any changes on the product(s).

Address: Mutlukent Mahallesi 2073 Sokak (Eski 93 Sokak) No:10 Çankaya – Ankara – TURKEY
Phone: +90 0312 443 03 90 **Fax:** +90 0312 443 03 76
E-mail: info@udemitd.com.tr www.udem.com.tr




1.6 Manufacturer's Label

The Manufacturer's Label is on the backside of the machine (see picture below)



It is recommended to record all of the data for access anywhere anytime. You will need to supply your Serial Number to our Support Team on occasion.

 THUNDER LASER SYSTEM DONGGUAN THUNDER LASER EQUIPMENT CO.,LTD Shatian Town, Shatian Dadao, Mintian, Dongguan City, Guangdong Province, China	
Rated voltage: Phase: Rated frequency: Full load current: Weight: Lasertype: Model/Type: Serial Number: Manufactured:	Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 This Product Complies With EN 60825-1:2014. Class 2 Laser Product www.thunderlaser.com MADE IN CHINA

Chapter 2 Safety

2.1 General Safety Information

Any personnel involved in installation, set-up, operation, maintenance and repair of the machine, should have read and understood the Operation Manual, particularly for the "Safety" section. The user is recommended to assign specific company-internal personnel to implement each operation according to the qualifications the employees. And the receipt of the instruction/Operation Manual or the participation at introduction/training should be acknowledged in writing in each case.

Safety -conscious working

The machine must only be operated by trained and authorized personnel.

The scopes of different applicable operations of the machine must be clarified and observed in case of some problems related to safety. Especially for operations on the electric equipment, which must be performed by special experts only.

For all manipulations concerning modifications, maintenance, inspection and repair of installation, set-up, start-up, operation, conditions and operation methods, the switch-off procedures that may be provided in the Operation Manual must be observed.

Safety Information for the User and/or Operating Personnel



1. Any operating methods that will imperil the safety of the working machine are forbidden.
2. The operator must also ensure that no unauthorized person work with the machine (e.g. activating equipment without authorization).
3. It is the duty of the operator to check the machine before starting for externally-visible damage or flaws, and to report changes (including behavior during operation) that imperils the safety.
4. The user must ensure that the machine is only operated in sound condition.
5. The user must guarantee the cleanness and accessibility at and around the machine by corresponding instructions and controls.

6. No removing or interrupting safety components (we emphasize again the imminent dangers, for example severe burns, loss of eyesight, etc.). If the removal of safety components is required during repair and service, the replacement of the safety components must be performed immediately after repairing.
7. Preparation, retooling, change of workpiece, maintenance and repair **must be performed only with equipment switched off** and by trained personnel.
8. **Any attempt to perform unauthorized modifications and changes to the machine can INVALIDATE THE WARRANTY.** This does not conform to Thunder Laser's routine preventive & general maintenance, adjustment and alignment, etc.

2.2 Laser Safety Information



1. According to the assessment of the potential danger of the laser systems, the machine is classified into SECURITY CLASS 2. Thunder Laser AURORA series is a device of SECURITY CLASS 2, which is guaranteed by the protective housing and the safety installations.

Attention: Improper operation and maintenance of the device can change the security level and cause the emission of harmful radiation.

2. Without safety precautions, exposure to laser radiation will cause the following risks:

Eyes: Corneal burn

Skin: Burns

Clothing: Danger of fire

3. Never try to modify or disassemble the laser or start up a modified or disassembled system!

4. Other inappropriate operation or adjustment will cause dangerous radiation exposure other than those described here.

2.3 Safety Precautions when Operating the Device

Your Thunder Laser AURORA SERIES has an integrated safety system which immediately stops running when the protection cover (Lid) is opened. Opening the cover during the operation will interrupt the engraving.

Please remember the following safety precautions when working with this device:



1. CO2 Fire extinguishers should be placed near laser. Always keep a properly maintained and inspected fire extinguisher on hand.
2. Do not store any inflammables inside of the device. Particularly, leftovers of processed materials have to be removed to prevent fire hazard.
3. Please maintain free airflow around this system all the time. Do not cover the machine during operation.
4. Stay with the laser. Do not leave the laser unattended when it is working.



1. These lasers emit invisible radiation, so safety glasses should be worn when maintaining these machines for protection.
2. Adjustment of the beam path must be performed only by professionally trained personnel. Any non-standard setting can lead to uncontrollable emission of the laser radiation.

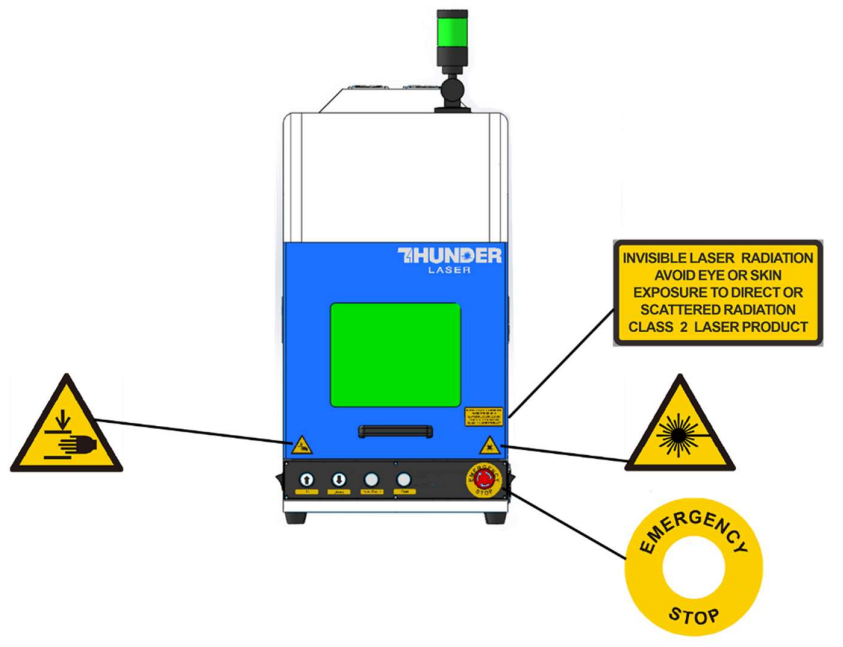


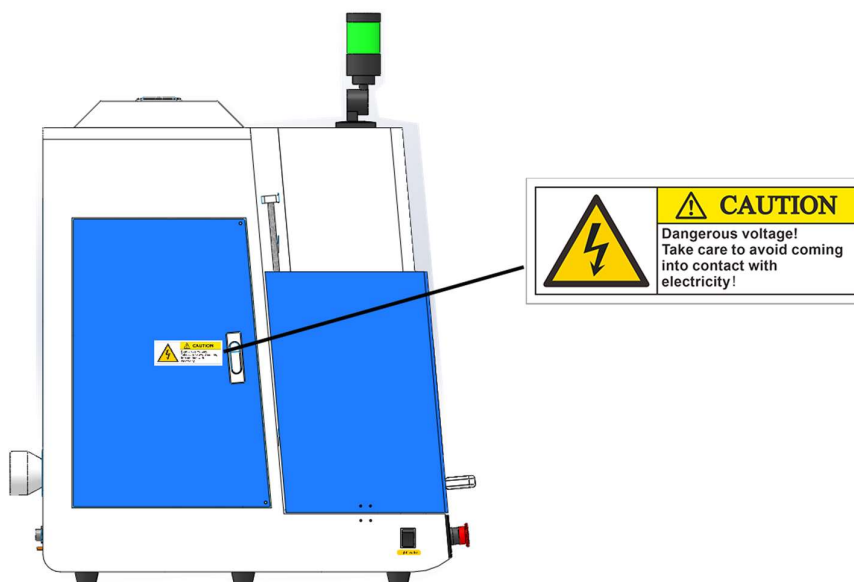
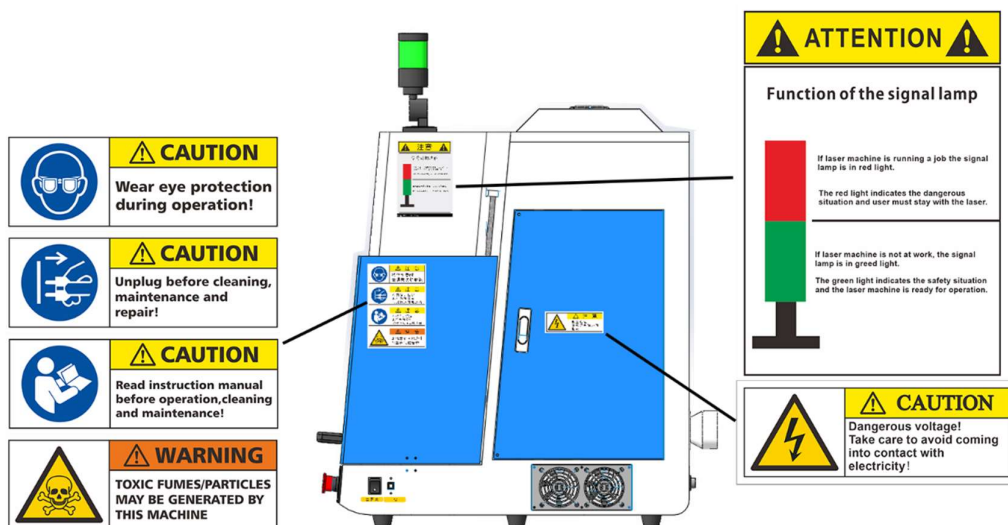
1. Do not disable limit switches or safety devices as this can invalidate warranties and cause damage to you and the machine.
2. Before processing, please verify whether harmful materials can be generated and whether the equipment for exhaust and filtration is useful in dealing with the harmful materials. We need to emphasize that it is the responsibility of the user to consider the national and regional boundary value (the maximum permitted emission concentration) for dust, fogs and gases when selecting the system for exhaust and filtration.
3. Under no circumstances can PVC (polyvinyl chloride) be processed with the laser.

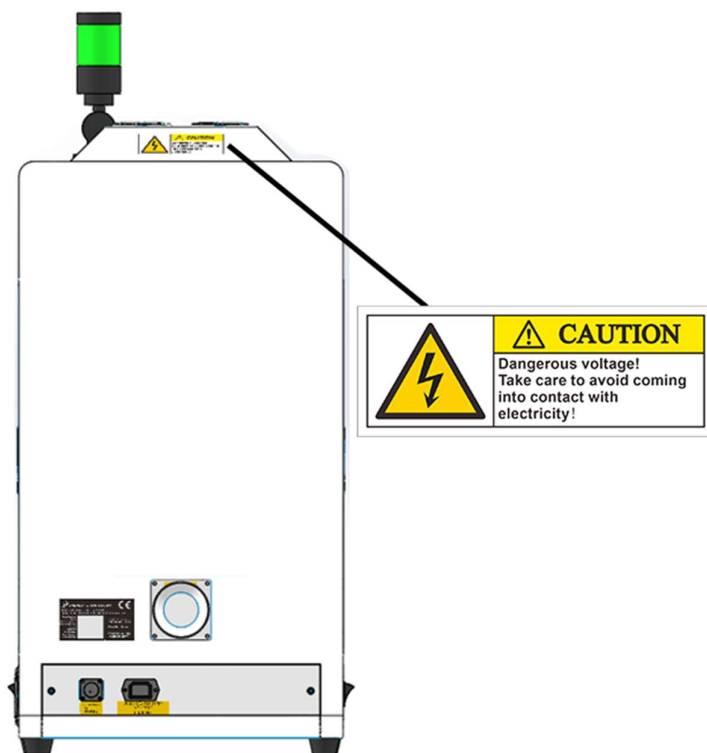
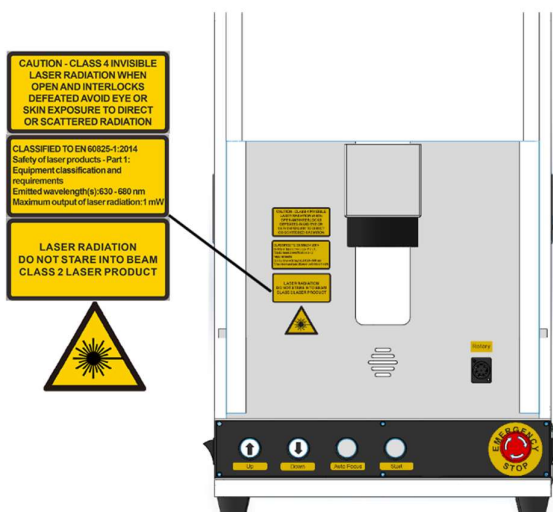
2.4 Warning and Information Labels



The warning and information labels in various locations of the machine should always be carefully read and understood. If labels are lost or damaged, they must be replaced immediately.







Chapter 3. Process of Installing

3.1 Unpacking

When you receive your THUNDER LASER AURORA SERIES, it's packed in a wooden box which contains the laser machine and additional accessories. The steps for unpacking and assembling of the laser are as follows. Please follow them carefully.



Keep the packing box. You will need it in case of a return.

Dispose all waste according to the applicable waste disposal rules

1. Put the wooden box in a flat and spacious room for unpacking.
2. Remove the machine box; carefully remove the protective foam, wraps, films, etc.
3. Please keep the warranty certificate as well as the model and serial number of the machine. If you need tech support, please tell us these.
4. Then start to install the machine, carefully following the instructions in this manual.

3.2 Location

Before installing the fiber laser system, you should select an appropriate location. Follow the guidelines shown below:



1. Avoid locations of high temperature, much dust and high humidity. (The humidity should be kept within 70% and the recommended operating environment temperature range of the laser is 0-40°C.)

2. Avoid locations where the system is exposed to mechanical shocks.



1. Circuit Breaker protection: Do not connect other devices on the same circuit as that of the laser system. It requires a dedicated circuit.
2. DO NOT open any of the machine's access panels while the unit is plugged in. Opening any panel may expose the operator to severe electric shock, invisible laser radiation, mechanical pinch points, burns, blindness, and other hazards. POWER OFF AND UNPLUG after using!

3. DO NOT make or break any electrical connections to the system while the unit is turned on.



1. Avoid locations with poor air circulation; select a location close to ventilation (if available). Select a location, whose room temperature is between 15 °C and 25°C (59°F – 77° F).
2. This is fundamental to maintain consistent and reliable operation of a fiber laser and the machine itself. Avoid higher ambient temperatures and strong exposure of the engraver to strong sunlight. Use blinds, if needed.
3. Mechanical shock and vibration of the laser will have detrimental effects on the performance and life expectancy of the machine. It will manifest (over a period of time) with a noticeable decrease in performance and need for maintenance, even breakdown, possibly. Setting your Thunder Fiber Laser up in a suitable controlled temperature, dust free, moisture free, level, stable surface (a level concrete floor) with the recommended maintenance method is critical to the ongoing performance of the machine. It is also a premise for warranty.

3.3 Connections



Perform the connections exactly in the order described; otherwise the static electricity can damage your computer and/or the electronics of the laser system.

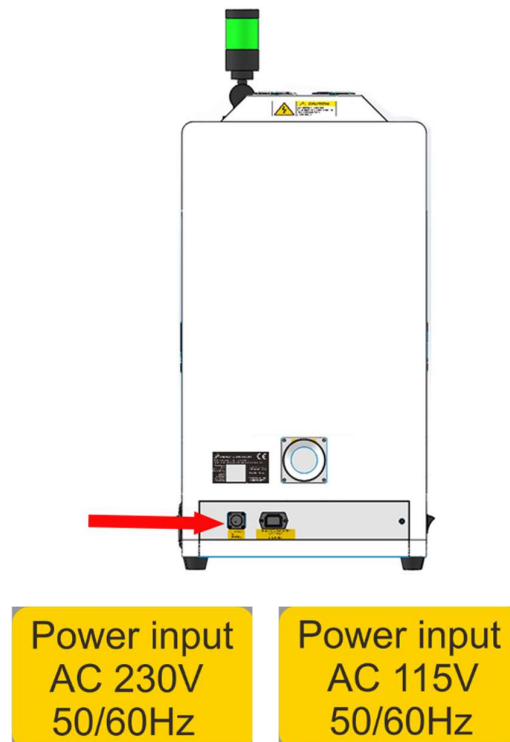
3.3.1 Connecting the Mains

Connect one end of the mains cable with the connection socket at the rear side of the laser device (see figures below) and the other end with a protected power outlet.

Mains voltage must correspond with the operating voltage (AC 230V 50/60 Hz or AC 115V 50/60 Hz) – see information on label beside the connection socket.



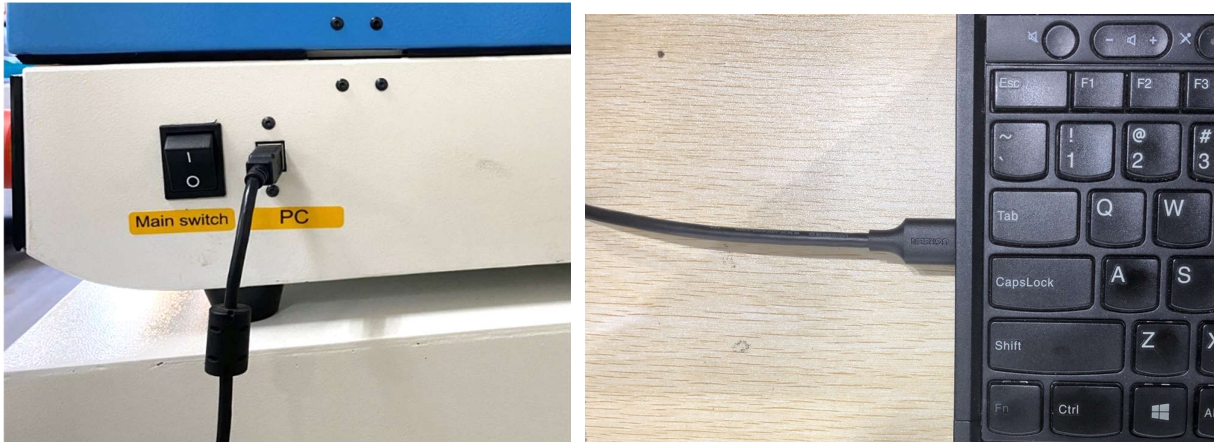
Under no circumstances should you switch on the device if the voltages do not correspond with each other.



3.3.2 Connecting the Computer

● AURORA 8

Connecting the computer and the machine by using the USB cable, as shown in the picture below:



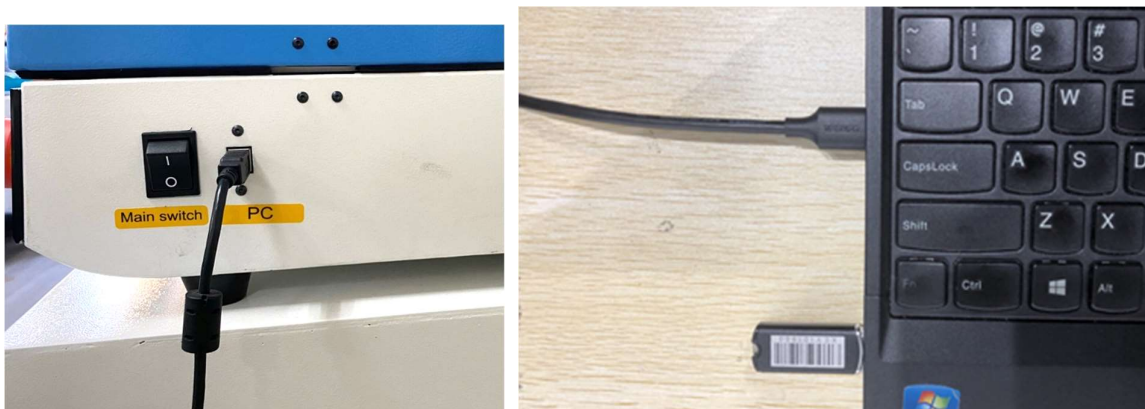
About how to start to use software EzCad2, refer to chapter 5.2 EzCad2.



The USB cable is placed inside the toolbox.

● AURORA 8 PRO

Connecting the computer and the machine by using the USB cable, and insert the Dongle that comes with the machine, as shown in the picture below:



About how to start to use software EzCad3, refer to 5.3 EzCad3.

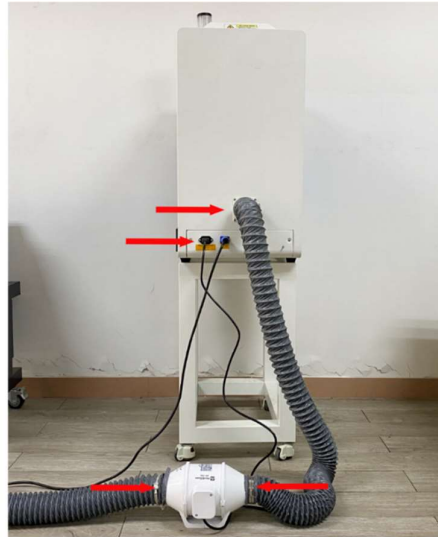


The USB cable and Dongle are placed inside the toolbox.

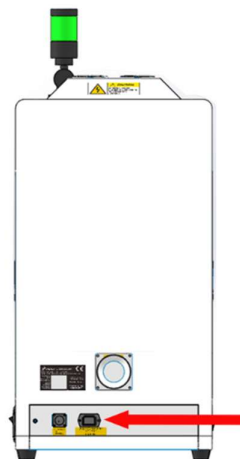
3.3.3 Connecting the exhaust system

Insert one side of the gray exhaust pipe into the fan inlet and the other side into the machine behind the exhaust tank. Insert one side of the other gray exhaust pipe into the fan outlet and put the other side of the pipe outside the operation room (If the machine is too far from the door of the room to discharge the gas manufactured; then you might need a dust/fume filter, it can keep good air quality of your working environment).

Please refer to the following pictures about how to install the exhaust pipe:



The input voltage must correspond to the required range (AC 230V 50/60 Hz or AC 115V 50/60 Hz) – see information label beside the connection socket.



Output: Exhaust fan
AC 115V
50/60Hz

Output: Exhaust fan
AC 230V
50/60Hz

Chapter 4. Machine view

1. Left side door

On fiber laser, there are installed Z motor and Driver, Z limit switches.

Please open this door for checking these parts, but you must pay attention to the electric current.

2. Exhaust hole

This is for exhausting the fume.

3. Flap protection sensor

This is where the switch for flap protection exist. Laser will stop working once the cover is opened during working.

4. Light switch

Turn on the LED lamp inside the fiber laser.

5. Up button

You can raise the field lens up.

6. Down button

You can lower the field lens down.

7. Auto focus button

The fiber laser will adjust the focus length automatically.

8. Start button

Start to mark.

9. Emergency stop button

Once there's an accident during operation, please press this button immediately. And then the laser power and motion power will be cut off immediately.

10. Rotary connector

To connect rotary device.

11. Field lens

You can replace the Field lens by rotating it.

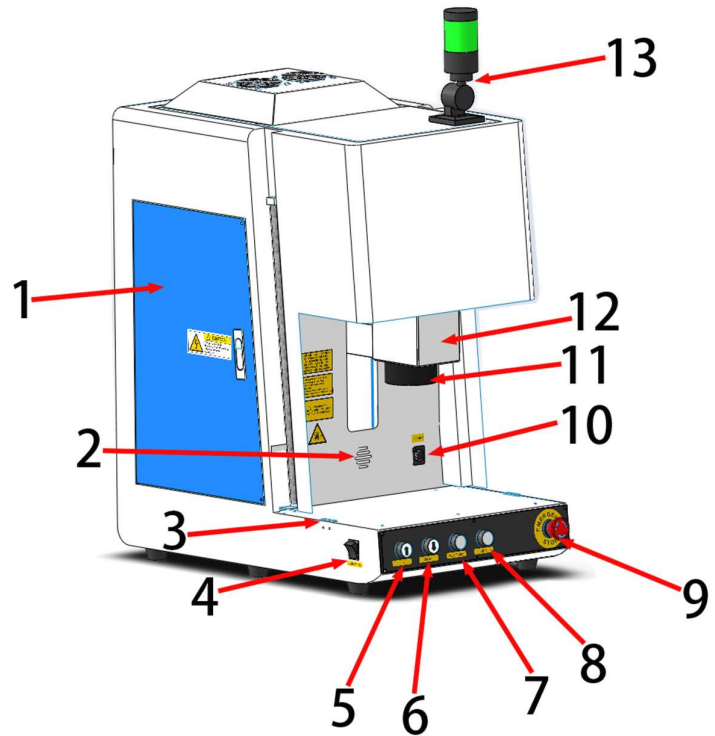
12. Galvanometer

Composed of two parts: optical scanning device and servo control.

13. Indicator light

If fiber laser machine is running, the signal lamp is in red light.

If the laser machine is on standby, the signal lamp is in green light.



14. Front door

Open the door to put the material.

15. Main switch

The laser machine will be started when you turn it on.

16. PC connection port (USB)

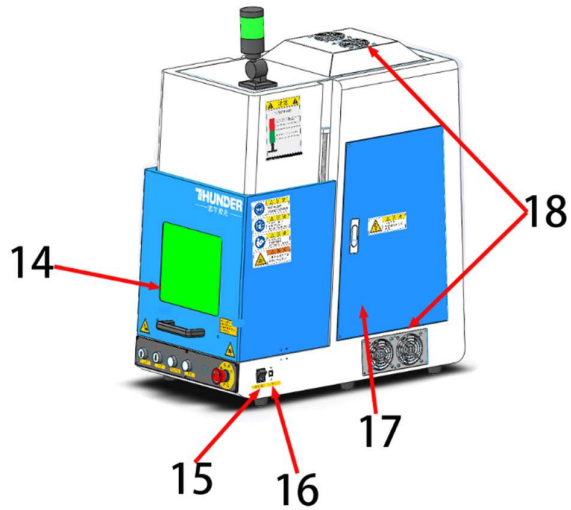
This USB is for connecting computer.

17. Right side door

The laser source is inside the right door.

18. Cooling fan

To cooling the fiber laser machine and laser.



19. Manufacture's label

The device information is listed, such as serial number, manufacturing date and etc.

20. Main power socket

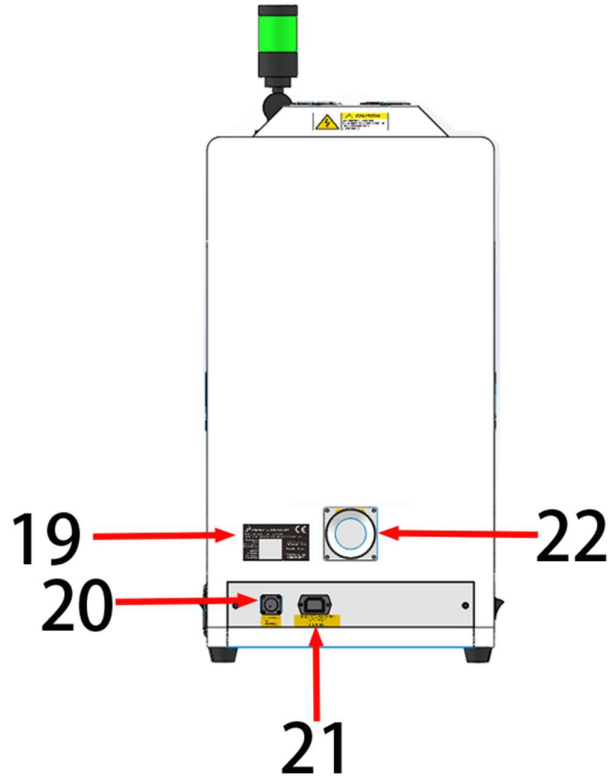
To connect the main power.

21. Exhaust fan socket

To connect the main power of exhaust fan.

22. Exhaust hose

To connect the exhaust device.



Chapter 5. Brief Introduction to Softwares

For AURORA 8 and AURORA 8 PRO, the software is different. Please note which one is what you need.

	AURORA 8	AURORA 8 PRO
Software	EzCad2	EzCad3

5.1 EzCad2

The EzCad2 software runs on a PC with 900 MHz CPU and 256 MB RAM at least. In general, we recommend the fastest PC available. EzCad2 was developed in Microsoft Windows XP and will run in Windows XP, WIN7, WIN10 and VISTA.

The installation of EzCad2 is very easy. Users just need to copy EzCad2 folder in the Install FOLDER to hard disk, and then double click the Ezcad2.exe under the EzCad2's directory to run the software.

If users run the software without connecting the fiber laser, a caution will appear and the software will work at demo state. In demo state, we can evaluate the software but we cannot save files and cannot control the laser device.



The Software, Drive and Correction file are in the U-disk that came with the fiber machine.

5.1.1 Driver Installation

Turn on the fiber laser.

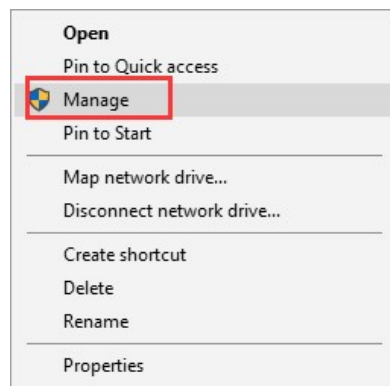
Connect your fiber laser with PC via USB cable.



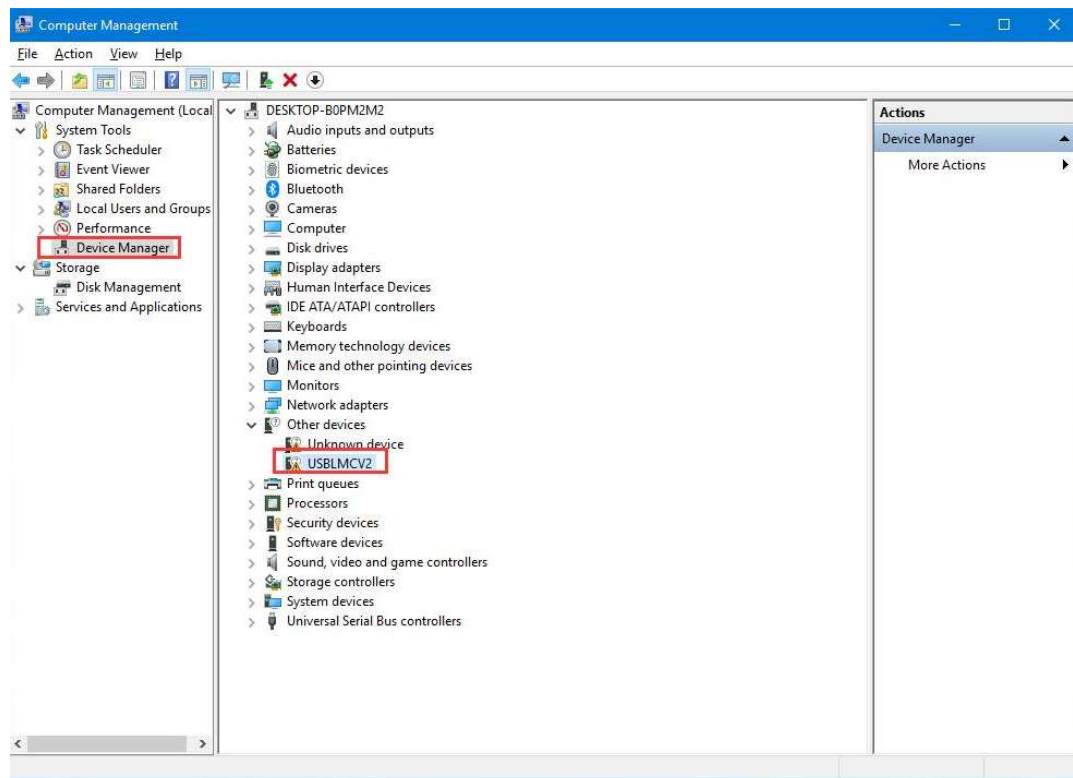
Before moving on to the next step, please save the Driver file in the U- disk to your computer, and remember where it is.



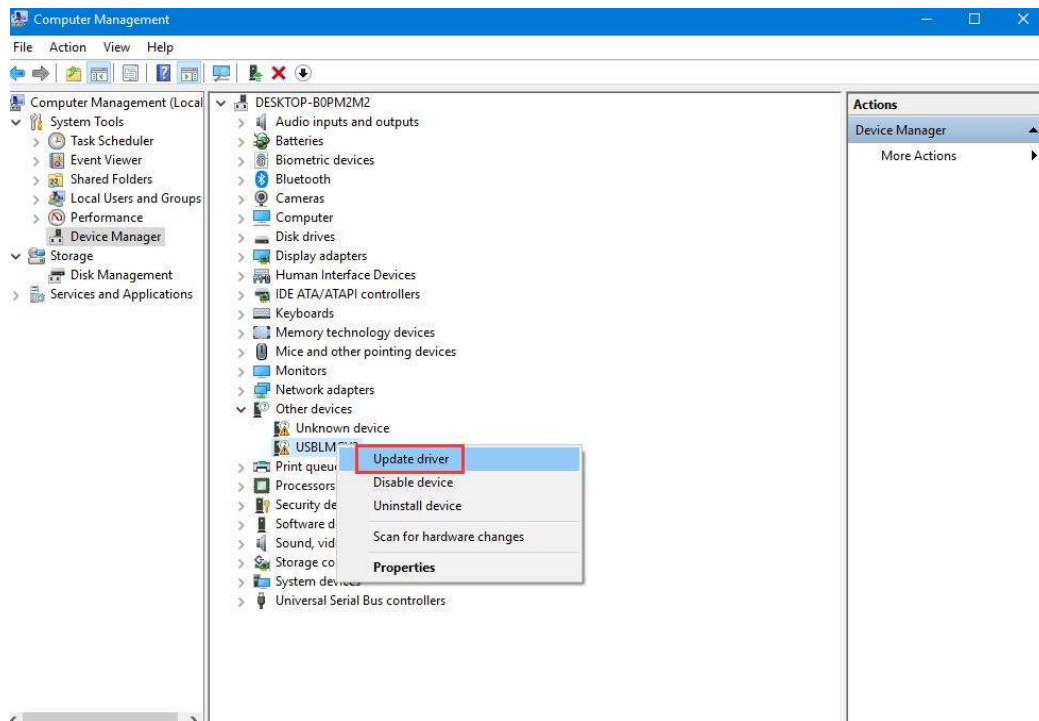
1. Go Manage>>Device manager>>Other devices>>USBLMCV2>>right click, Update driver>>Browse my computer for driver software>>Browse, and find the CV4 folder you saved from the U-disk that came with the fiber laser>>Select the CV4 driver>>Next>>Install, then the driver is installed successfully. See pictures below.



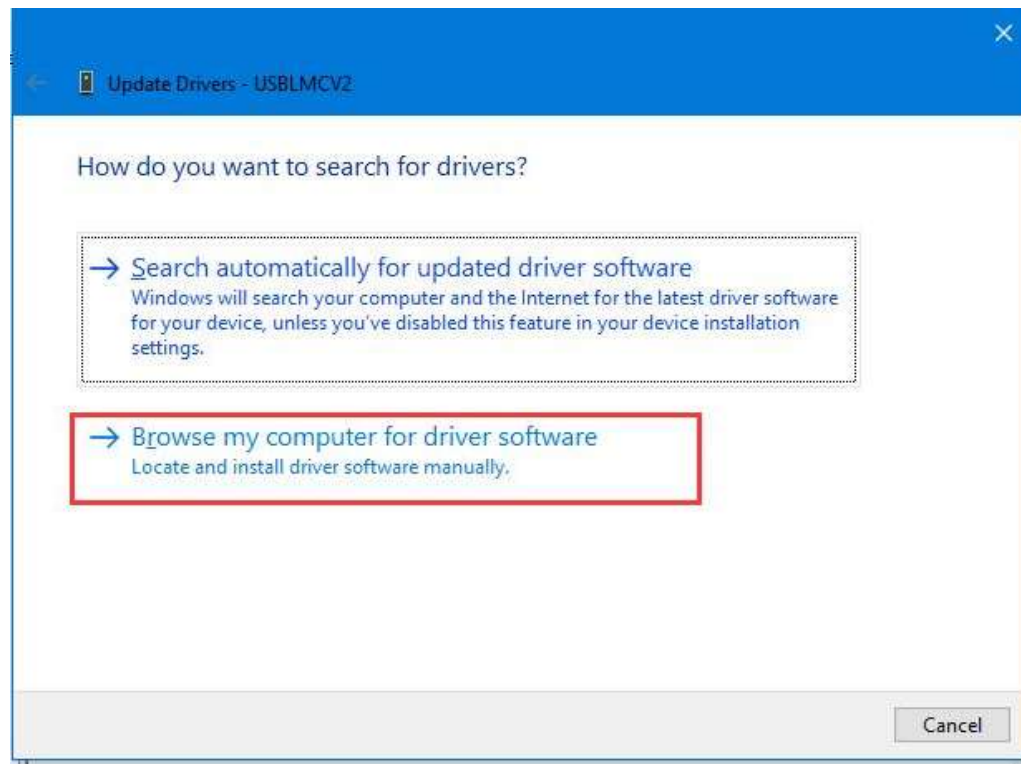
Pic1



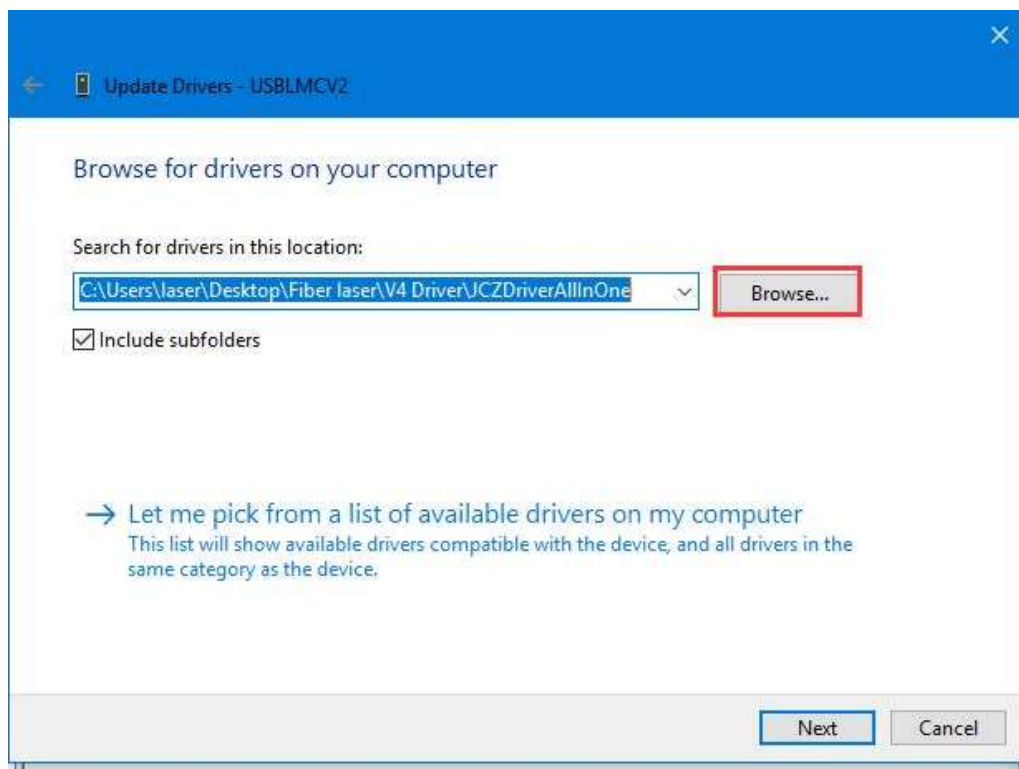
Pic2



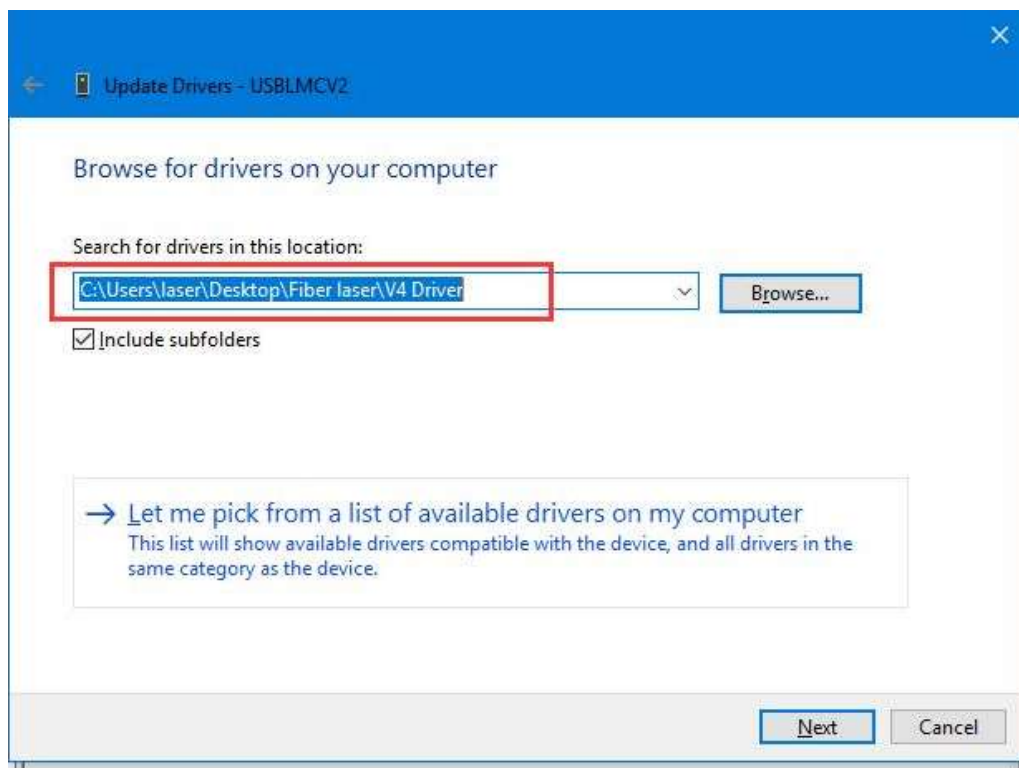
Pic3



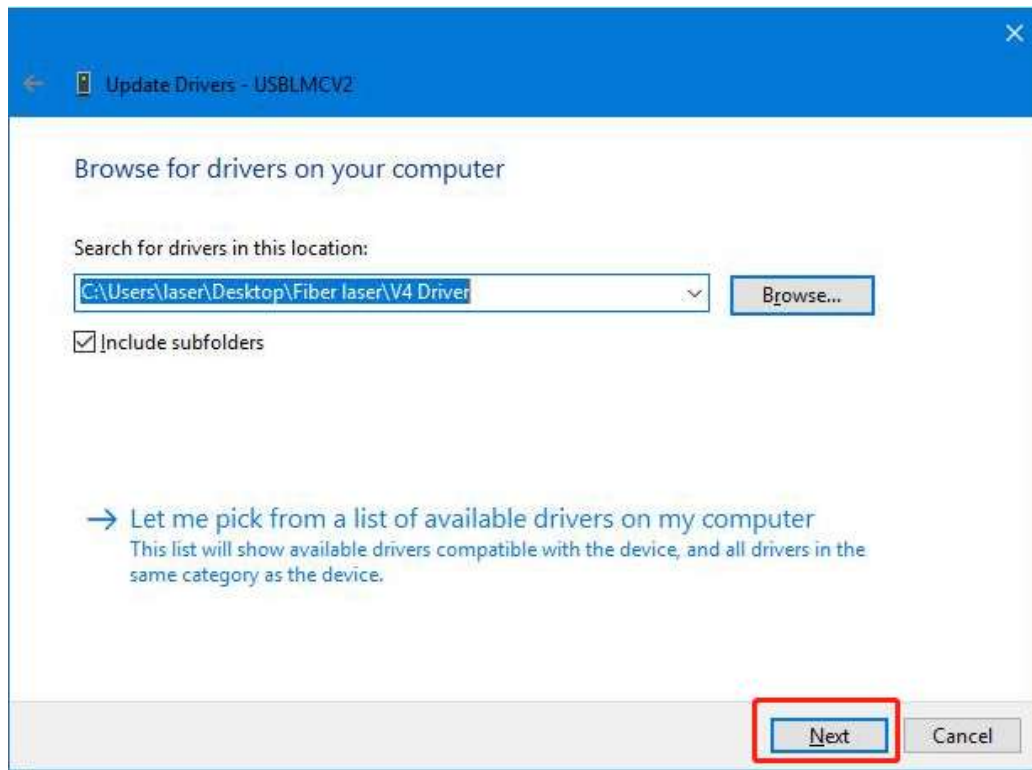
Pic4



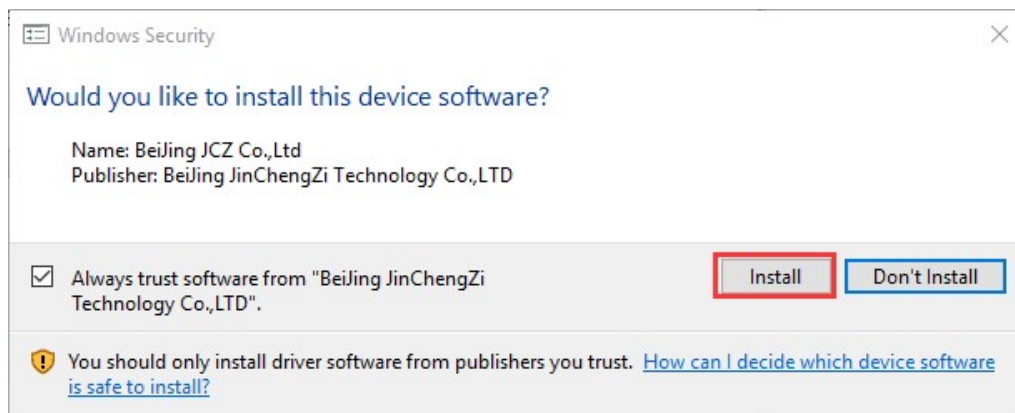
Pic5



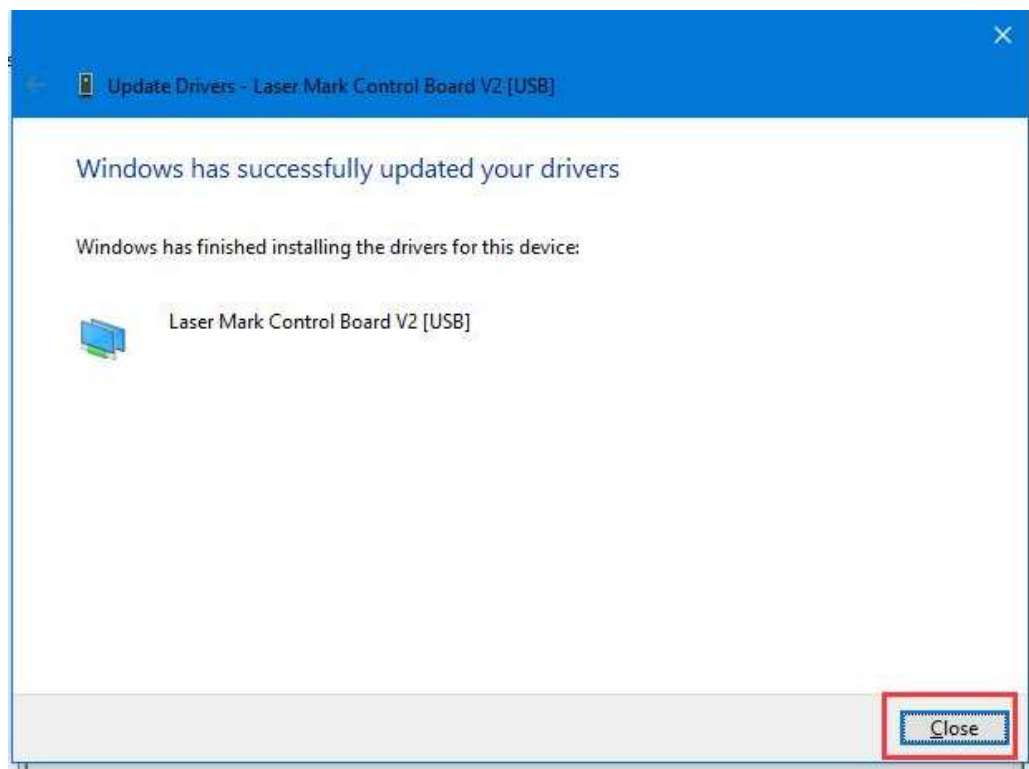
Pic6



Pic7



Pic8



Pic9

Then, you can open the software now.

5.1.2 Software setting

1. General setting

Open the software, then press “F3” and select items according to the picture below (take AURORA 20W as an example) .

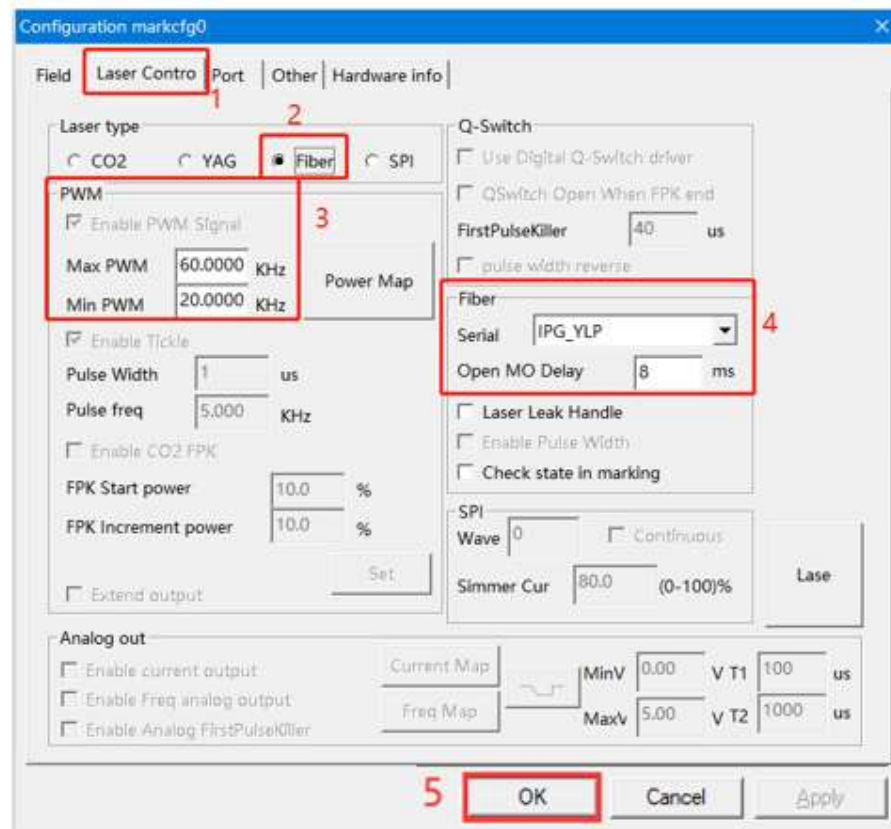
Laser type: Fiber

PWM:

Max PWM: 60KHz, Min PWM: 30 KHz.

Fiber serial: IPG_YLP

Open Mo Delay: 8ms.



The frequency ranges for different laser source.

Laser fiber	20W	50W	
Laser MOPA			20W
Frequency	30-60kHz	50-100kHz	1-4000kHz

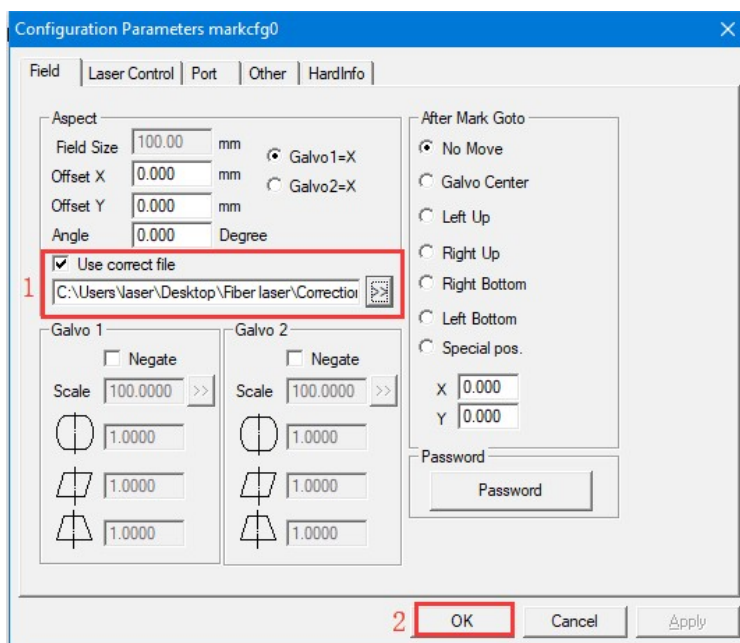
And we set all setting above before leaving the factory, so just check if these are correct. If not, change them according.

2. How to import the calibration file



1. Before leaving the factory, we have done a correction test for each machine and imported the calibration file to fiber software, so the customer does not need to calibrate again.
2. Different field lenses have different calibrate files and cannot be used randomly.
3. If you've purchased other field lens with the fiber machine, we will prepare the calibration file and put it in the U disk too.
4. If you've purchased other field lens after the machine left the factory, contact us to get the calibration file.

Open the software>>Press "F3" button>>Field>>find the calibration file (say the name is 110×110.cor) in the USB disk that came with the machine.



Customer can save the calibration file to computer from U-disk, and select it from computer.

5.2 EzCad3

The standard computer hardware required for the operation of EzCad3 software: dual-core CPU, memory 2G, hard disk 10G, dual native USB interface. The computer system software is Microsoft Windows operating system WIN7 64-bit, WIN8 64-bit and WIN10 64-bit. The default operating system of the manual is Microsoft Windows.

Note: It is recommended to choose Professional or Enterprise Edition as the operating system.

EzCad3 software installation is very simple, users only need to copy the EzCad3 directory file on the installation CD directly to the hard disk. Then double-click the EzCad3.exe running software in the EzCad3 directory that has been installed. The computer must be authorized before the software runs, otherwise the software will not run normally.

PC > THUNDER (F:) > Ezcad3

搜索"Ezcad3"

名称	修改日期	类型	大小
LANG	2021-06-22 14:43	文件夹	
PARAM	2021-06-22 14:43	文件夹	
PLUG	2021-01-23 14:42	文件夹	
RES	2021-06-22 14:43	文件夹	
AUTOSAVE.ez3	2021-05-31 10:53	EZ3 文件	12,284 KB
CH365DLL64.dll	2015-06-15 17:29	应用程序扩展	25 KB
DfjzhControlerDll64.dll	2016-08-12 18:27	应用程序扩展	871 KB
dlc.dll	2021-04-21 22:43	应用程序扩展	459 KB
endpoint.dll	2019-10-21 10:52	应用程序扩展	498 KB
Ezcad3.exe	2021-04-21 22:43	应用程序	1,772 KB
Ezcad3_Multi.exe	2021-04-15 12:08	应用程序	1,741 KB
Ezcad3Kernel.dll	2021-04-22 18:37	应用程序扩展	8,566 KB
Ezcad3Motion.dll	2017-12-04 20:16	应用程序扩展	31 KB
gt_rn.dll	2020-06-16 11:13	应用程序扩展	738 KB
gts.dll	2020-06-12 15:13	应用程序扩展	1,738 KB
LicenseManager_x64.exe	2021-01-19 19:45	应用程序	1,286 KB
OpenIssue.exe	2019-11-07 17:30	应用程序	99 KB
QIL.dll	2020-06-04 13:48	应用程序扩展	9,001 KB
Scan3DLib.dll	2021-03-23 22:40	应用程序扩展	27 KB
WrapAlgorithm.dll	2020-11-01 21:41	应用程序扩展	888 KB

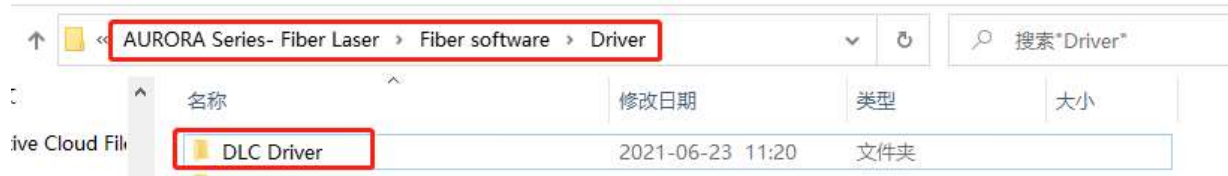


The Software, Drive and Calibration file are in the U-disk that came with the fiber machine.

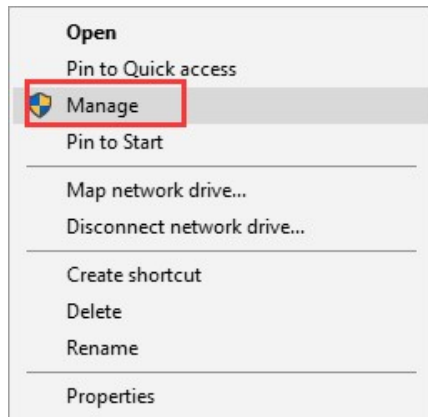
5.2.1 Driver Installation

Turn on the fiber laser

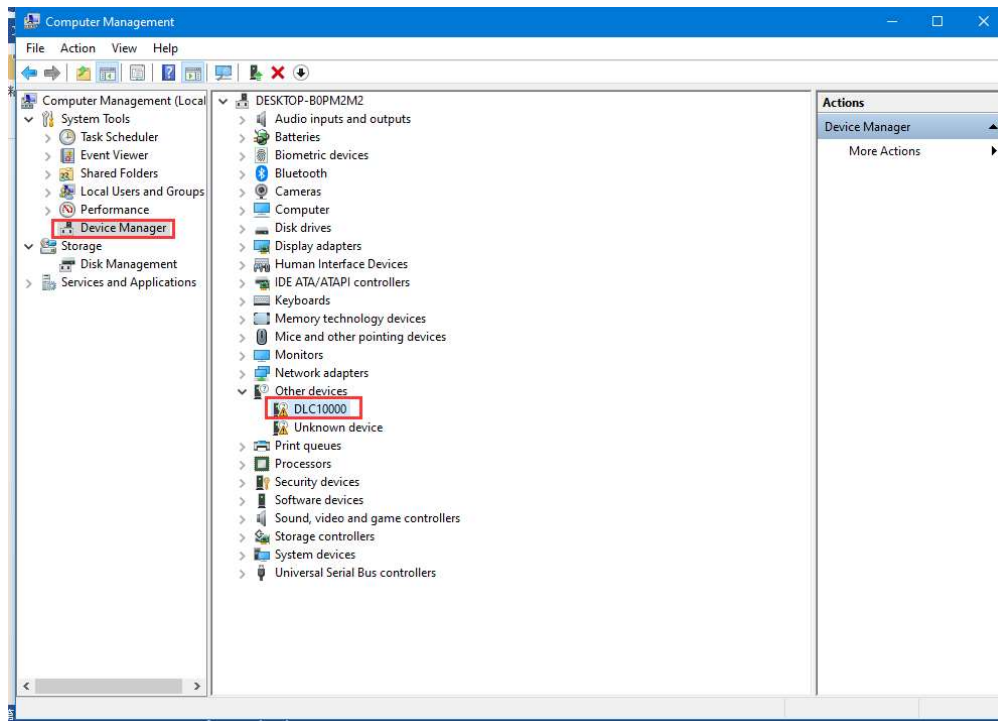
1. Connect your fiber laser with PC via USB cable.
2. Before moving on to next step, please save the Driver file in the U-disk to your computer, and remember where it is.



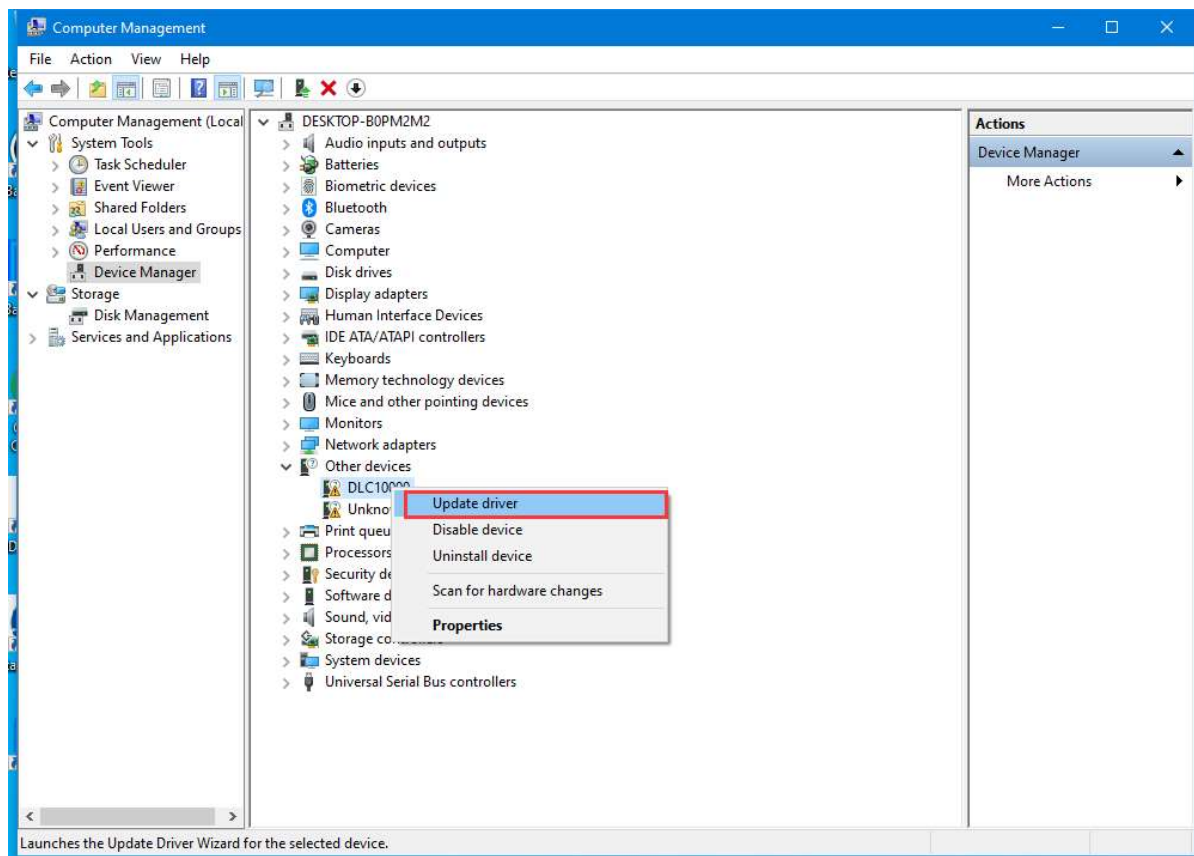
3. Go Manage>>Device manager>>Other devices>>DLC1000>>right click, Update driver>>Browse my computer for driver software>>Browse, and find the DLC1000 folder you saved from the U-disk that came with the fiber laser>>Select the DLC1000 driver>>Next>>Install, then the driver is installed successfully. See below pictures.



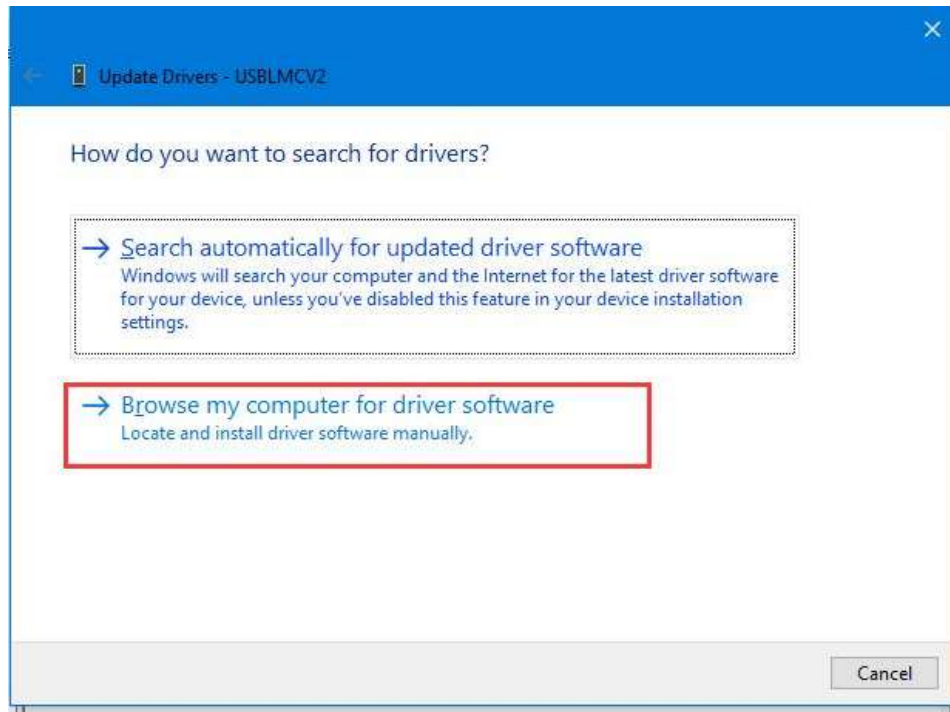
Pic1



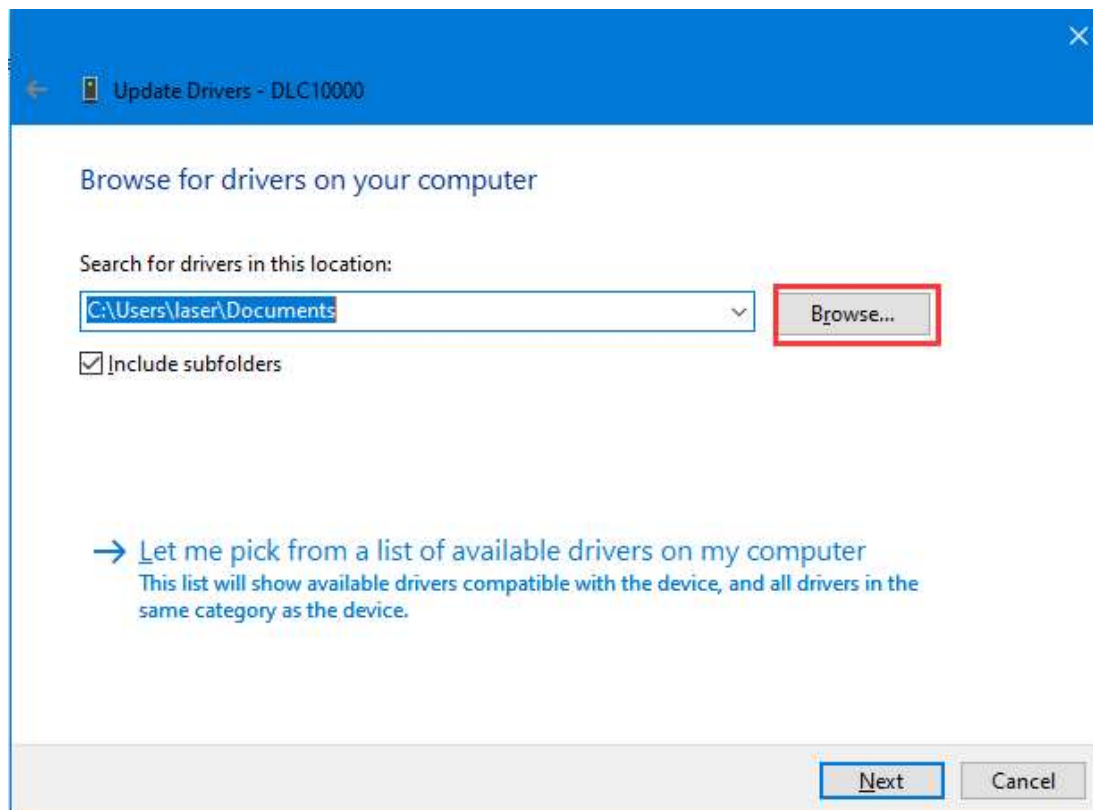
Pic2



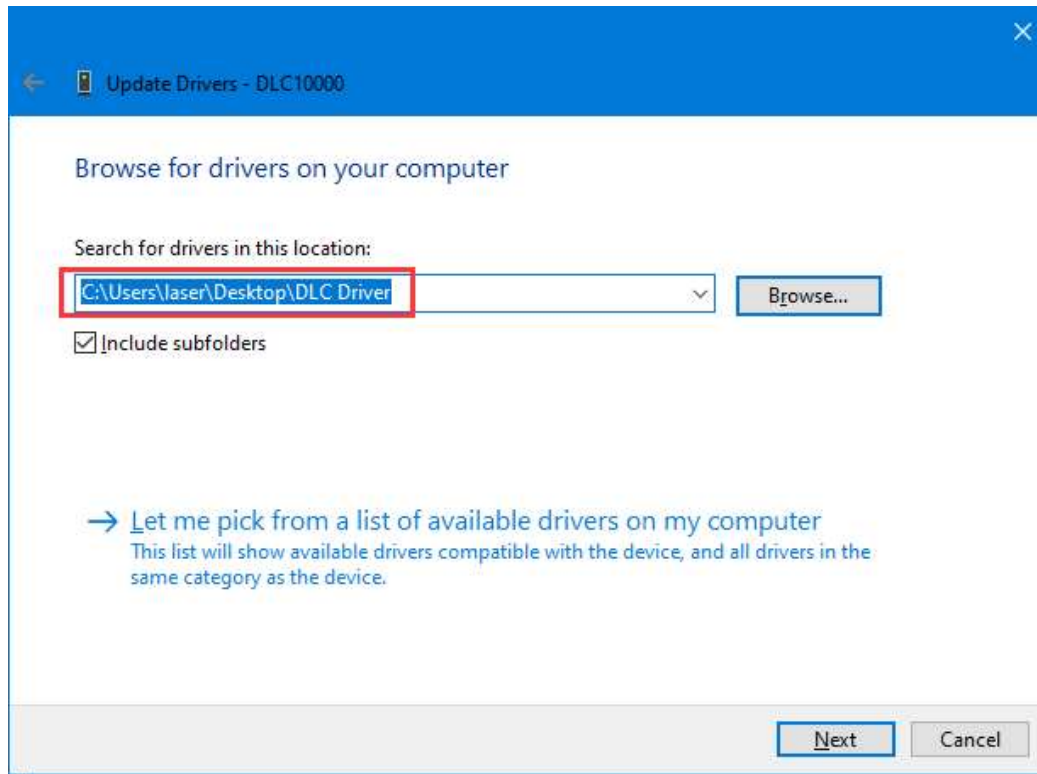
Pic3



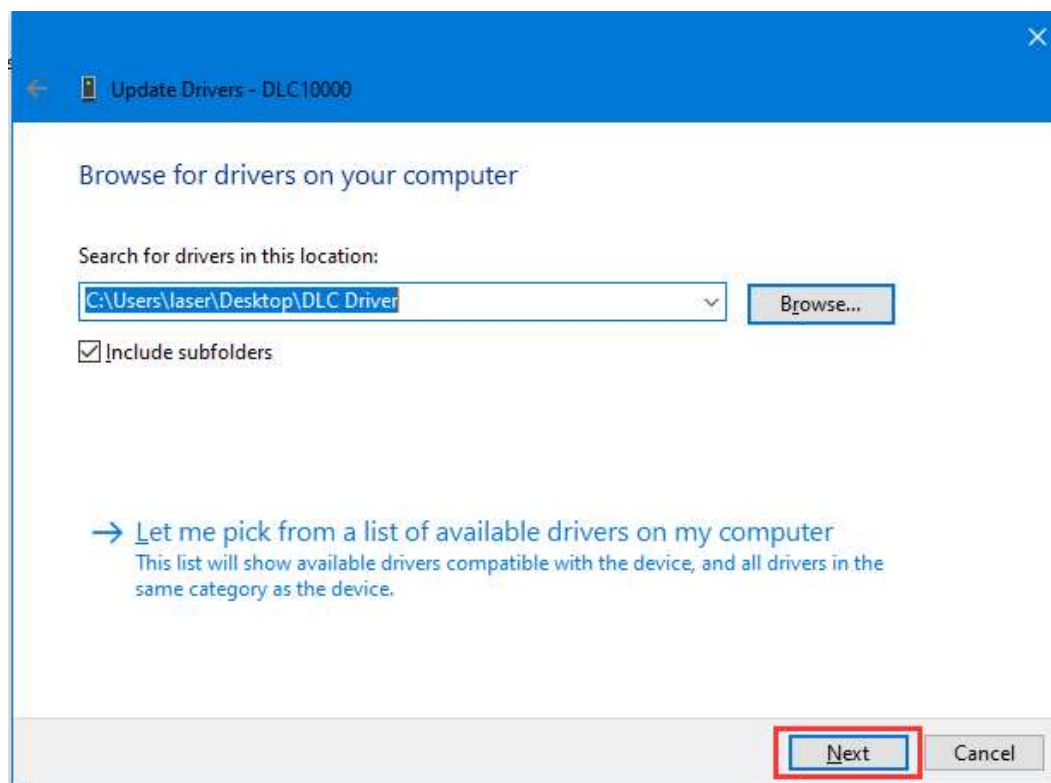
Pic4



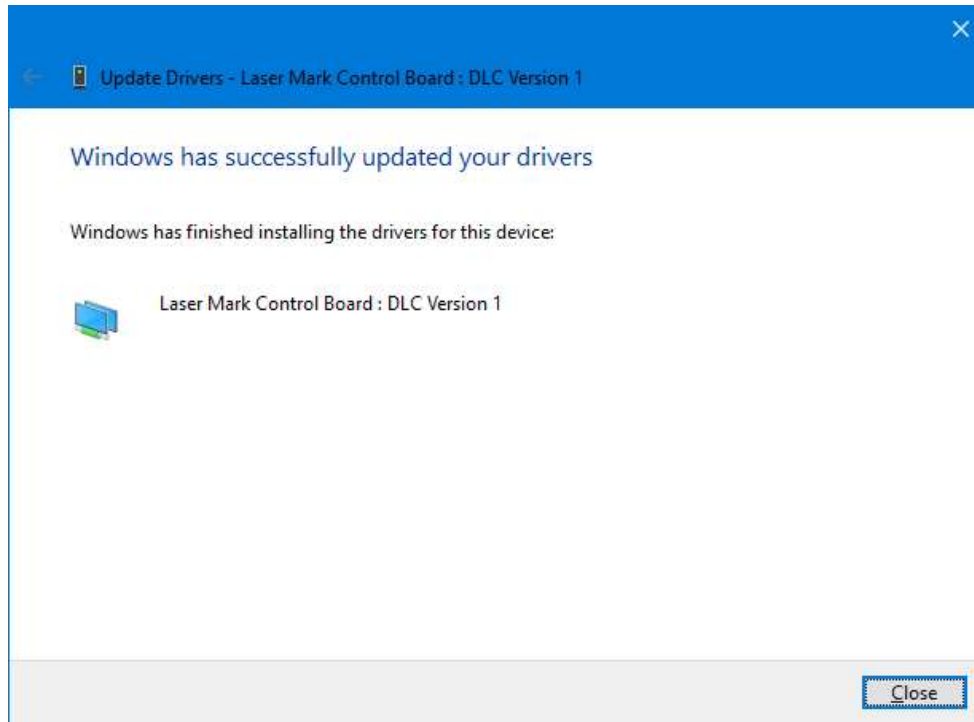
Pic5



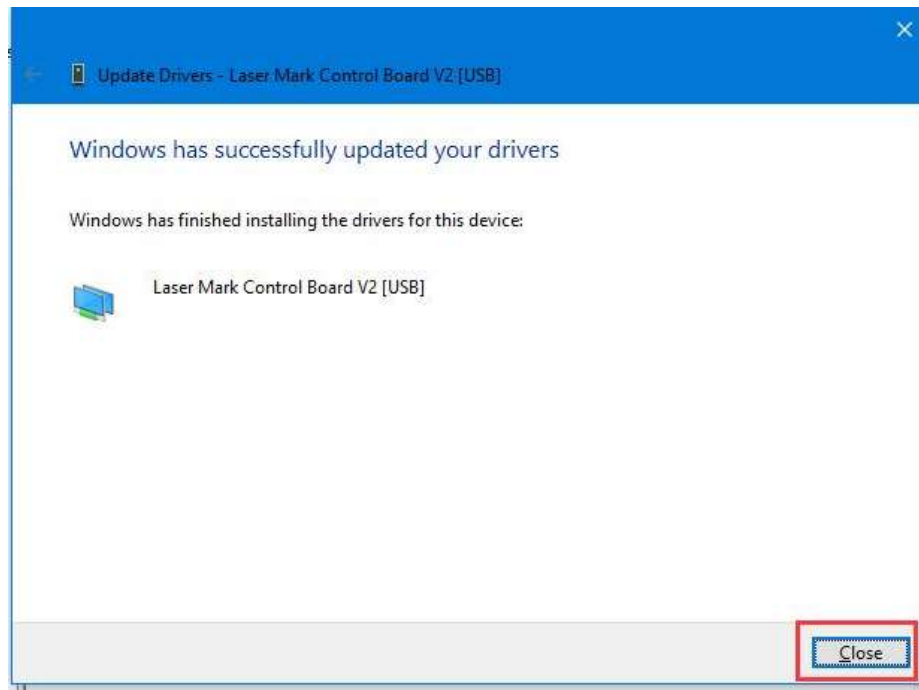
Pic6



Pic7



Pic8



Pic9

5.2.2 Activate the software

EzCad 3 needs to be activated before initial use, and the software only work with the Dongle inserted to the computer.

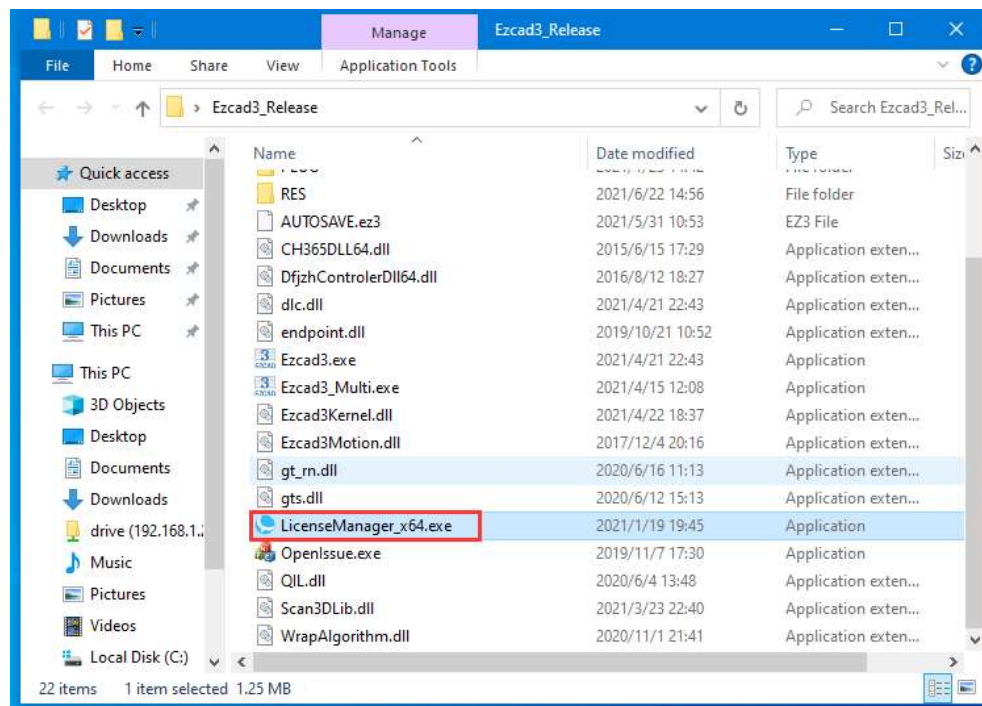
● Activating process

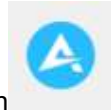
Here is a Dongle that came with the machine, with a string of activation codes on the back side:



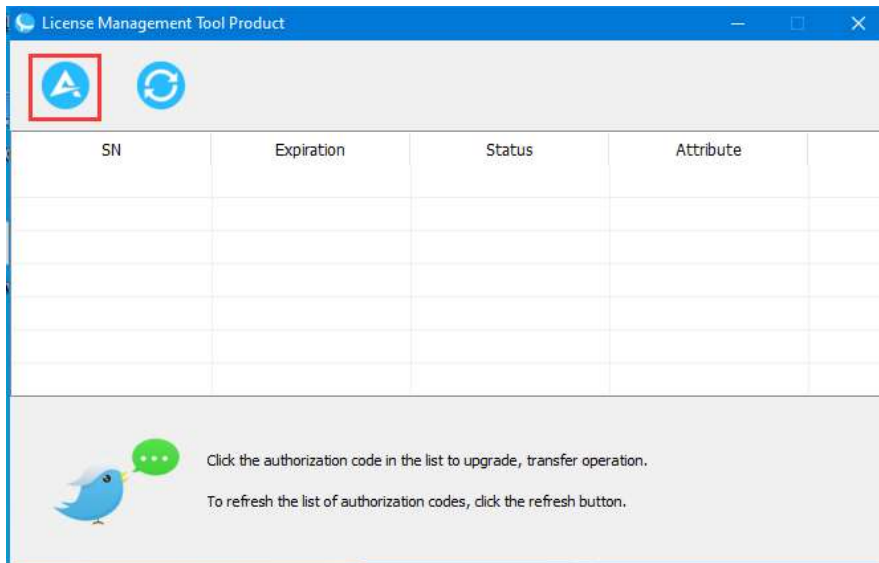
Please record this activation code on a piece of paper, because you'll need it in the following steps.

1. Insert the dongle to your computer.
2. Open the activated software LicenseManager X64 in fiber software folder.

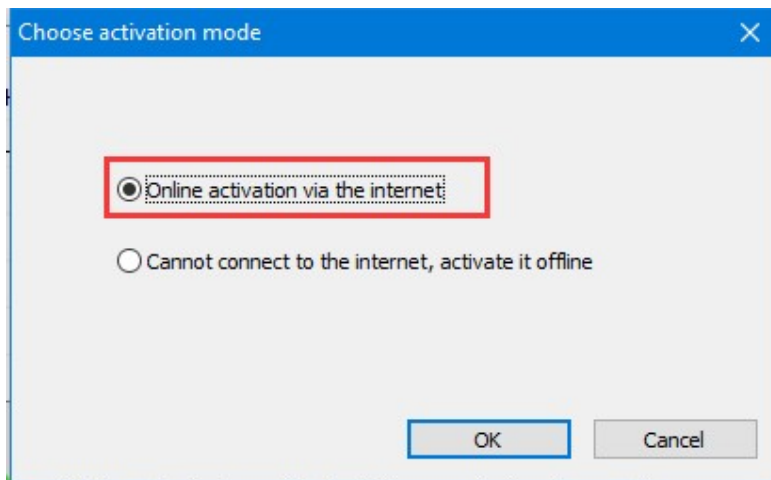




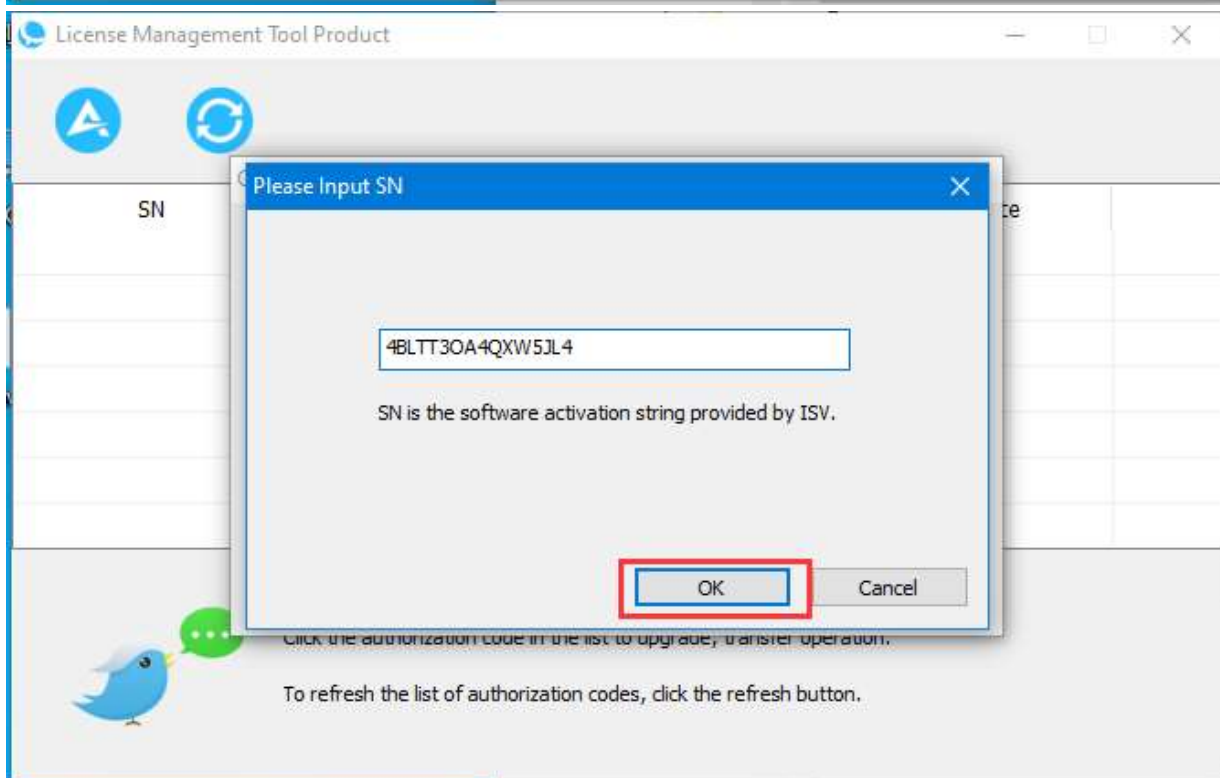
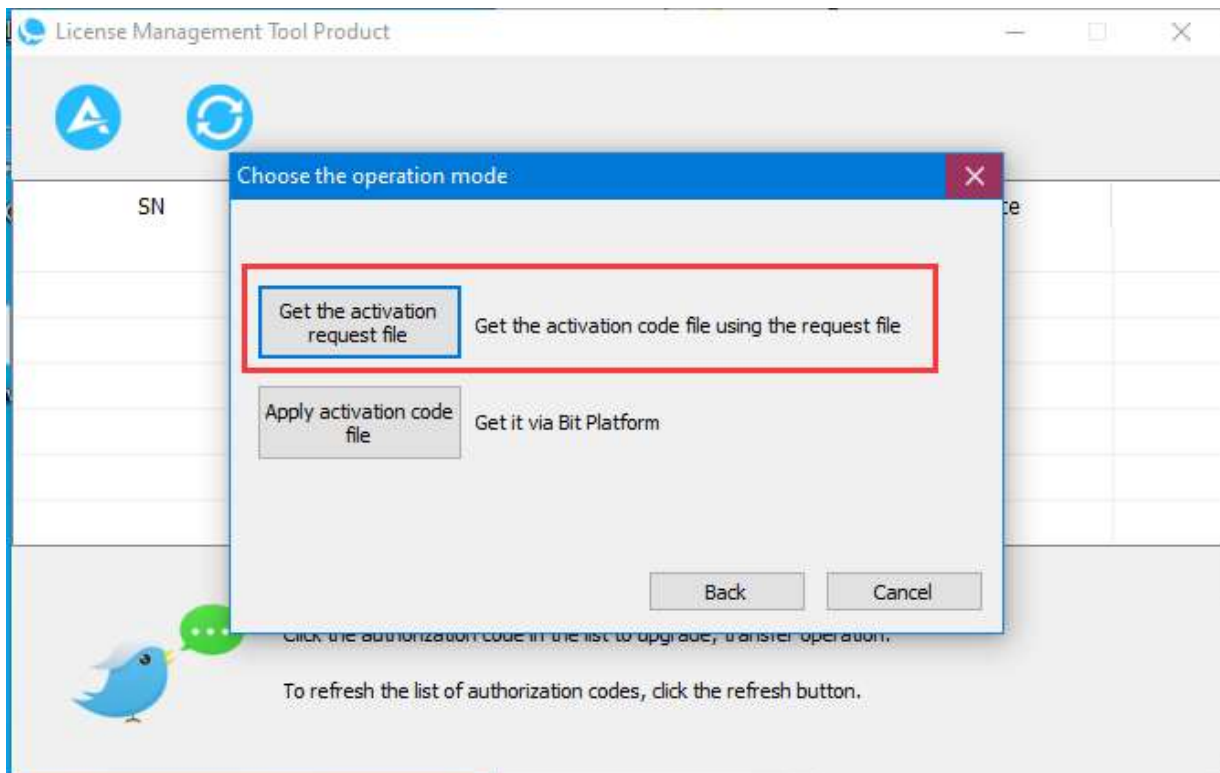
3. Click License activation icon



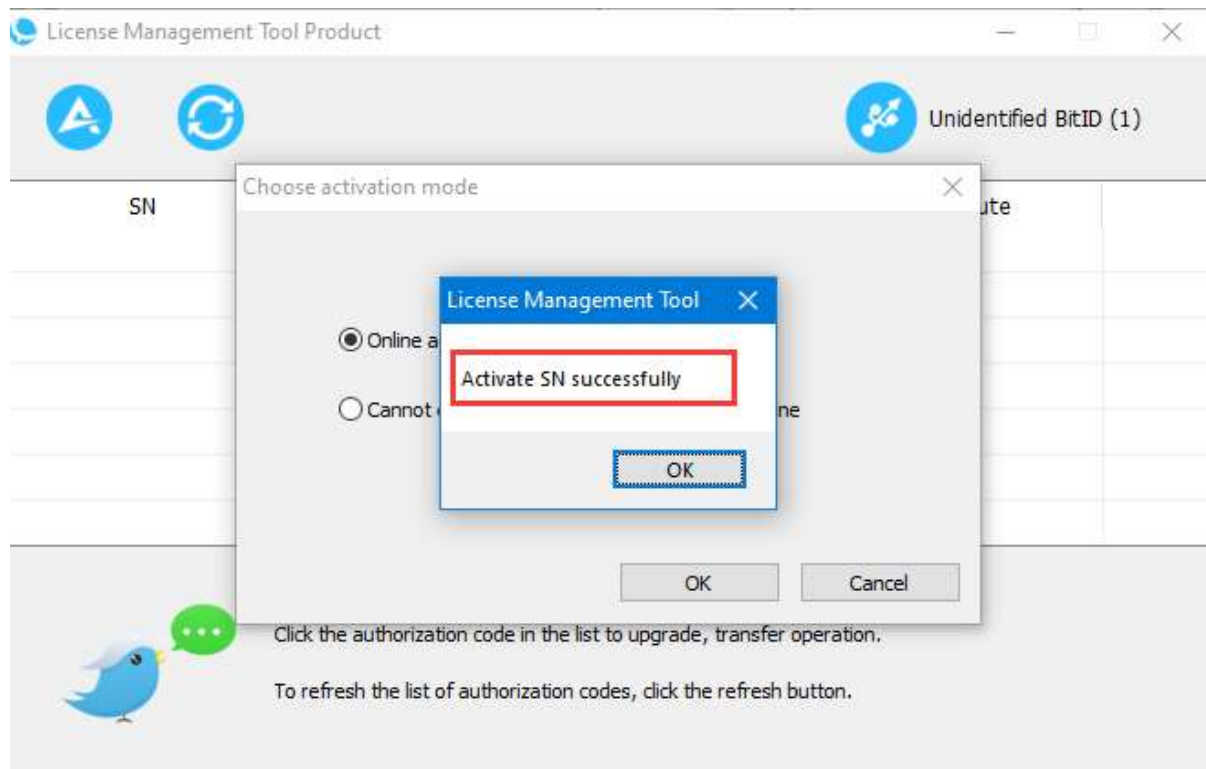
4. Click “online activation via the internet” and click “ok”



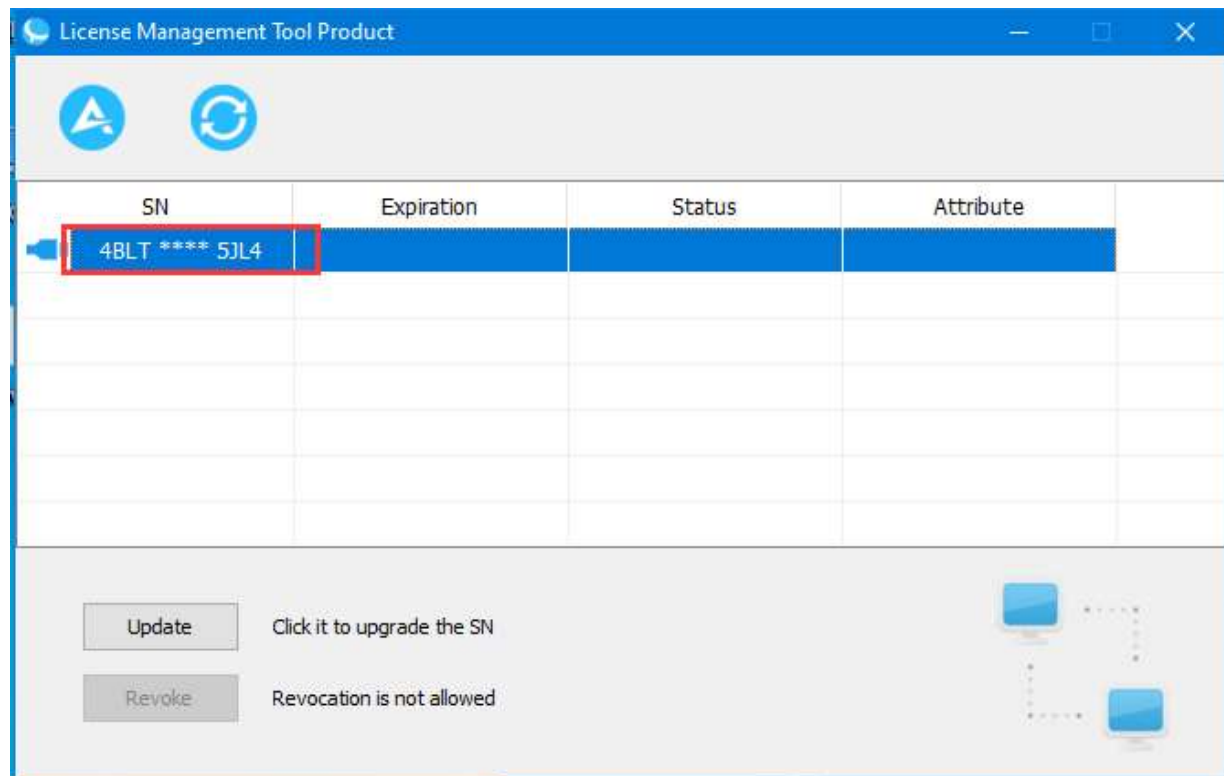
- Click "Get the activation request file" and enter the activation code that you record. Then click "OK".



6. Then it will show "Activate SN successfully".



7. Now, the SN is activated successfully.



8. Then you can open the EzCad3 software.



The activation code can only activate 5 computers!!!

5.2.3 Software setting

1. General setting

We have made the correct settings in the software before the machine leaves the factory.

Please open the software to check if they are correct.

Open the software, then press “F3” and select items according to the picture below (take MOPA 20W as an example) .

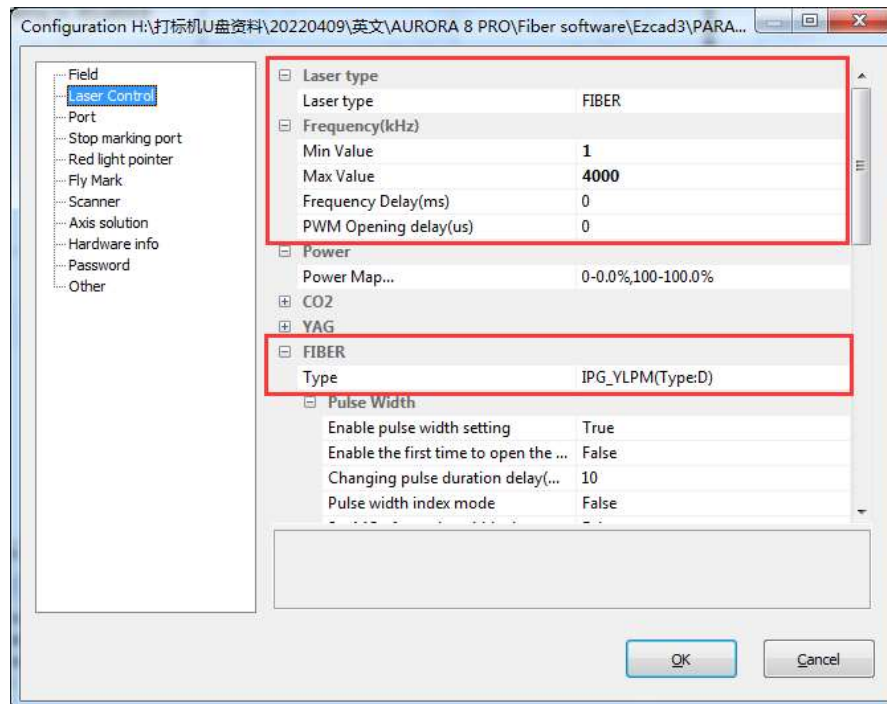
Laser type: FIBER

Frequency(kHz):

Min Value:1, Max Value:4000.

FIBER:

Type: IPG_YLPM(Type:D)





The frequency ranges for different laser source.

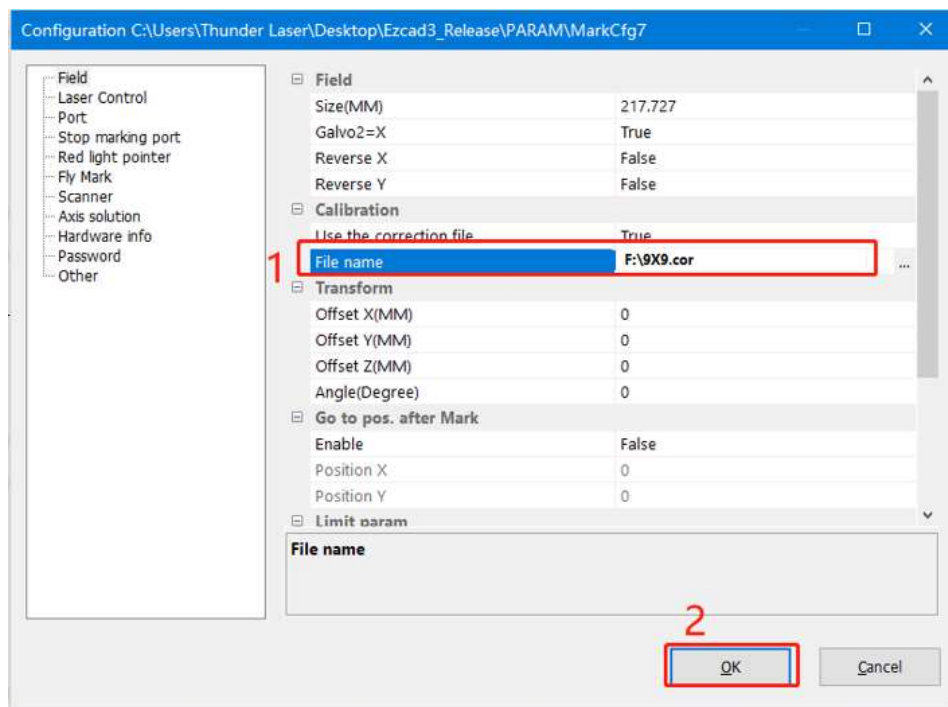
Laser fiber	20W	50W	
Laser MOPA			20W
Frequency	30-60kHz	50-100kHz	1-4000kHz

2. How to import the correction file.



1. Before leaving the factory, we have done a correction test for each machine and imported the calibration file to fiber software, so the customer does not need to calibrate again.
2. Different field lenses have different calibrate files and cannot be used randomly.
3. If you've purchased other field lens with the fiber machine, we will prepare the calibration file and put it in the U disk too.
4. If you've purchased other field lens after the machine left the factory, contact us to get the calibration file.

Open the software>>Press "F3" button>>Field>>find the calibration file (let's say the name is 9×9.cor) in the USB disk that came with the machine.



Chapter 6. How to set & adjust the focus length of Auto-focus

AURORA series marking machines can be equipped with 3 field lenses (F-160, F-210, F-290), and the focal lengths of different field lenses are different. After changing the field lens, the user needs to adjust the focus of autofocus again.

	AURORA 8	AURORA 8 PRO
Auto-focus software	Jhc Seriestools	TI-tool

6.1 Jhc Serials tool



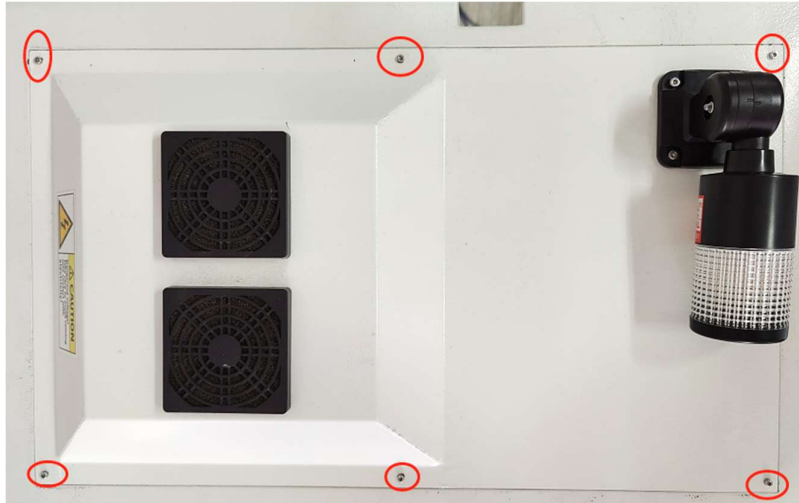
For AURORA 8 Only!

● How to set the focus length of Auto-focus

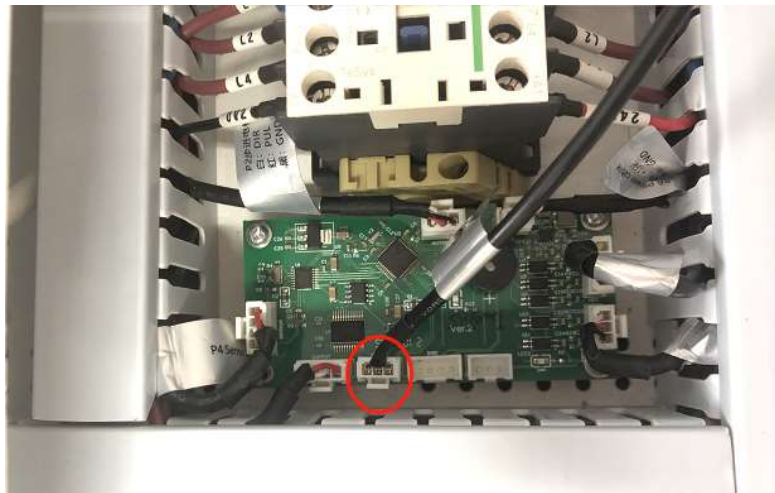
1. Find the USB cable of Auto-focus board that came with the Fiber machine.



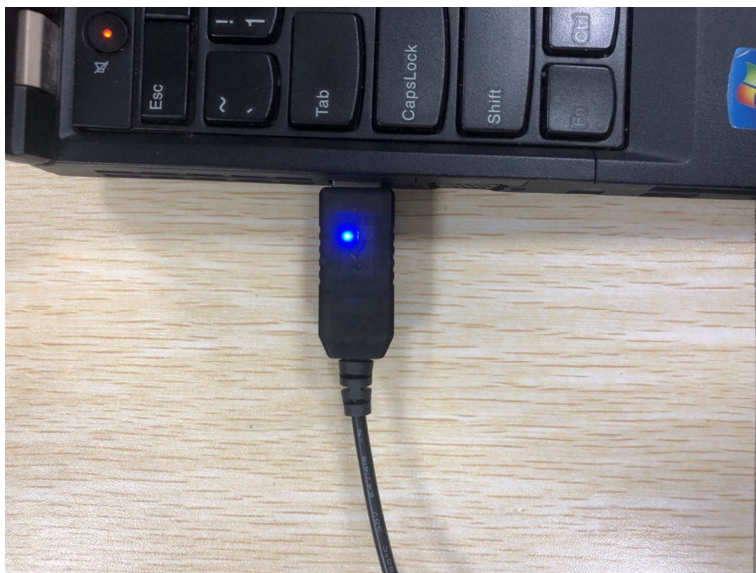
2. Loosen the 6 fixing screws of the top cover of the fixed marking machine (please keep the screws), move the top cover to the right until you can see the auto focus plate. Then connect the USB cable to the auto focus plate "UStart" interface, the other end connected to the computer end.



Pic1



Pic2



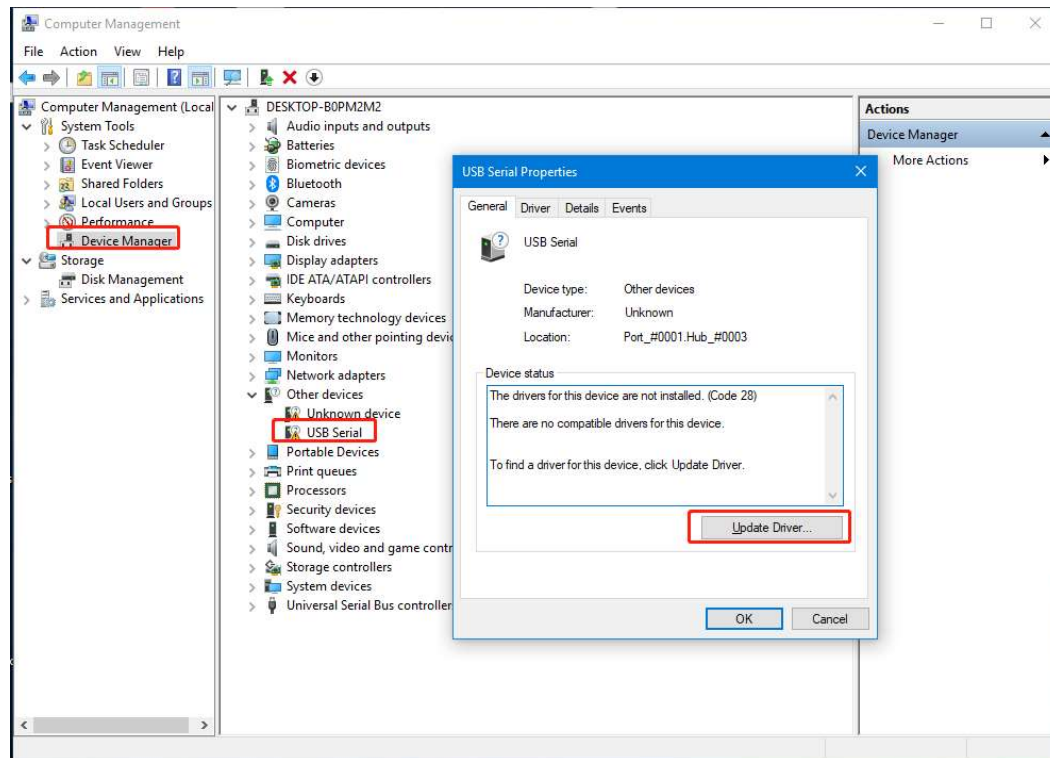
Pic3

3. Install USB driver: Right-click "computer>>Management>>device manager>>Other devices>>USB Serial>>Update Driver>>Browse my computer to driver software>>Find the Driver folder that came with the machine CD340G-USB-Drive>>Next>>Install successfully.

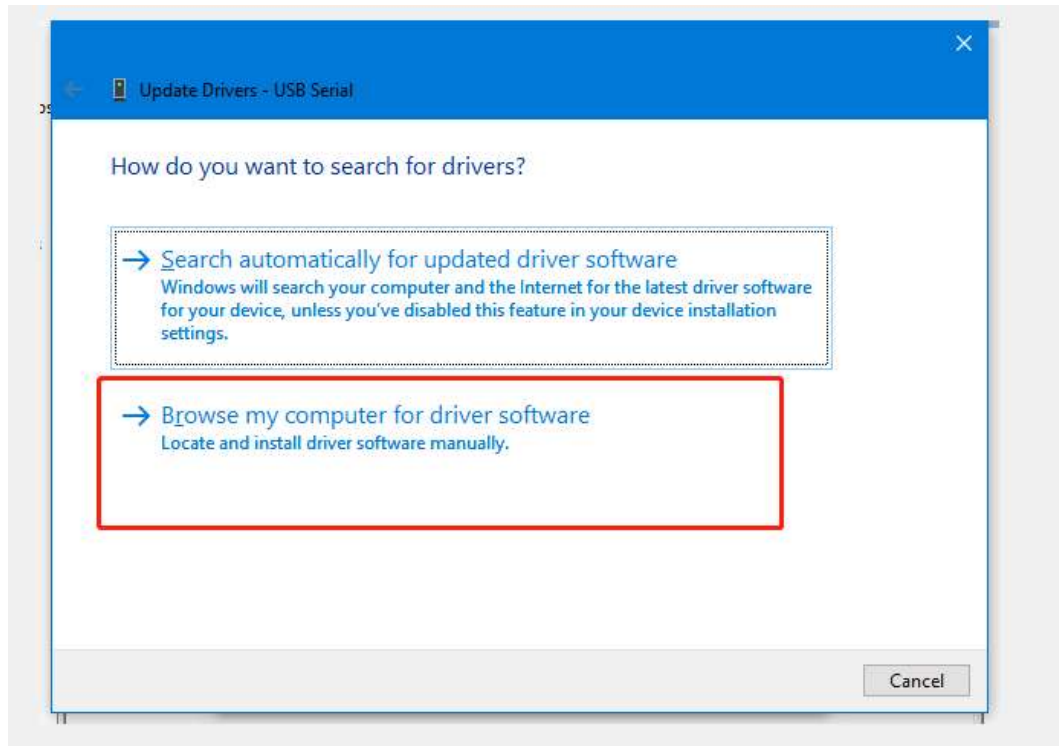
Find the corresponding COM of the USB, and remember it.



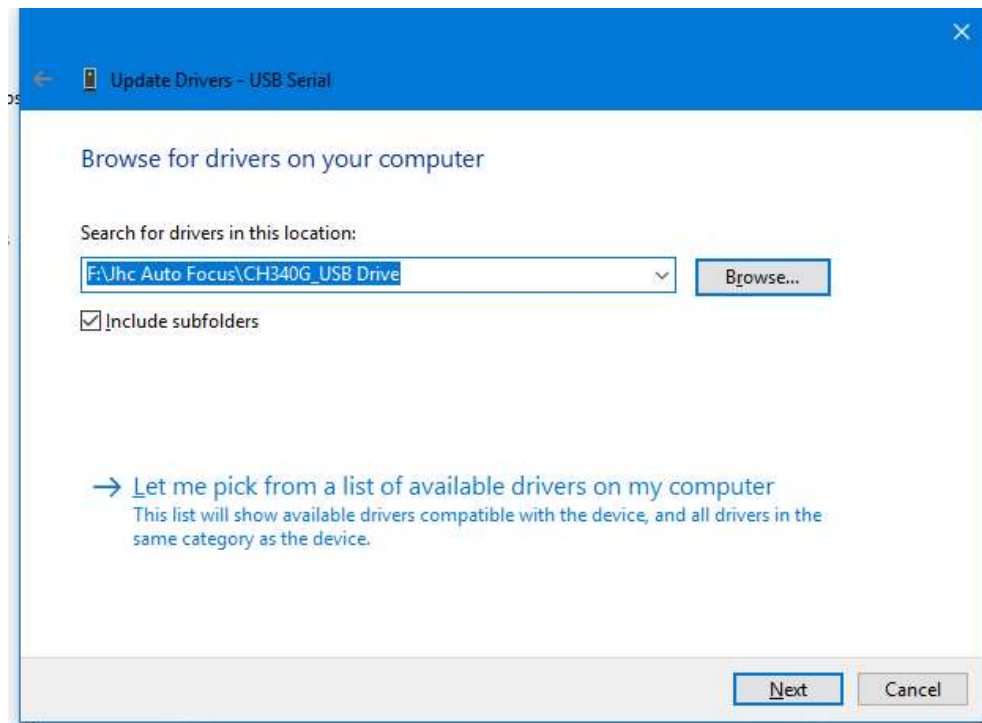
The auto-focus software driver folder is in the U-disk that came with the Fiber machine.



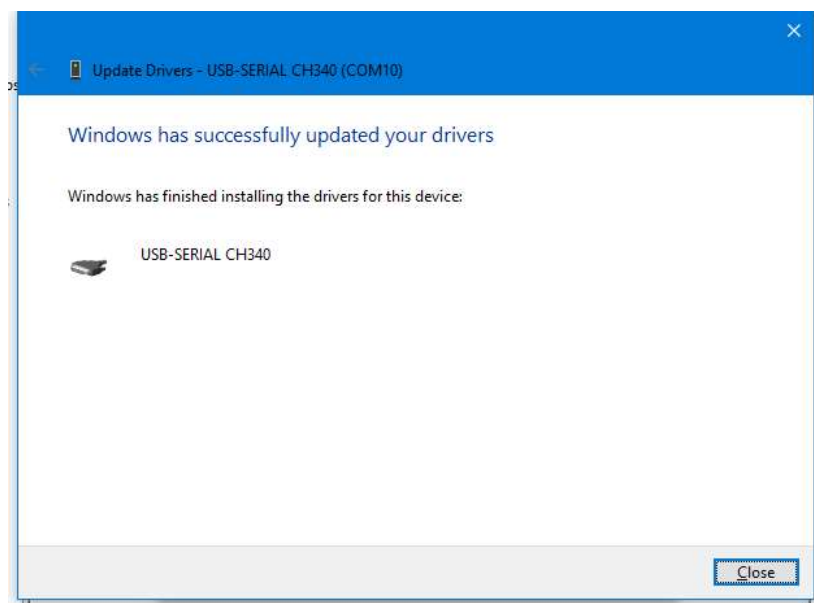
Pic1



Pic2



Pic3

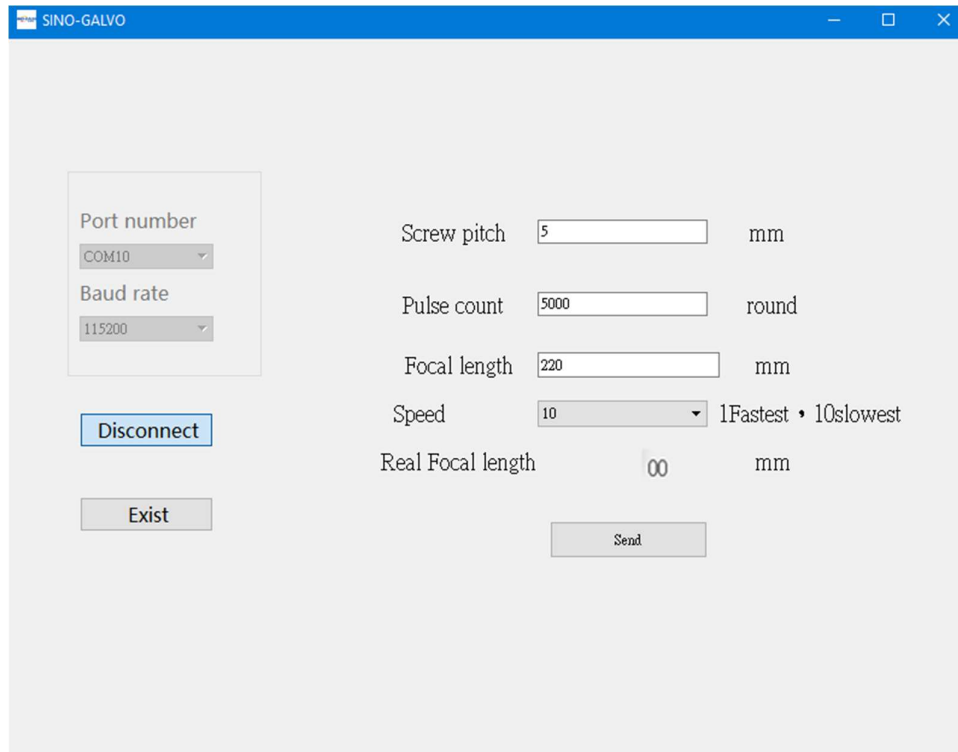


Pic4

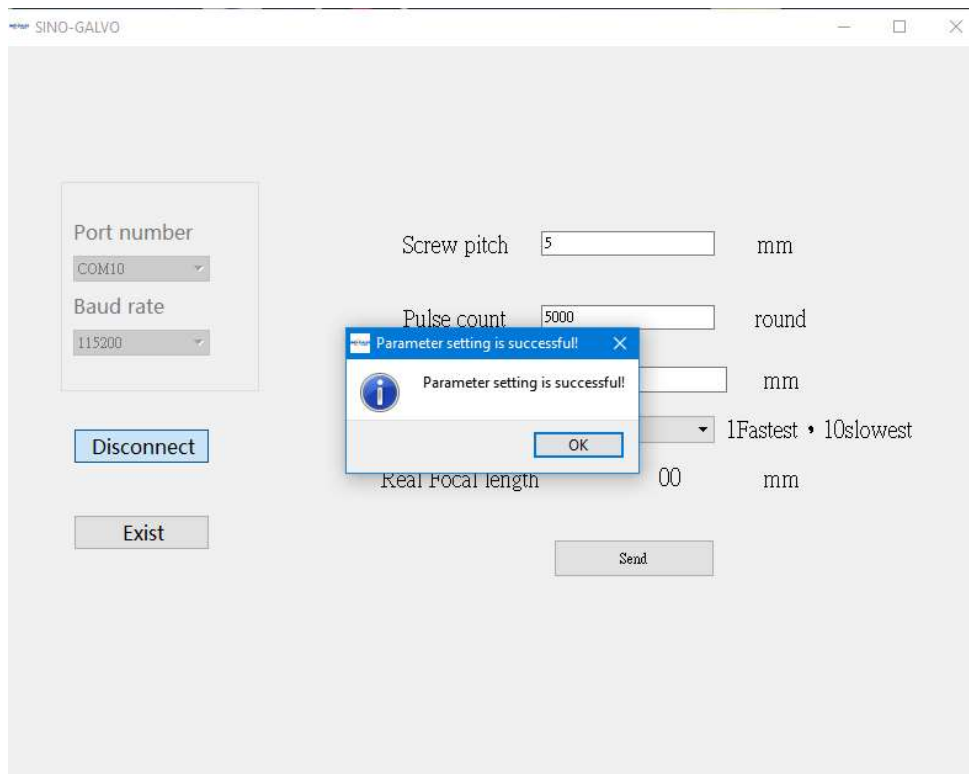
4. Choose correct COM port and click connect, then set the screw pitch as 5, Pulse count as 5000. Speed as 1(divided into 10 gears, 1 fastest, 10 slowest, 1-10 speed decreasing), then click Send, the window of “successfully set” will be presented. And input the focal length according to the reference form.

Focal Length for different lens (for reference only)

	F-160	F-210	F-290
AURORA 8	P:30%, S:100mm/s,		
Focus length range	218.14~219.52mm	274.71~278.17mm	398.03~401.08mm
AURORA 8 PRO	P:30%, S:100mm/s, PW:100ns		
Focus length range	220.56~222.64mm	273.84~276.56mm	395.52~397.1mm



Pic1



Pic2

● How to adjust the focus length

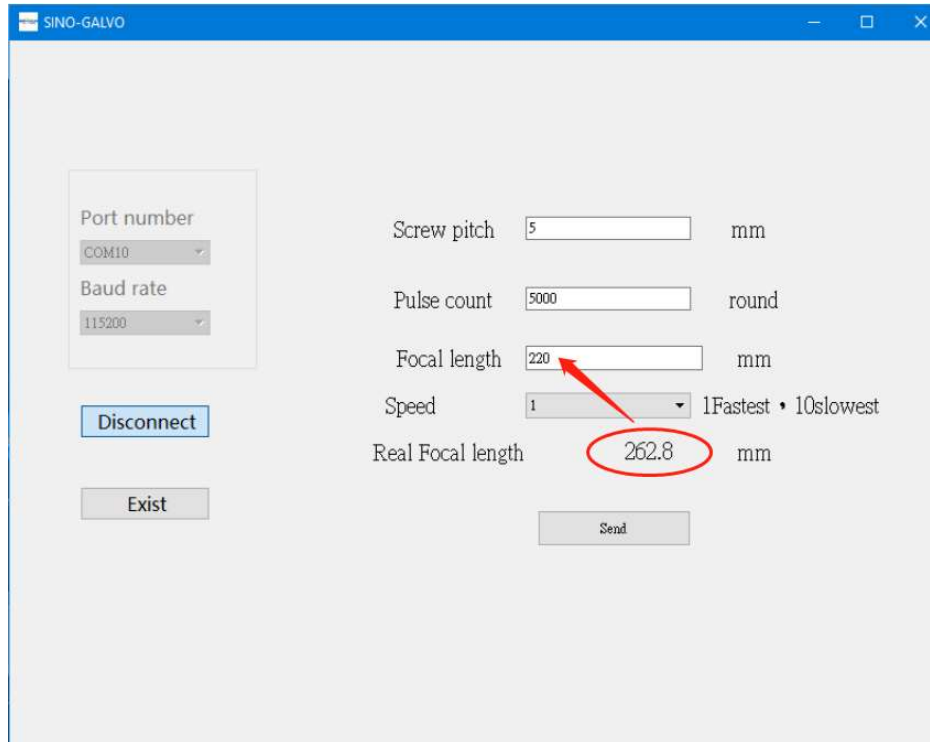
1. Install the USB driver first, and set the Screw pitch, Pulse count and Speed according to the steps in the next part: **How to set the focus length of Auto-focus.**

2. Open the marking software, place a piece of metal material on the working platform, draw a 10*10mm square in the software, set the marking parameters. It is recommended to set the speed to 100mm/s and the power to 30%. Low-speed marking makes it easier to observe changes in focal length. Click on the red light, align the material, and click on the mark. During the marking process, press the up or down button of the marking machine to observe the beam. When the beam is at its brightest, the focus length is optimum. At the same time, it can be observed that the actual focal length column in the auto-focus adjustment software is constantly changing. Please record the actual focal length when the beam is at its brightest. About how to use the Fiber laser, you can refer to **Chapter 6.**

And the table below is for reference. You can input them in auto-focus software or adjust based on them.

	F-160	F-210	F-290
AURORA 8	P:30%, S:100mm/s,		
Focus length range	218.14~219.52mm	274.71~278.17mm	398.03~401.08mm
AURORA 8 PRO	P:30%, S:100mm/s, PW:100ns		
Focus length range	220.56~222.64mm	273.84~276.56mm	395.52~397.1mm

3. Input the recorded real focal length value into the input box of setting focal length, click “send” again, the software will return to the successful setting, the parameters will be stored by the software, and the system will automatically move to this position by clicking the auto-focus button again.



6.2 TL-tool



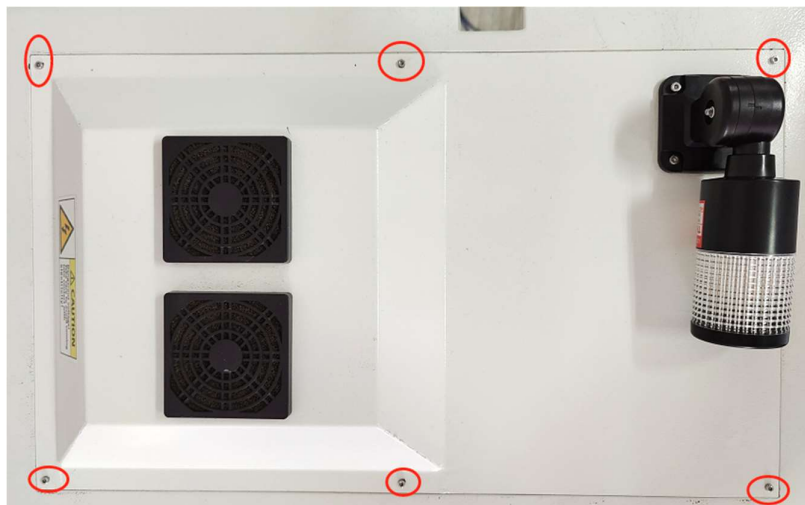
For AURORA 8 PRO Only!

- **How to set the focus length of Auto-focus**

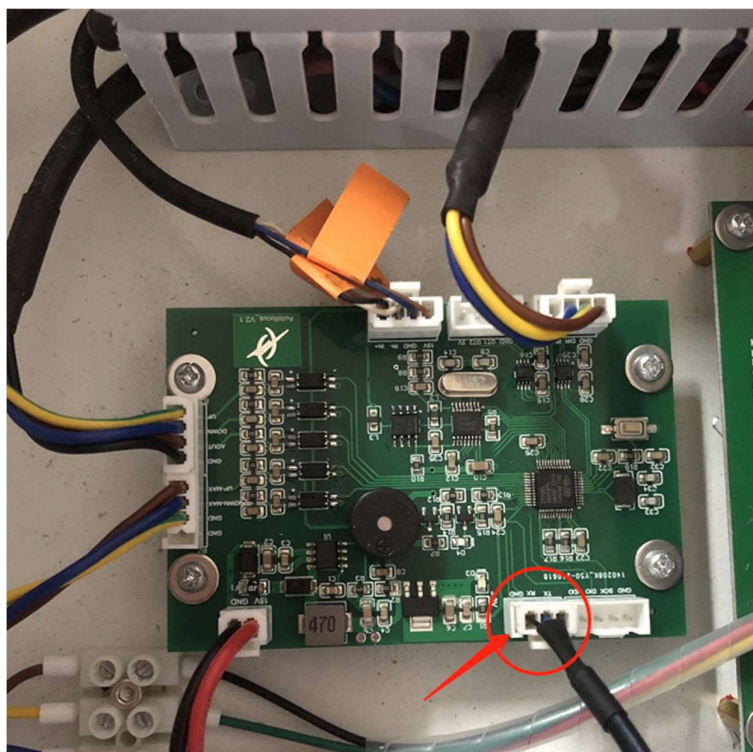
1. Find the USB cable of Auto-focus board that came with the Fiber machine.



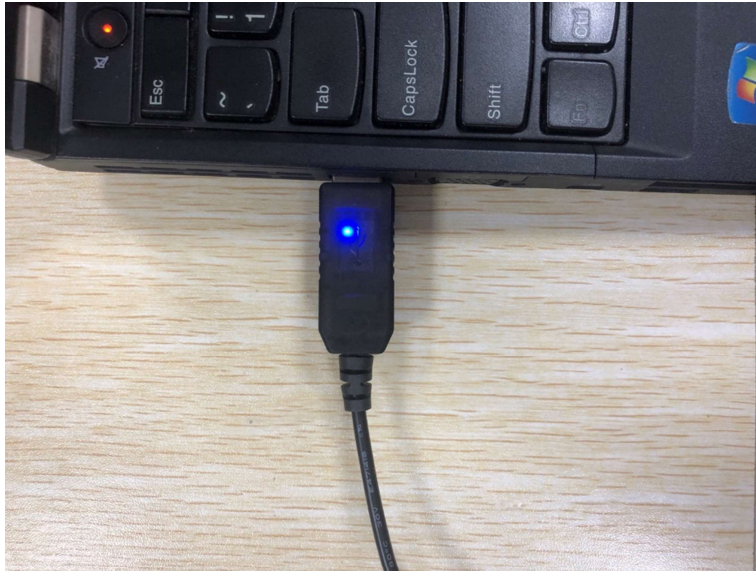
2. Loosen the 6 fixing screws of the top cover of the fixed marking machine (please keep the screws), move the top cover to the right until you can see the auto focus plate. Then connect the USB cable to the auto focus plate interface, the other end connected to the computer end.



Pic1



Pic2



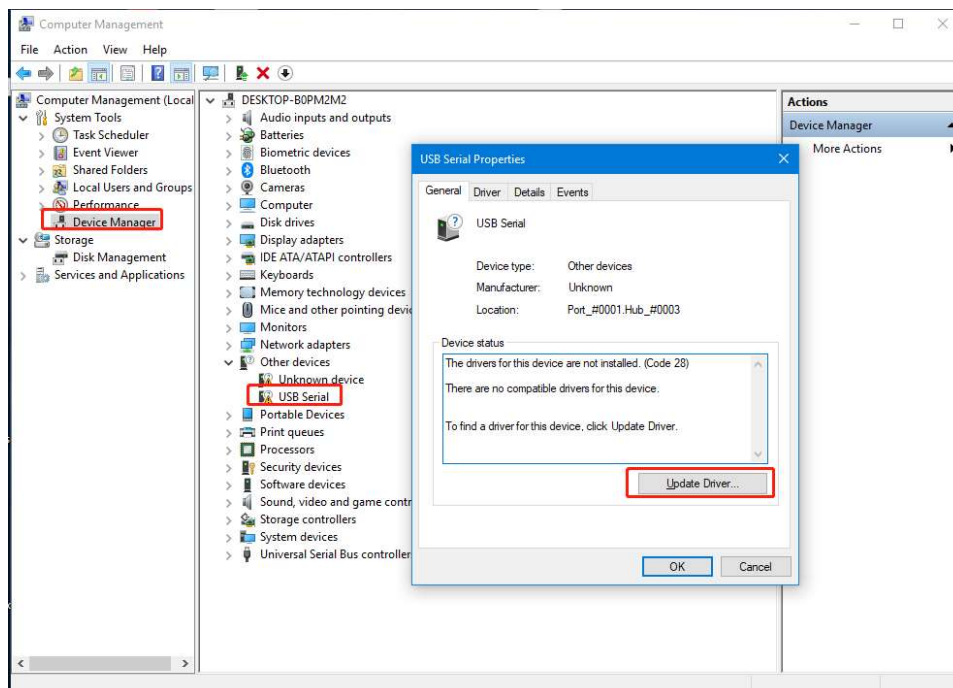
Pic3

3. Install USB driver: Right click "computer">>Management>>device manager>>Other devices>>USB Serial>>Update Driver>>Browse my computer to driver software>>Find the Driver folder that came with the machine CD340G-USB-Drive>>Next>>Install successfully.

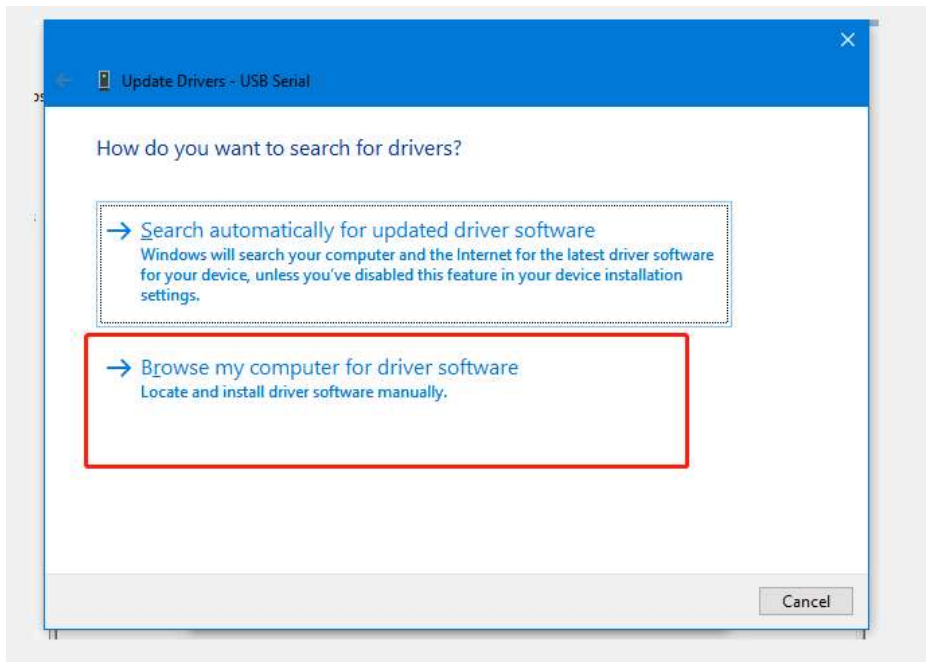
Find the corresponding COM of the USB, and remember it.



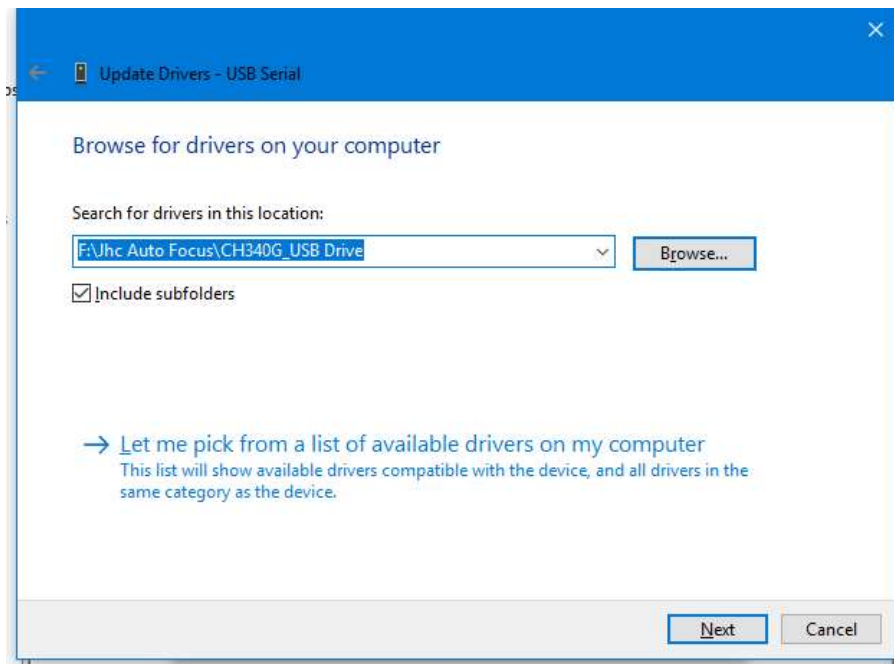
The auto-focus software driver folder is in the U-disk that came with the Fiber machine.



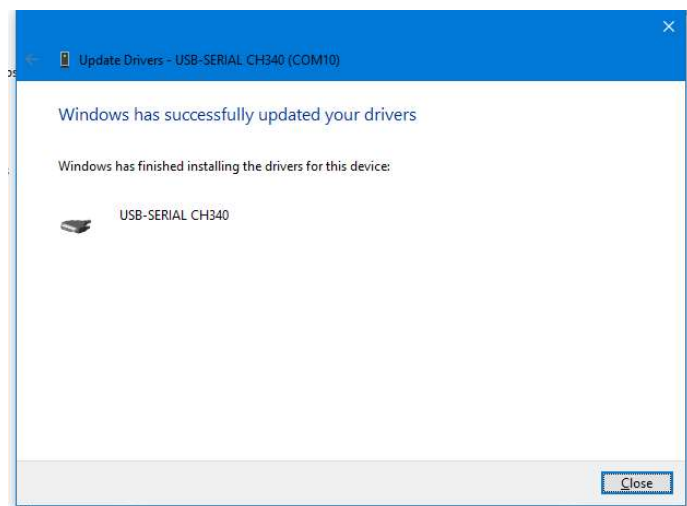
Pic1



Pic2



Pic3

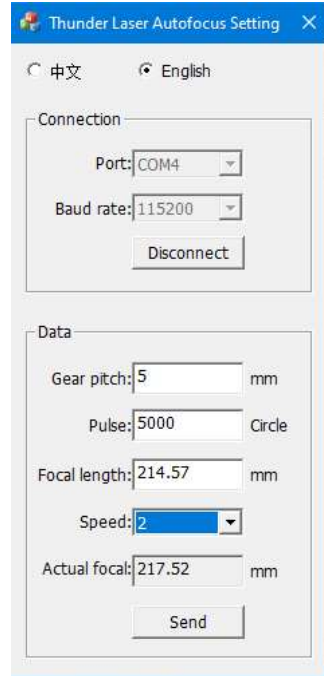


Pic4

4. Choose correct COM port and click connect, then set the screw pitch as 5, Pulse count as 5000. Speed as 2(divided into 9 gears, 1 fastest, 9 slowest, 1-9 speed decreasing), then click “Send”, the window of “successfully set” will be presented. And input the focal length according to the reference form.

Focal Length for different lens (for reference only)

	F-160	F-210	F-290
20&50WATT	P:30%, S:100mm/s,		
Focus length range	218—219.5 mm	274.7—278.2 mm	398—401.2mm
20 WATT(MOPA)	P:30%, S:100mm/s, PW:100ns		
Focus length range	218—219.5 mm	274.7—278.2 mm	398—401.2mm



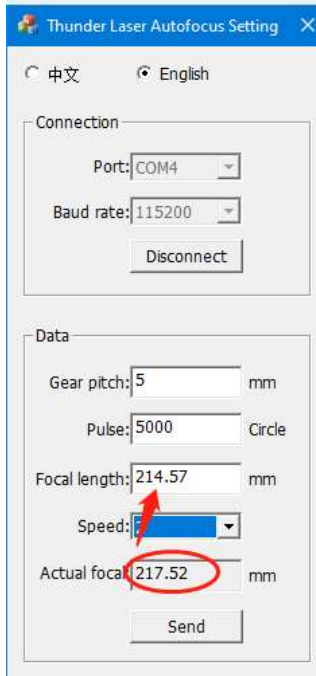
● How to adjust the focus length

1. Install the USB driver first, and set the Screw pitch, Pulse count and Speed according to the steps in the last part **How to set the focus length**.
2. Open the marking software, place a piece of metal material on the working platform, draw a 10*10mm square in the software, set the marking parameters. It is recommended to set the speed to 100mm/s and the power to 30%. Low-speed marking makes it easier to observe changes in focal length. Click on the red light, align the material, and click on the mark. During the marking process, press the up or down button of the marking machine to observe the beam. When the beam is at its brightest, the focus length is optimum. At the same time, it can be observed that the actual focal length column in the auto-focus adjustment software is constantly changing. Please record the actual focal length when the beam is at its brightest. About how to use the Fiber laser, you can refer to **Chapter 6**.

And the table below is for reference. You can input them in auto-focus software or adjust based on them.

	F-160	F-210	F-290
20&50WATT	P:30%, S:100mm/s,		
Focus length range	218—219.5 mm	274.7—278.2 mm	398—401.2mm
20 WATT(MOPA)	P:30%, S:100mm/s, PW:100ns		
Focus length range	218—219.5 mm	274.7—278.2 mm	398—401.2mm

3. Input the recorded real focal length value into the input box of setting focal length, click "send" again, the software will return to the successful setting, the parameters will be stored by the software, and the system will automatically move to this position by clicking the auto-focus button again.



Chapter 7 The First Time to Run the Fiber Laser



For your safety, never ever run the laser system unattended.

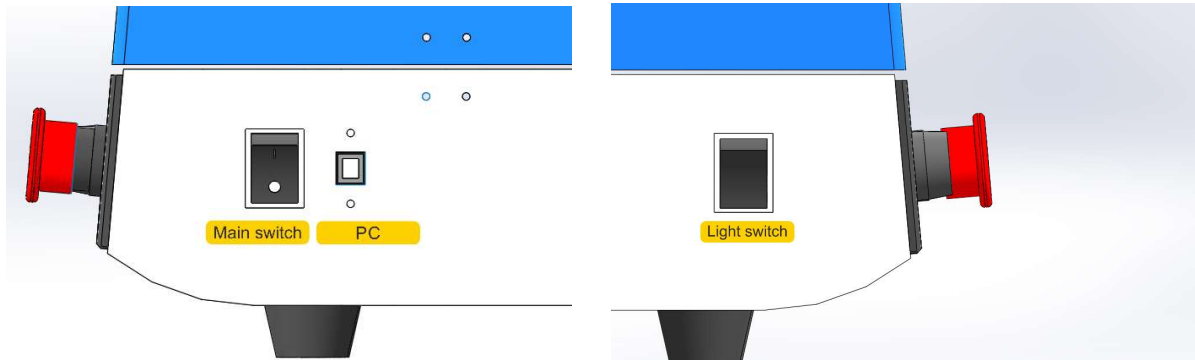


According to international standard, "O" means close ; "I" means open for the rocker switch below.

Your first marking test (take AURORA 8 PRO, MOPA 20W, Lens F-290 as an example)

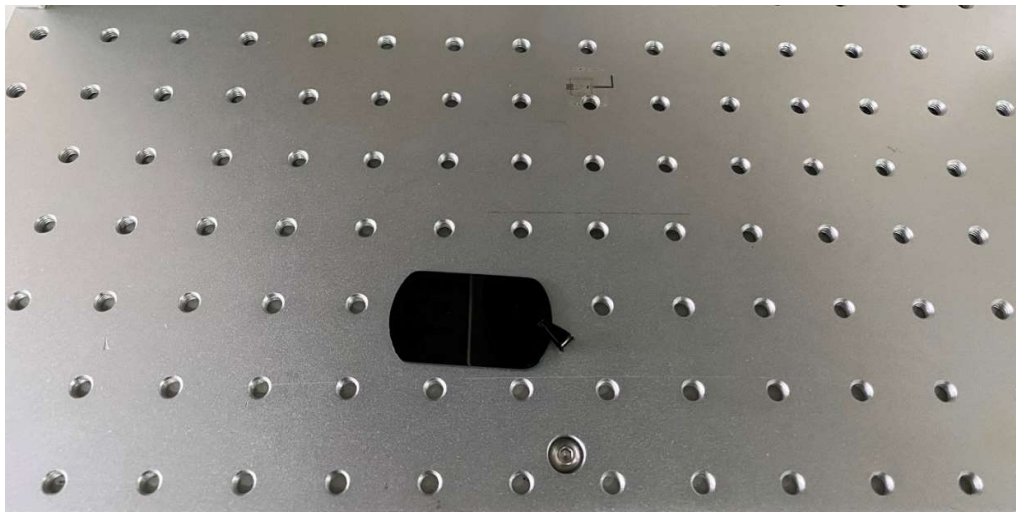
The following steps describe how to successfully engrave a pattern for the first time. Please follow the steps:

1. First ensure that the exhaust fan, computer and all mains are connected.
2. Turn on the "Main" switch and "Light" switch.



The Main switch is on the right side of the Fiber laser, and the Light switch is on the left side of the fiber laser.

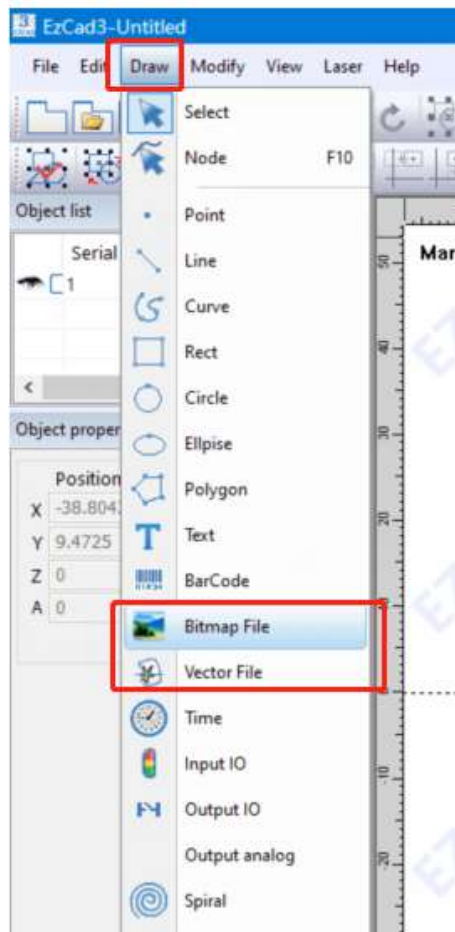
3. Place the material on the working platform.



4. Open the software EzCad3, then install driver and import the calibration file according to **Chapter**

5.2.3.

5. Import your file to EzCad3



This software supports these file types.

Vector Files

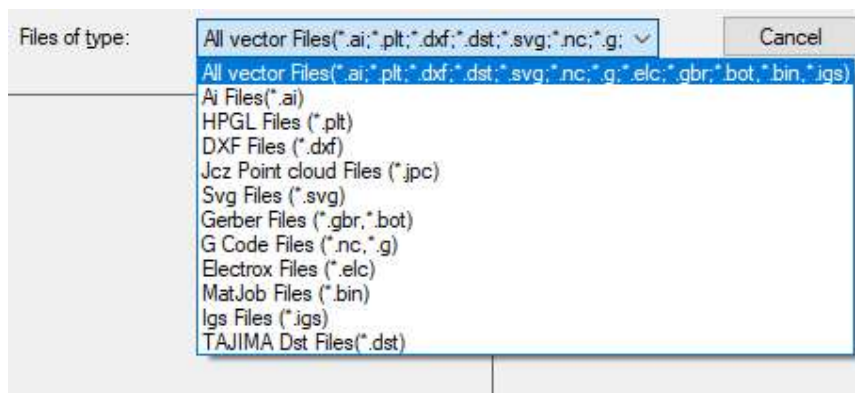
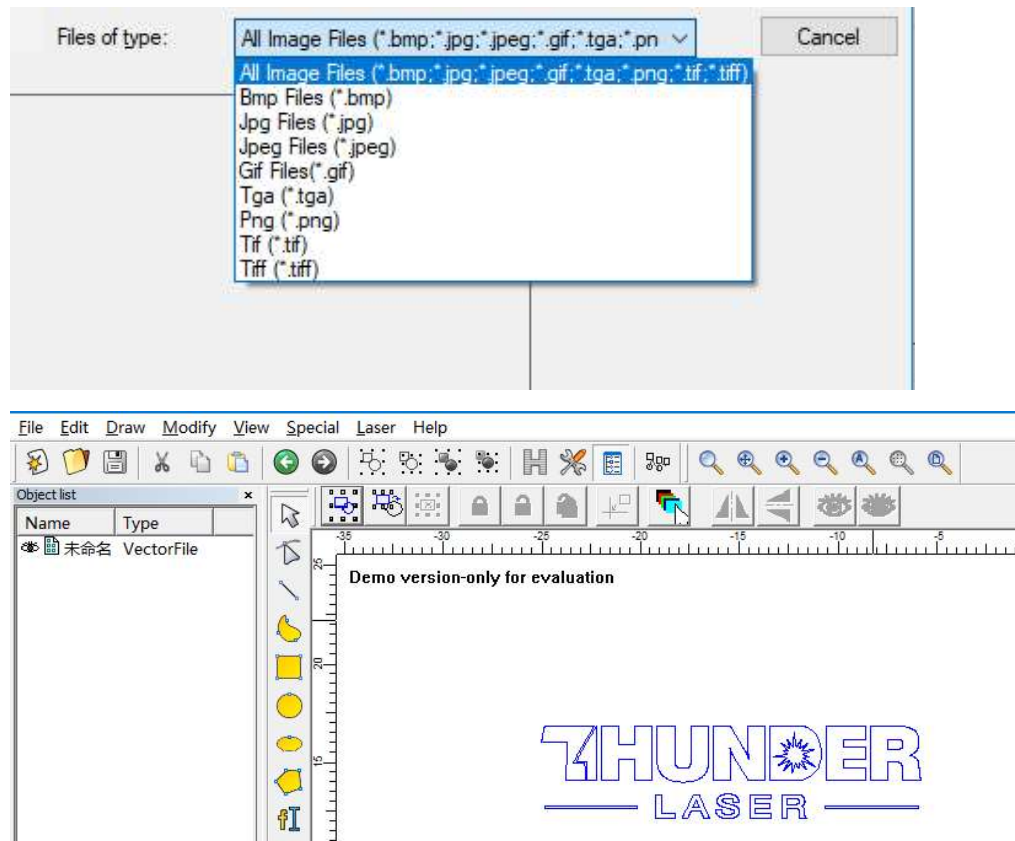
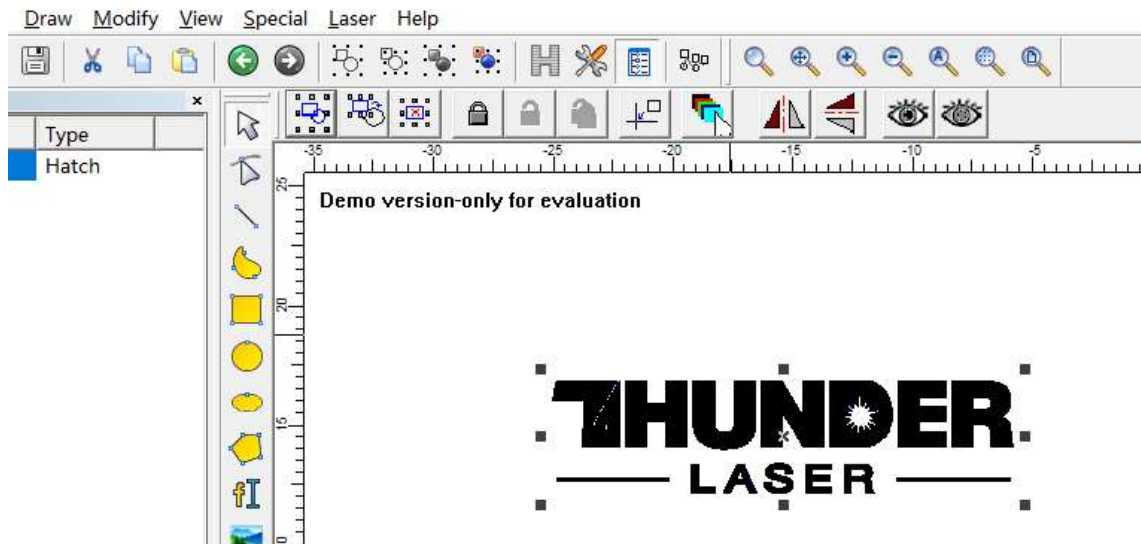
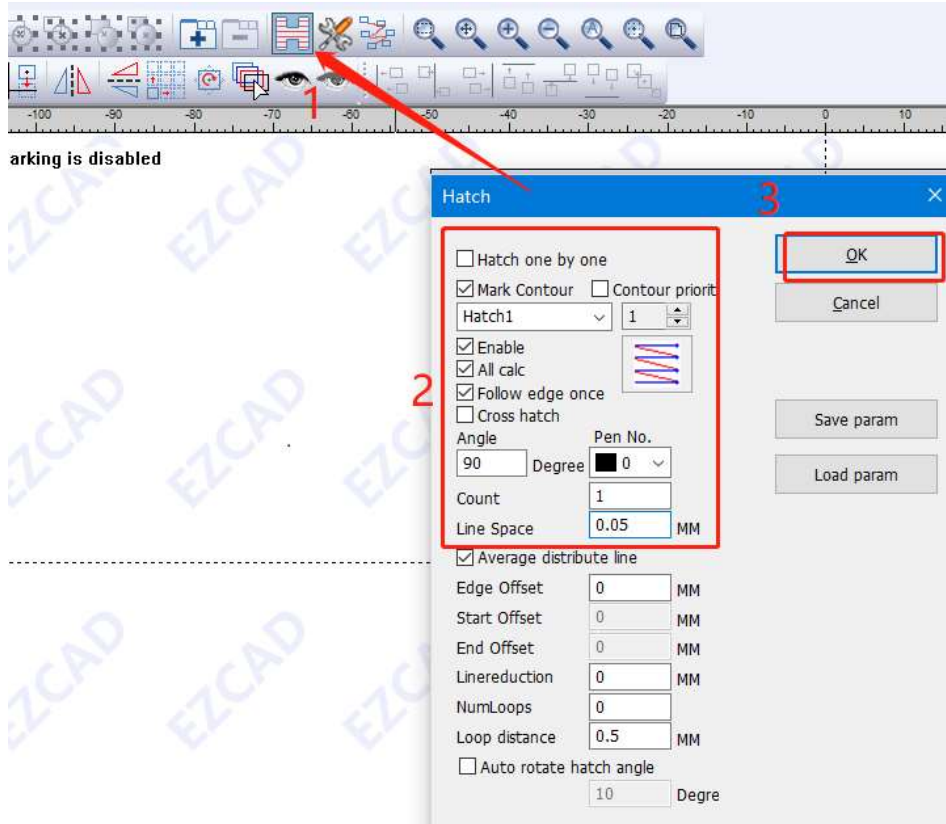


Image Files



6. Press "Hatch", choose Hatch1(or you can choose the others as you need), set the Line space as 0.05mm (we recommend the range of 0.01-0.1mm), then press "OK".



7. Set the marking parameters for your file. Adjust parameters as needed (you need to unselect “use the default para” for changing the parameters).

Set the Loop Count to 1, Speed to 1800mm/s, Power to 50%, and Frequency to 300KHz, Pulse width to 200ns.

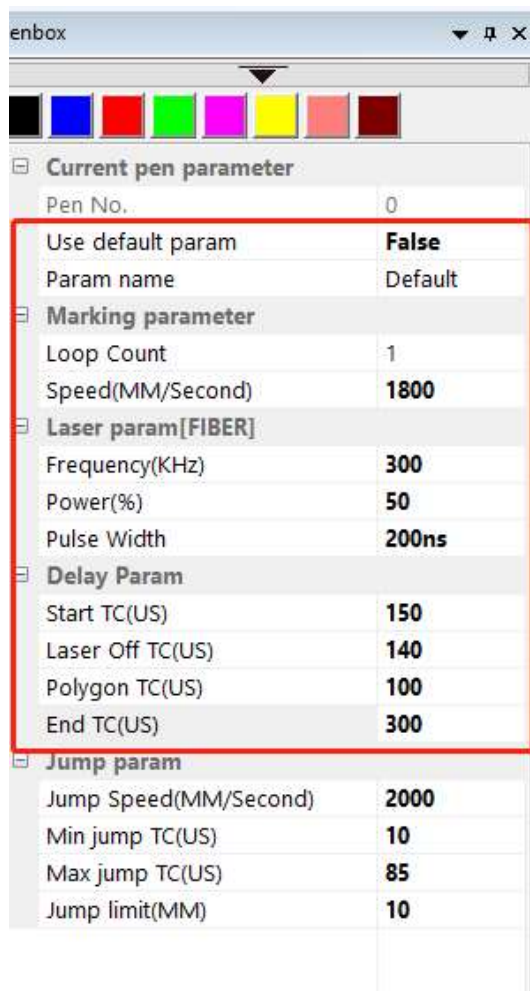
Start TC(US) to 150, Laser Off TC(US) to 140, End TC(US) to 300, Polygon TC(US) to 100.

Other settings needn't to change.

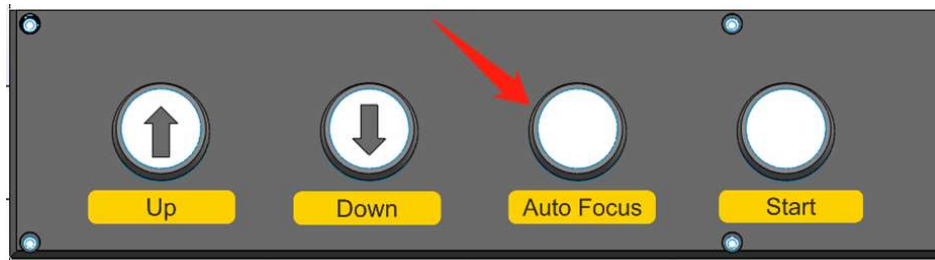
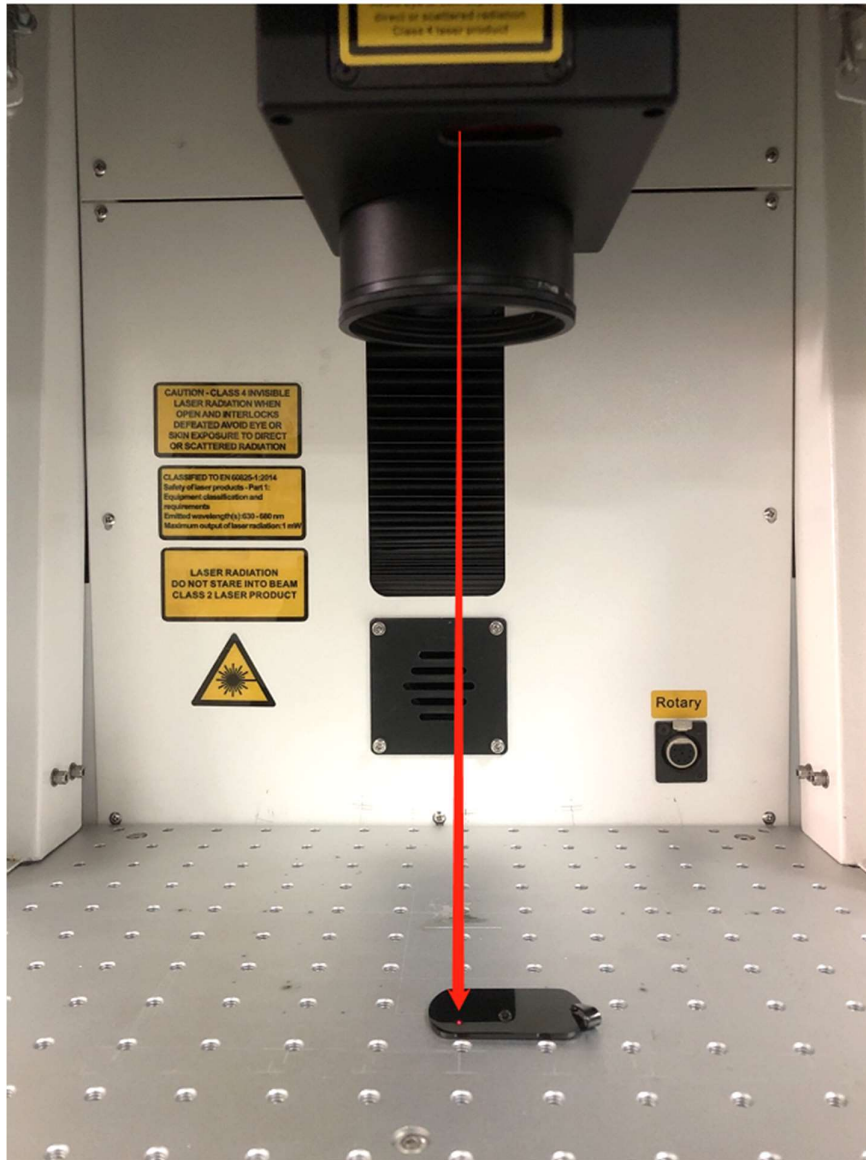


For different watts, the frequency range is different, please refer to the table below.

Laser Fiber	20W	50W	
Laser MOPA			20W
Frequency	30-60kHz	50-100kHz	1-4000kHz



8. You can see a red dot on the work area, which comes from the galvanometer. So please put your material under the red dot, then press the “Auto focus” button. The galvanometer will adjust the focus distance automatically, which will last for 2-3 seconds. After hearing a beep (from the indicates light), the focus distance adjustment is complete.





If the beep continues after you press the auto focus button, please view the info below.

Here is a ranging sensor inside the galvanometer, the range we set is 200mm-600mm (the distance between the ranging sensor and object), if the distance is lower than 200mm or higher than 600mm, the buzzer inside the sensor will beep. You need to UP/DOWN the field lens manually, after you adjust to correct range, stop to press UP/DOWN button, then the beep will stop. Then you can use the auto focus again. The picture below is the ranging sensor.



9. Press Key F1 or Red(F1) in software, then fiber will virtually mark out the size of your file. Adjust the position of your material according to the red area. See pictures below.





10. Close the door and press Key F2 or Mark(F2) in software. Or press “start” button to mark.



1. The controller can record the last file, if you want to run a file twice or more, you can just press “Start” button of the fiber machine.

2. You can start to mark with “Start” button also.

11. The fiber laser will mark your image.



Chapter 8 Maintenance

8.1 General Maintenance



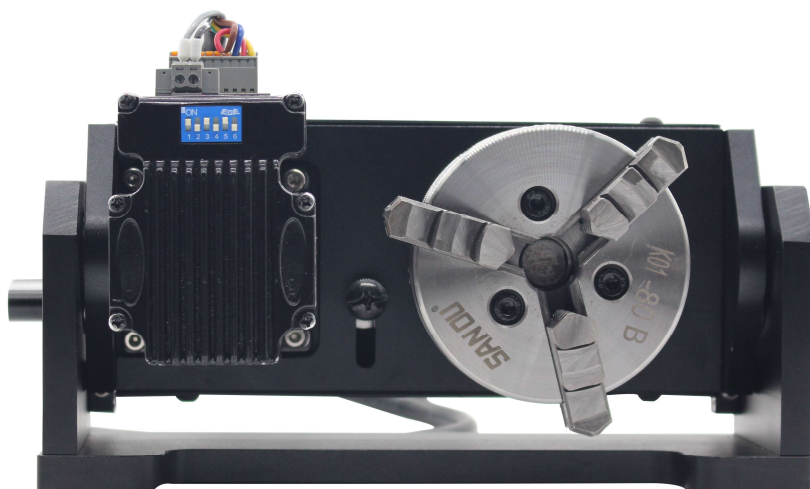
Caution-Before any maintenance efforts takes place, ensure that the power supply has been cut off and the system is powered off.

All maintenance efforts must be carried out according to the safety regulations.

In order to ensure the maximum availability and lifespan of the system, we recommend that you regularly check the ventilation and keep the surrounding area clean.

- **Lubricating the rotary**

It is suggested to add lubricant oil (or Rust Preventative Grease) to the chuck at least every two weeks.



8.2 Clean the Field lens

This system is equipped with high-quality optical components, which, under normal operating conditions, are free for maintenance within their lifespan. However, it may be necessary to clean output lenses, e.g. the scanner flat field lens (f-theta objective) needs cleaning if it is covered in dust or fumes.

1. Never touch the optical components with your fingers! Oily or dirty hands may damage the surfaces of lens.
2. Do not use any tools or hard objects to clean the surfaces. Scratches cannot be repaired.
3. Blow away large pieces of dirt by blowing up a balloon.



4. Spray the cleaning solution onto the Q-tip, and remove the remaining stains with it.



5. Distribute the cleaning fluid carefully by small circular motions. Start with the center of the lens and move outwards to the edge. Keep moving the Q-tip until the entire surface is clean.
6. Clean it again with a new clean and dry cotton swab.
7. Make sure that no water or stains remain on the surface of the lens after cleaning.
8. Do not wipe the lens with a dry cloth. Do not touch the reverse side of the cloth.
9. Do not exert any pressure on the lens.
10. Clean once half a year (depended on the usage).

The End.