Sign-in-Global

CALCA®

LASER MARKING MACHINE

MOPA SERIES FIBER LASER USER MANUAL

Please read this manual carefully before operation

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Disclaimer and Responsibility Statement

Whole using the machine from our company, users are required to ensure integrity and independence of the product including but not limited to: Mechanical, electrical, optical, control software and accessories. Unauthorized modification is strictly prohibited. It is a must to satisfy operating environment and operating specifications specified in the owner's manual. For the followings:

> Machine modified with no authorization (Including but not limited to: add, remove, modify, unauthorized disassembly, replacing parts).
> Use the machine in the environment failing to satisfy the operating requirements.
> Operate disobeying the specifications of our company.
> Unauthorized use the machine parts, accessories and auxiliaries on to other machine or in other places.
> Viciously disassemble, destroy, decode hardware and software of the machine from our company.

Our company shall not undertake any direct, indirect or joint responsibility. Our company reserves the rights to ascertain legal responsibility for the serious consequences or economic losses or reputation losses caused by what mentioned above.

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Foreword

Thanks for purchasing the fiber laser marking machine control system of our company.
Before operating, please read this manual carefully to ensure proper operation.
Please keep the manual properly for reference.
Since the configuration is different, certain models do not have the functions listed in this manual. Please refer to the specific functions for details.
Due to the constantly tech-update, the specification for reference only, subject to the real specs at purchase.

Tags in this book:

 Alarm	Special Attention: User must follow and perform as the manual. Otherwise, it could lead to errors or relatively serious problem.

 Note	Note: User should comply with the attention and suggestion in this manual. It could bring much easier operation.

Safety Precautions

 Attention	☑ Before using the machine, users are required to carefully read this manual and other operating requirements, strictly abide by the operating specifications. Professional are required for operating the machine.
 Attention	☑ The machine uses class 4 laser (strong laser radiation). The laser radiation may possibly cause the following accidents: 1. Emblaze the surrounded flammable materials; 2. Enerate other radiations and toxic or hazardous gas by processed objects during laser processing; 3. Direct irradiation of laser radiation cause harm to human body. Therefore, firefighting devices are required in the operating place of the machine. Stacking flammable or explosive objects near the machine is strictly prohibited. Good ventilation is a must. Only the qualified personnel are authorized to approach the machine.
 Attention	☑ The processed objects and discharged materials are required to satisfy requirements as per local laws and regulations.
 Attention	☑ Laser processing is with potential risks. Users should carefully make sure if the processed objects are suitable for laser processing. ☑ There is high voltage and potential risk in the laser machine. Unauthorized disassembly by unqualified personnel is prohibited. ☑ Reliable earthing is required for the machine and related another machine before power-on. ☑ During operating, removing any cover of the machine is strictly prohibited. ☑ During operating, the operators are required to observe working status of the machine all the time. In case of any abnormality, it is immediately to disconnect power supply and take active and corresponding measures. ☑ After power-on, special personnel are required for monitoring. Unauthorized leaving is strictly prohibited. ☑ It is a must to disconnect the power supply before leaving.
 Attention	☑ It is strictly prohibited to placing any unrelated all-reflective or diffusion reflective objects in the machine to prevent laser reflecting to human body or flammable materials.
 Attention	☑ The environment for the machine should be dry, free of interference and influences from pollution, vibration, high voltage and strong magnet. The operating environment temperature ranges 10-35˚C, and the humidity ranges 5-85% (no dew); ☑ The machine should be far from electric appliances sensitive to electromagnetic interference; ☑ Operating voltage: 110V, 60Hz / AC220V, 50Hz. Power-on is strictly prohibited in case of unstable voltage of the power grid or unspecified voltage.
 Attention	☑ Chapter two of this manual is for Safety Rules. Please refer to the chapter more details concerning safe operation of the machine. Users are required to carefully read and abide by all the requirements of safety.

CONTENT

Chapter1. Equipment Overview

Equipped with sophisticated fiber laser generator, LMM-DR-M Series laser marking machine, composed of marking system, work platform and chassis, is a broad-applied laser marking device with good quality of portability. BJJCZ control software is adopted in this model to achieve multiple-dimension-marking within limited range.

Description of equipment model:

LMM-DR-XX-M

Equipment series:	**Laser power:**	**Auxiliary model:**	**Series code:**
MF: Fiber laser marking machine	100: 100W 60: 100W 30: 100W 20: 100W	description: MOPA P: Function Code: Split	description: S: Series Code: Series E2M7

1.1 Equipment Components

Due to different machine models and product update, some models may have different appearances and details. The actual product shall prevail.

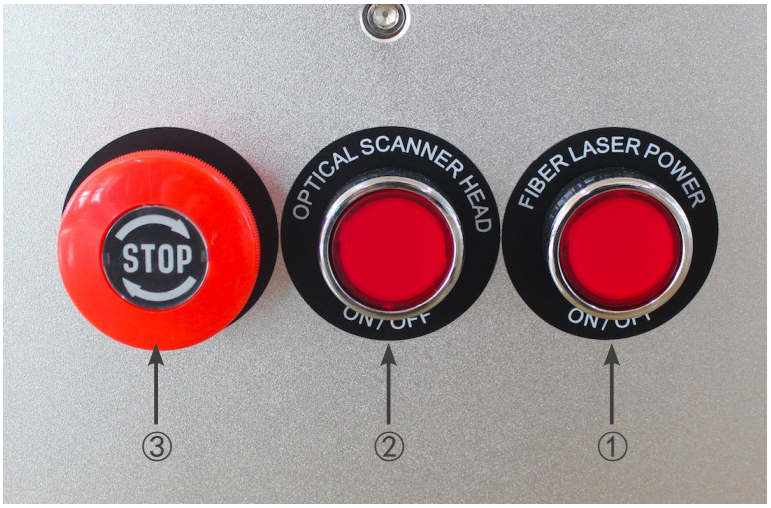
1.1.1 Overall Components

The front view of the machine is as shown in Fig. 1-1

① Z Axis Column Handle
② Optical Scanner Galvanometer
③ Lens
④ Z Axis Column
⑤ Plate Form
⑥ Control Button
⑦ Stop Switch

Fig.1-1 Front View

The operation panel is as shown in Fig. 1-2 Control Buttons

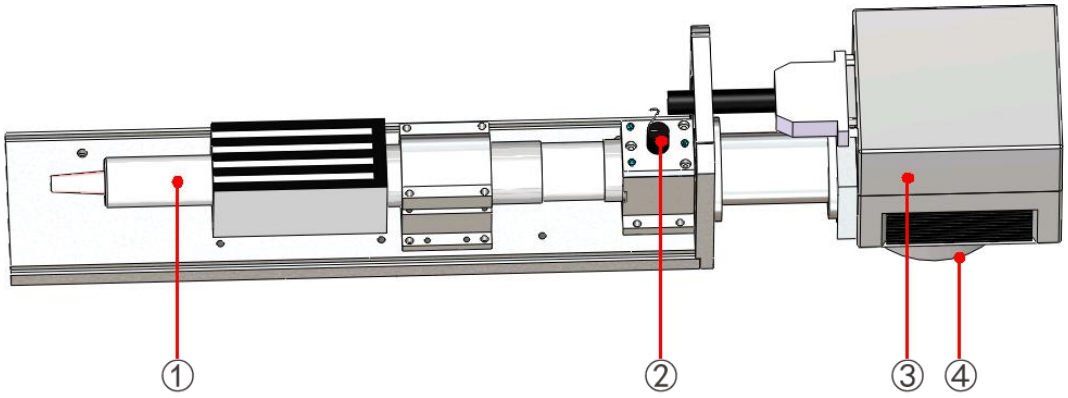


① ON/OFF Fiber Laser Power
② ON/OFF Optical Scanner Head
③ Stop Switch

The rear view of the machine is as shown in Fig.1-3 Rear View, Position of Line Guide Holes

1.1.2 Optical system composition

The optical structure is shown in Figure 1-4:



① Laser ② Red Light Punctuation ③ Scanner Mirror ④ Focus Lens

Fig.1-4 Optical Mechanism of the Laser Fiber Marking Machine

1.2 Equipment Parameters

The equipment parameters are vary due to the model and configuration. The actual product nameplate and attached factory parameters shall prevail. The nameplate is usually on the back or the left side of the machine. Below is the nameplate of LMM-DR-M Series:

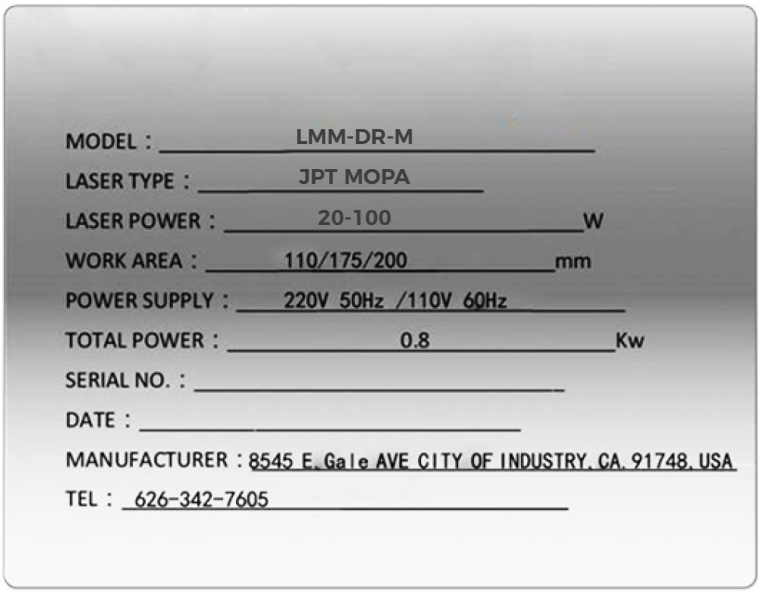


Fig.1-5 Machine Nameplate

The machine parameters on the nameplate are as follows:

Type: Machine type;

Type of Laser: Fiber laser;

Laser Power: Rated power of the laser generator;

Working Area: Processing surface of the equipment,

Power Supply: The total input power supply of the equipment, voltage standards of different countries are not consistent. The main voltage is 220V/110V, 50Hz/60Hz;

Total Power: The rated power when the equipment works;

Serial Number: The unique number of each machine;

Production Date: The production date of the machine.

1.3 Product Configuration

Laser MLaser Modelodel	LMM-DR-20W-M	LMM-DR-30W-M	LMM-DR-60W-M	LMM-DR-100W-M
Output Power	20W	30W	60w	100W
Laser Type	JPT MOPA Fiber	JPT MOPA Fiber	JPT MOPA Fiber	JPT MOPA Fiber
Laser Model	JPT 20-M7	JPT 30-M7	JPT 60-M7	JPT 100-M7
Frequency Ajustable Range	1-4000khz	1-4000khz	1-4000khz	1-4000khz
Working Area	4.3"x4.3"	5.9"x5.9"	7.9"x7.9	7.9"x7.9
Field Lens Dimension	110mm x 110mm	150mm x 150mm	200mm x 200mm	200mm x 200mm
Wavelength	1064nm	1064nm	1064nm	1064nm
Marking Speed	0- 10000mm/s	0- 10000mm/s	0- 10000mm/s	0- 10000mm/s
Accuracy	0.01mm	0.01mm	0.01mm	0.01mm
Pulse Duration	2 ~ 350ns	2 ~ 350ns	2~500ns	2~500ns
Graphic Format Supported	BMP, GIF, JPG, JPEG, DXF, DST, Al.etc	BMP, GIF, JPG, JPEG, DXF, DST, Al.etc	BMP, GIF, JPG, JPEG, DXF, DST, Al.etc	BMP, GIF, JPG, JPEG, DXF, DST, Al.etc
System Supported	Window xp/7/8/10/11	Window xp/7/8/10/11	Window xp/7/8/10/11	Window xp/7/8/10/11
Voltage	110/220V	110/220V	110/220V	110/220V
Compatible Materials	all kinds of metal including Stainless Steel, Aluminum, Gold, Silver, Alloy ,Ceramic,Marble, Leather,Plastics etc.	all kinds of metal including Stainless Steel, Aluminum, Gold, Silver, Alloy ,Ceramic,Marble, Leather,Plastics etc.	all kinds of metal including Stainless Steel, Aluminum, Gold, Silver, Alloy ,Ceramic,Marble, Leather,Plastics etc.	all kinds of metal including Stainless Steel, Aluminum, Gold, Silver, Alloy ,Ceramic,Marble, Leather,Plastics etc.
Color Engraving	YES	YES	YES	NO
Expected Service Life (MTTF)	100,000 hr.	100,000 hr.	100,000 hr.	100,000 hr.
Dimensions	70cm x 20cm x 50cm (28in x 8in x 19.7in)	70cm x 20cm x 50cm (28in x 8in x 19.7in)	70cm x 20cm x 50cm (28in x 8in x 19.7in)	70cm x 20cm x 50cm (28in x 8in x 19.7in)
Net Weight	35kg (77lbs)	35kg (77lbs)	40kg (88lbs)	45kg (99lbs)

Table 1-1 Configuration Table

Name	Origin (brand)	Remarks
Optical Laser	JPT	Long service life, high reliability, fine beam quality
Galvo Mirror	Galvo-tech (digital)	Fine marking, more quick and high reliability
F-θ Lens	JGZOE	High quality optical device
Board	bjjcz	2.12.0 version
Marking Software	BJJCZ Marking Software (Ezcad software)	Powerful, simple and easy operation, Auto-cad, CorelDraw, AI8.0, Photoshop software compatible.
Optical fiber special cabinet, all the mold production, high seal		

1.4 Operating Environment

Humidity: 5%-85%; (non-condensing), if it is too humid, the dehumidifier should be installed.

Temperature: 10-35˚C (please install the air-conditioner if it is too hot.)

Power supply: AC220V/110V; 50Hz/60Hz

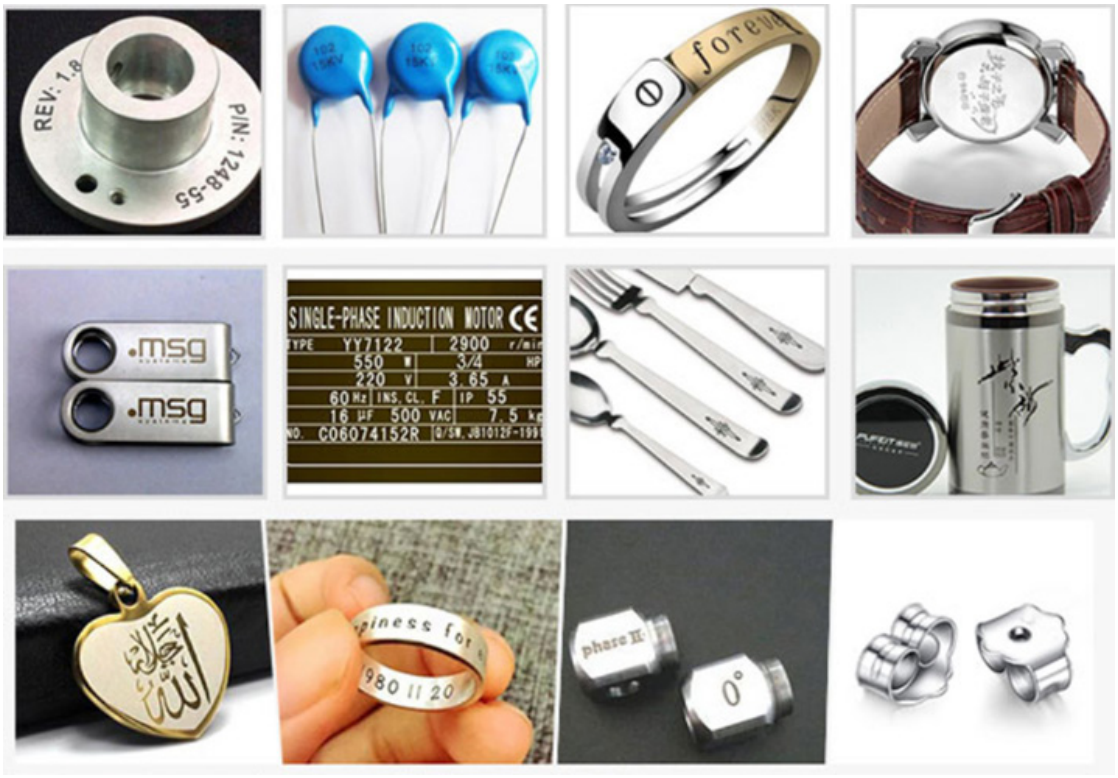
Grid power fluctuations: ±5%, grid reference to international standard; voltage fluctuation amplitude is higher than 5% should install automatic stable equipment such as digital voltage regulator.

Equipment environment should be dry, smokeless, no dust, and no strong magnetic field interference.

1.5 Applicable Industries & Materials

This equipment is widely used in food and beverage, pharmaceutical, tobacco, leather, packaging, building materials, lighting, jewelry, cosmetics, mobile phone shell, kitchen and bath hardware, clock and watch shells, medical equipment, tools and accessories, electronic components, auto parts, lighting and other industries; Low energy consumption, non-toxic, non-pollution.

Applicable Materials: Plastic, pig iron, stainless steel, sterling, gold, aluminum magnesium alloy, zinc alloy, copper, nickel plating, galvanization, aluminum oxide, etc.



Fiber Marking Material Gallery

Aluminum



Black Oxide



Brass



Stainless Steel



Chapter 2. Safety Rules

This chapter mainly introduces safety warnings for protecting personnel and the machine, and makes an introduction to signs used in the owner's manual. The machine is already equipped with sufficient safety guarantee, yet it is still with certain risk. All the operators are required to carefully read through and well understand the safety rules.

2.1 Warning and signs

 Alarm	◆ May possibly cause serious harm to human body or danger to life and property
 Note	◆ What the operator and maintenance personnel should pay attention to.

2.2 Product safety

The following conditions are required to be satisfied to ensure safe work:

Abide by operation manual and instruction signs;

> Operators and maintenance personnel have received training held by machine manufacture;
> In case of operation by couples of person at the same time, division of responsibility should be made and followed;
> No admission to the working area for the unauthorized personnel;
> Avoid any working method breaking the safety rules;
> Timely eliminate all the failures possibly causing lower safety coefficient;
> Abide by maintenance regulations of the machine.

2.3 Safe equipment

Safety equipments are used for protecting personnel, and unauthorized disassembly, bridge-group or by-pass connection are strictly prohibited; in case of failure with the safety machine, professional are required for repair. If part replacement is needed,

the product with same model, specification and from the same manufacture is required; otherwise, written consent from the manufacturer is required.

2.4 Safety awareness

The machine can be operated only by trained and/or authorized. Improper use or operation may possibly be very dangerous and cause damage to the machine. Therefore, the followings are strictly prohibited:

> Placing heavy objects or stepping on the working table of the machine;
> Used for processing the materials unapproved by manufacturer;
> Staying of unauthorized personnel in the dangerous area (It is the responsibility of operators to ensure keeping unauthorized personnel away from the working area.).

2.5 Requirements for personnel

After trail operation, maintenance personnel from the manufacturer may perform training on the operators.

It is the responsibility of machine owner to have operators trained at corresponding level.

We have prepared ready a series of training course for your option. Please make phone call to our **Customer Training Center** for details.

2.5.1 Definition of terms

All the personnel using or operating the machine are called User in the manual; Different requirements are for different users. Users are classified into the followings:

- **Owner**

  Owner means the authorized person or representative to sign contract with the manufacturer. With authorization, the owner has rights to sign the agreement with binding force of law.

- **Operator**

  Operator means the personnel trained for operating the machine. Training of the operator includes participation of training held by the manufacturer.

- **Maintenance personnel**

  Maintenance personnel mean the technicians having received formal training for machine and electric engineering. The maintenance personnel are responsible for

daily maintenance of the machine, and repair at low level if needed. Training on the maintenance personnel contains participation training held by manufacturer.

2.5.2 Qualifications

The operator is required to accept guidance and training of the owner, and the operator is responsible for the safety of a third party in the working area; the personnel required for further training and guidance are required work or operate the machine under supervision of the operators.

2.5.3 Responsibility

It is a must to clarify the related responsibilities of each performance (operation, maintenance, parameter setting), and carry it out. Unclarified responsibilities will cause hidden safety risks.

Owner is required to provide operation manual for the operators and maintenance personnel, and ensure that they have read and understood the operation manual.

2.5.4 Personal protective devices

When technology or measures fail to absolutely avoid risk of health, the owner is required to provide personal protective devices for operator and maintenance personnel. For example,

> Protective gloves;
> Laser-proof goggle;
> Light respirator

 Note	◆ Personal protective devices shall not be provided together with the laser marking machine.

2.6 Special product risks

2.6.1 Laser radiation risk

Based on level of potential risk of laser radiation, the China national standard GB 7247.1-2001 makes classification for them. Laser class applicable for this laser marking machine depends on operation mode. The followings are abstract of laser

device classification prescribed by the state:

Class 1: safe laser device under reasonable and foreseeable working conditions

Class 2: laser device is emitting visible light at wave length of 1064nm. Generally, avoidance response including blink reflection provides protection.

Class 3A: safe laser light visible to naked eyes. Generally, avoidance response including blink reflection provides protection. Harm to naked eyes of other wave lengths will be less Class 1 laser device. Class 3A light beam internal observation with optical device (e.g. glasses, telescope, and microscope) may be dangerous.

Class 3B: dangerous laser device is to directly and internally see light beam. Generally, observation of diffuse reflection is safe.

Class 4: laser device with diffuse reflection causes danger. They may possibly cause skin burn, or fire accident. Great care is required to use this kind of laser device.

2.6.2 Common mode

In the normal operating mode, the laser marking cutting machine equals to Class 4 laser radiation. In this operating mode, there will harm of laser radiation to eyes and skin; you are required to wear goggles with antiglare filter.

 Note	◆ Common working mode must ensure: ◆ Correct operation of the laser marking machine ◆ Materials should be verified to be suitable to be processed by fiber laser.

2.6.2.1 Direct laser

You are required to pay attention to the followings while operating the laser machine:

> It is strictly prohibited to directly expose any parts of human body, explosive object and flammable objects to direct laser;
> Modification of fasteners on the optical parts is strictly prohibited;
> Unauthorized change of light route is strictly prohibited;
> Abide by all instructions prescribed in the operation manual.

2.6.2.2 Reflection and diffuse radiation

Avoid exposing eyes and skin to mirror reflection and diffuse radiation. In the maintenance mode, the maintenance personnel are required to wear laser-proof glasses, and the laser-proof glasses should satisfy the requirements as per **EU standard EN207A1:2002**.

Fig.2-1 Safty Goggles

Note	◆ Wavelength of fiber laser device of this class is 10.6μm and it is a class 4 laser device; ◆ You are recommended to use SD-5 type of protective glasses made by Shield Company.

Alarm	◆ You are prohibited to directly watch strong light and laser even with laser-proof glasses on; ◆ Laser-proof glasses are made from high polymer material, and dipping into organic solvent or cleaning with it are prohibited; ◆ It is a must to replace the laser-proof glasses at the expiration.

2.6.3 High voltage risk

The external power supply is at 20000V.

Alarm	◆ High voltage 20000V! ◆ The voltage over 50V and the current over 20mA are with the risk of danger and may cause death. ◆ Only the maintenance personnel from the manufacturer are permitted to perform operation on the inner parts

2.6.4 Risk of electric shock

 Alarm	◆ While operating electric machine or device, mis-operation or neglect during operation may possibly cause serious hurt or human body or even death; ◆ Technicians with related qualifications are required for operating the electric machine or device or perform operation under their supervision.

The followings are required for operating of installing the electric machine:

> It is a must to use the specified fuse provided by the manufacture;
> Immediate pressing the emergency stop button is required in case of power failure;
> Unless otherwise prescribed, power disconnection of the electric part is required for maintenance;
> First check if there is live power on the insulated part, and then perform the treatment of earthing and open circuit, and perform insulation for the nearby live (charge) parts;
> Make regular check on the fiber laser marking machine. Timely correct failure like poor contact or burnt power cord;
> While operating live (charge) parts, minimum two persons are required at the site for disconnecting power supply if necessary; Mark the working area with red-and-white band and warning sign;
> It is a must to use insulation tools.

2.6.5 Risk of process by product

During laser processing, outgrowth may possibly generate, and their hazard must satisfy the requirements specified in Appendix A for example of processing outgrowth as China national standard GB 18490-2001 laser processing machine. The abstract is as below:

A1.1 Ceramic processing

The oxide of Al2O3, Mg, Ca and Si; BeO (virulent).

A1.2 Silicon slice processing

Crumb of silicon and silicon monoxide suspended in the air (possibly breathed

into lungs causing silicosis);

A1.3 Metal processing

In a view of medicine, the following metals and their compounds are influential: Mn, Cr, Ni, Co, Al, Zn, Cu, Be, Pb, Sb

Medical influences are as below:

Toxic Cr6-, Mn, Co

Allergic reaction, burn caused by metal smoke Zn, Cu

Lung fibrosisBe

carcinogenic Cr6+, NiO

Metal beryllium is very dangerous, especially cutting alloy or metal containing Zn in atmosphere will generate heavy metal smoke.

A1.4 Plastic marking

Various kinds of substances with potential risks may be generated when cutting the plastic. At lower temperature, aliphatic hydrocarbon will be produced; at higher temperature, aromatic hydrocarbon (e.g. benzene PAH) and polyhalo-polynuclear hydrocarbon (e.g. dioxin, furan) will be increased. Some of these substances may possibly generate cyanide, isocyanate (PU), acrylate (PMMA) and hydrogen chloride (PVC).

Medical influences include:

--------Toxic: Cyanide, CO, derivative of benzene

--------Allergy source/irritation: isocyanate, acrylate

--------Respiratory stimulating: formaldehyde, acrolein, amine;

--------Carcinogenesis: benzene, some PAH substances A1.6 Surface modification

Generally, there is no noticeable outgrowth, but sometimes heavy metal steam is generated. A1.8 Paper and wood Marking

General fibrin outgrowth, ester, acid ethanol, benzene

 Alarm	◆ During laser marking, the smoke generated may be very toxic. The smoke is removed by upper exhaust blower system; ◆ Marking with abnormal blower system is prohibited.

 Note	◆ Make frequent check on the ventilation system; ◆ Clean and maintenance the blowing system regularly; ◆ Foreign matter coming into duct of the blowing system is strictly prohibited; ◆ Ensure a good ventilation and the exhaust gas expel from the working room; ◆ Ensure a necessary disposal of the exhaust gas to satisfy emission requirements prescribed by the state and local government.

2.6.6 Risk of optical system

2.6.6.1 Routine operation

The optical system of the laser marking machine doesn't need to be maintained with great attention, however,
due to the great amount of dust generated by marking, the field lens should be cleaned frequently.

 Note	◆ During cleaning, please wear on goggle and gloves. The damaged parts must be sealed in a container and properly packaged, and then returned to the manufacturer. ◆ Good ventilation is required in case of any damage of the parts.

2.6.6.2 Warning for fire accident

Damaged machine or improper operation of the machine will cause risk of fire accident. Fire extinguisher must be equipped according to fire control regulations prescribed by the state.

 Alarm	◆ Atomizer or flammable or explosive substances are strictly prohibited to approach the machine, make regular check on the fire extinguishers to ensure a good condition.

2.6.7 Other risks

To ensure safety, modification or changing use of the machine with no consent from the manufacturer is strictly prohibited; any change of operating software or function to the machine is strictly prohibited, or it is strictly prohibited to perform integration

of the machine with other system.

2.6.8 Measures for emergency

2.6.8.1 For personal injury

In case of personal injury, the followings should be performed:

> Stop hurting (e.g. stop the machine, disconnect the power supply);
> It is a must to take first aid measures;
> Notify professional medical personnel;
> Notify the competent management department;
> Abide by the related regulations prescribed by the state and the company.

2.6.8.2 For fire accident

In case of fire accident, the following should be taken:

> Disconnection of power supply;
> Control of fire with the fire extinguisher, evacuation of personnel;
> Notify the competent management department;
> Abide by the related regulations prescribed by the state and the company.

Chapter3. Equipment Installation and Commissioning

3.1 Equipment Installation

3.1.1 Unpacking

Before installation, disassemble the wooden case from the top and sides with 8mm hex wrench in the following steps:

Fig.3-1 Equipment Packing Case

1. Visual check the wooden box received without any damages, take photos if necessary. Unpack in the following orders: top cover, left and right side covers, front and rear side covers, fastening ropes or fixing plate.
2. Take the machine out of the box and lay it on a platform or other stable flats.

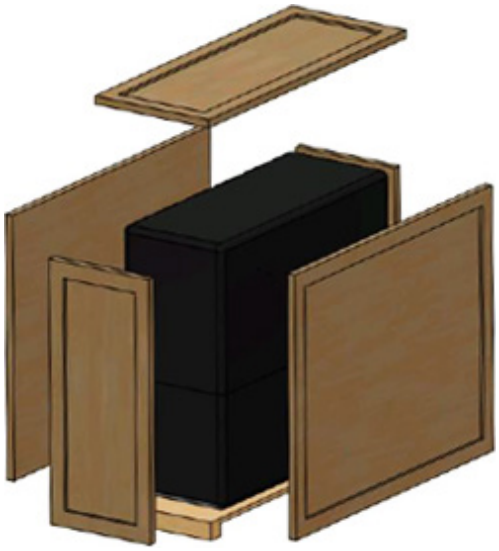


Fig.3-2 Machine Packing Case

Open the packing case of auxiliary machine, check the parts and accessories according to the packing list, and check if the parts are damaged or deformed.

Alarm	◆ Do not attempt to unpack without permission ◆ If you want to unpack, first obtain the consent of our customer Service or business personnel, or else we will assume no responsibility for the unexpected events.

Alarm	◆ If any problem occurs after unpacking, please inform our customer service or business personnel, or call the company directly ◆ Do not attempt to handle without permission

3.1.2 Preparation

The preparations required before installation are as follows:

1. Site

   Please set a separate platform (more than 800mm x 400mm x 650mm) to ensure the machine (700mm x 210mm x 525mm) can operate normally.

   Please check if the site conditions and working environment for the laser equipment comply with the requirements in Section 1.4 and the requirements of our company.

2. Personnel

The equipment must be installed by our professional service personnel. If the customer wants to install the machine, the installer must have received the full installation training and have mastered the key points of laser equipment installation.

3. Tools

The installation tools have been provided. In addition, the user should prepare some installation and testing tools if necessary, such as screwdrivers, multimeter, etc.

4. Others

The user needs to prepare the electricity, smoke exhaust channels, proofing materials, computer and power outlets associated with the equipment.

 Alarm	◆ The customer shall on site with the customer service during the complete installation process. ◆ The installation and commissioning are part of the training, and the user shall master.

3.1.3 Adjust the level of the machine

After the machine is moved from the crate to the workplace, the level of the machine should be re-adjusted as follows due to differences in the workplace:

> First, adjust four feet to completely hold up the machine;

> And then, place a spirit level in the front of the machine, and observe the shift direction of the bubbles in the spirit level. If the bubbles shift to the left, the left side of the machine is higher than the right side. Please adjust the level of the machine by reducing the height of the left foot or increasing the height of the right foot. When the bubble is centered in the spirit level, the front level of the machine has been adjusted properly;

 Alarm	◆ The machine level adjustment is necessary. The subsequent operation of the machine will be affected if the machine level is quite different.

3.1.4 Installation

Now that you are familiar with the overall terminology, we will walk you through on turning on and running your first file.

Step 1. Install the power cable

Install the power 110V input cord (circular electrical connector) into the back of the machine. The plug will be labeled “110V Input” The other end goes into a 110VAC outlet (Illustrated in the pictures below).

Equipment Grounding: LMM-DR-M laser equipment has strict requirements on safe grounding of user power system, which must comply with local safety standards.

Step 2. Turn on the machine

Note: Connect the machine and computer with a USB cable before doing the following operations

1. Press down on the Fiber Laser Power switch button.
2. Press down on the Opt ical Scanner Head button.
3. Remove the Lens Cap from the Scan Head to prepare for the following steps on running your job.

Step 3. The installation of computer /display and keyboard and mouse

Take the laptop out, connect it to the USB input cord from the main engine; connect the mouse to the laptop. The position of the laptop is flexible according to real

situation.

Computer System Requirements: Win7, Win8, Win10

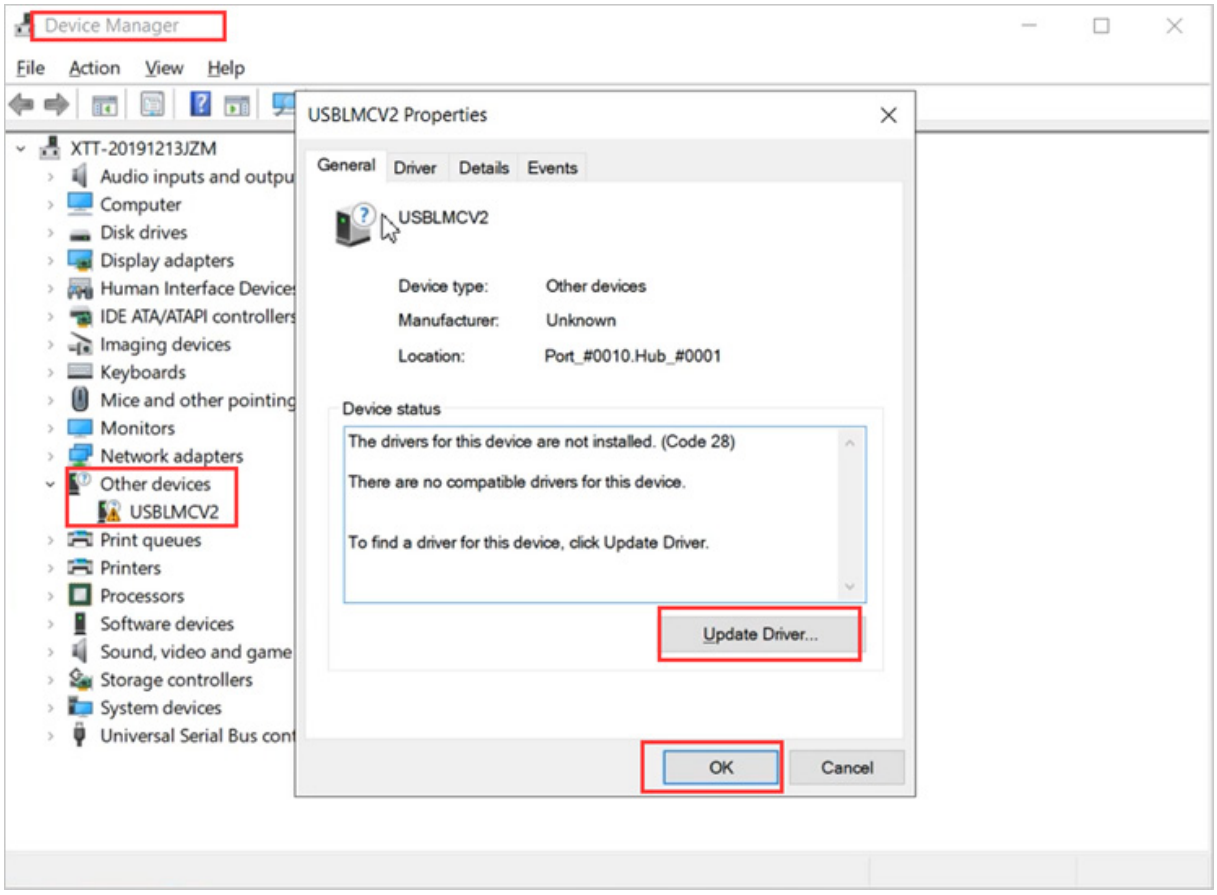
Step 4. Launching EzCad2. The shortcut icon is located on the desktop.

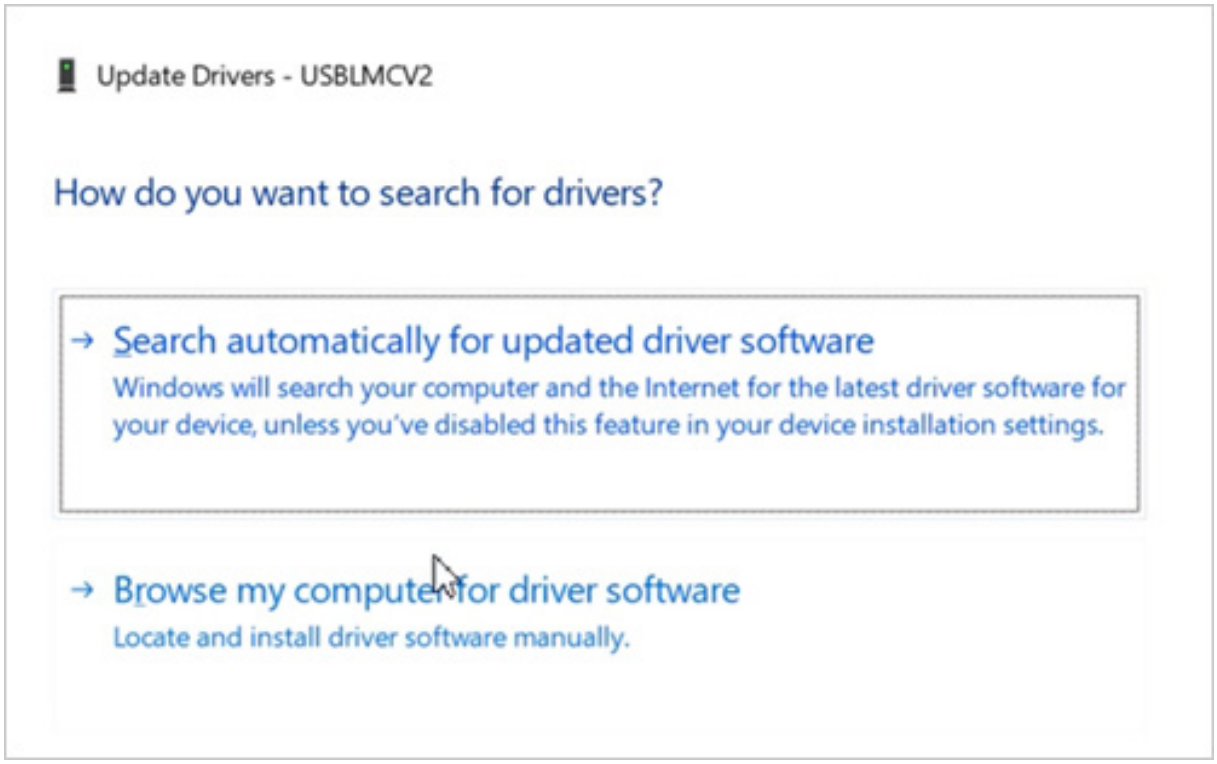
Marking software: Ezcad2, simple and convenient operation, Auto-cad, CorelDraw, AI8.0, Photoshop software compatible form.

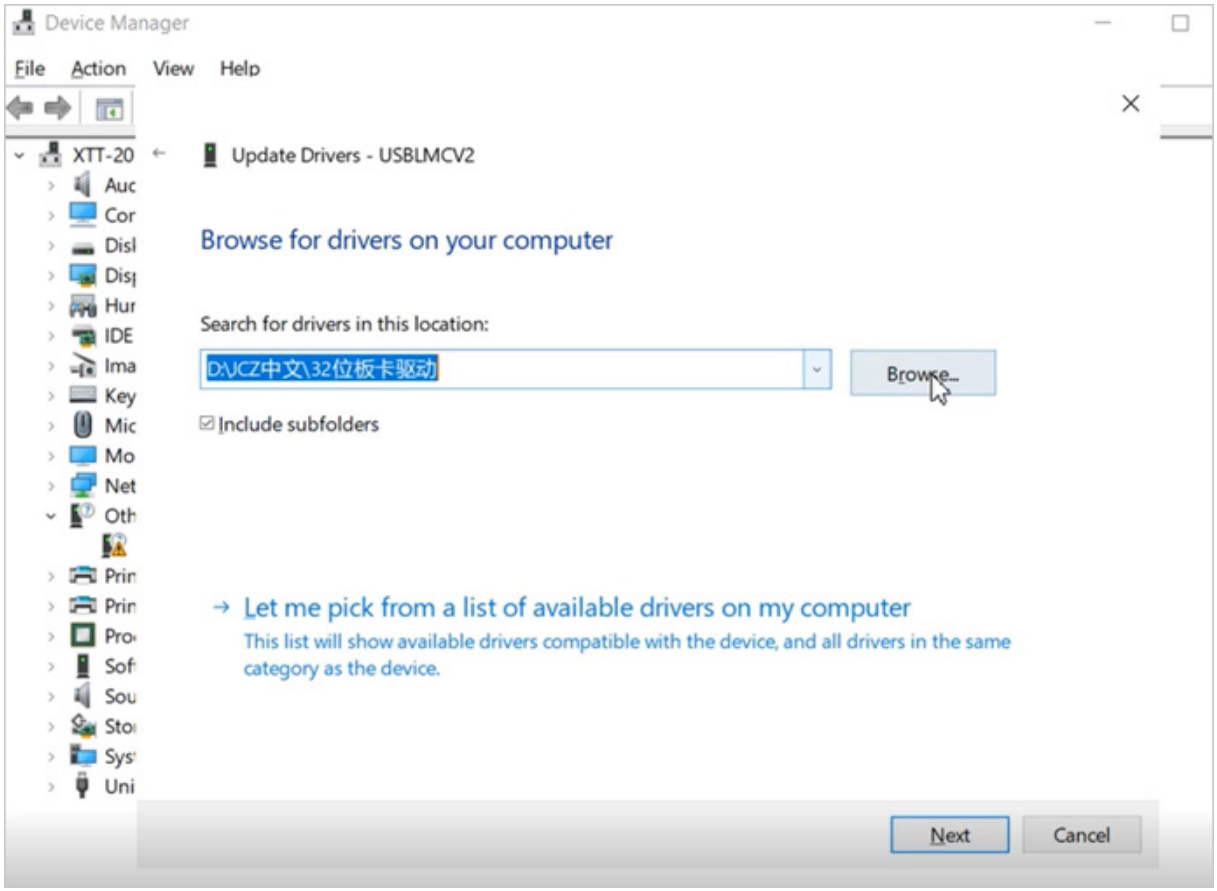
Graphic Format Supported: AI / BMP / DST / DWG / PLT

Double·click on the icon to start up the program. This is what the software looks like when fully launched (shown in the picture below).

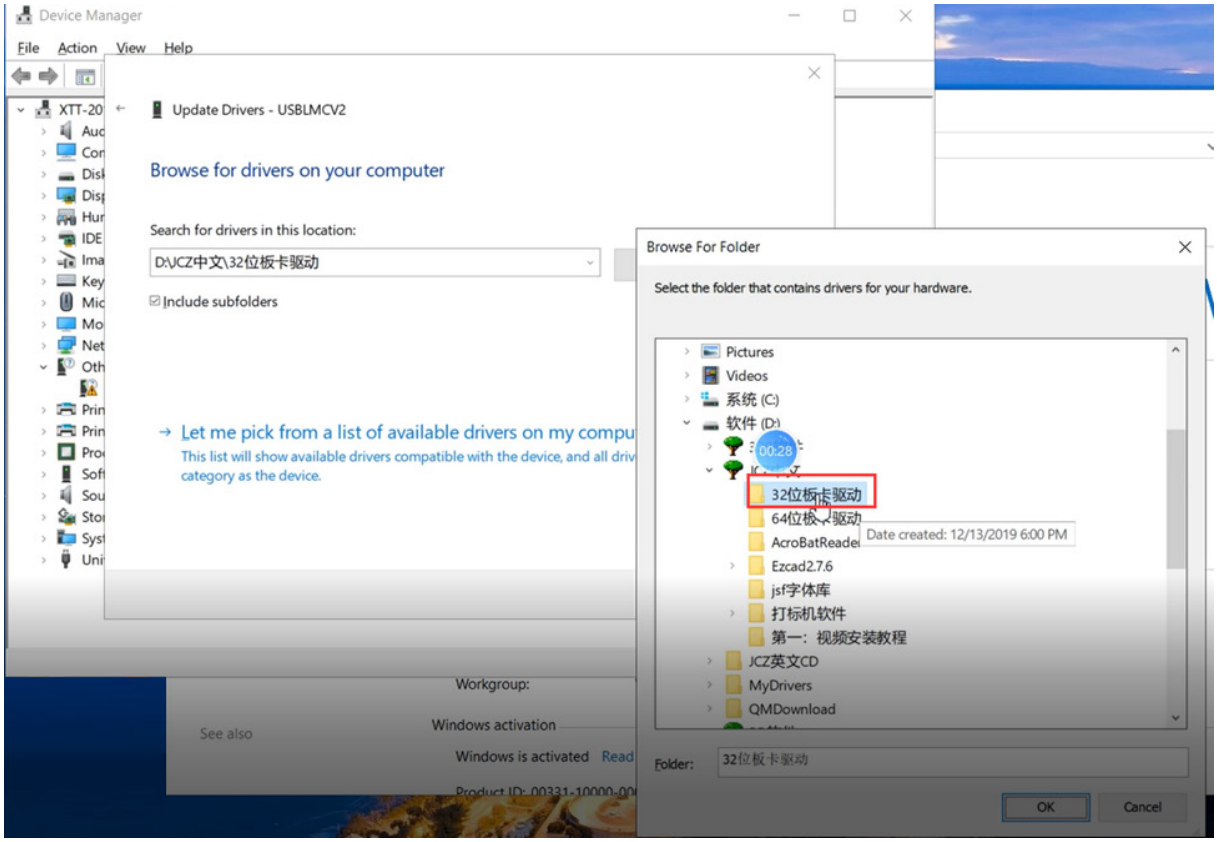
Click Device Manager—Other devices—USBLMCV2—Update Driver....., click ok

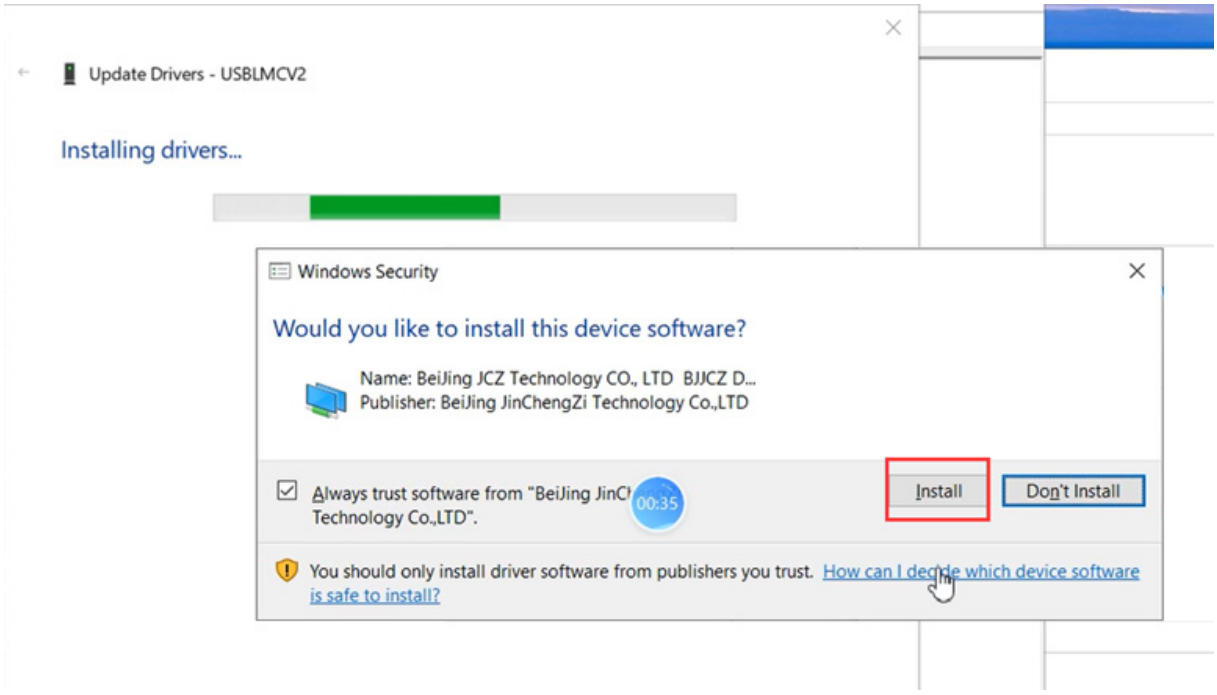



Update Drivers - USBLMCV2
How do you want to search for drivers?
Search automatically for updated driver software
Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.
Browse my computer for driver software
Locate and install driver software manually.

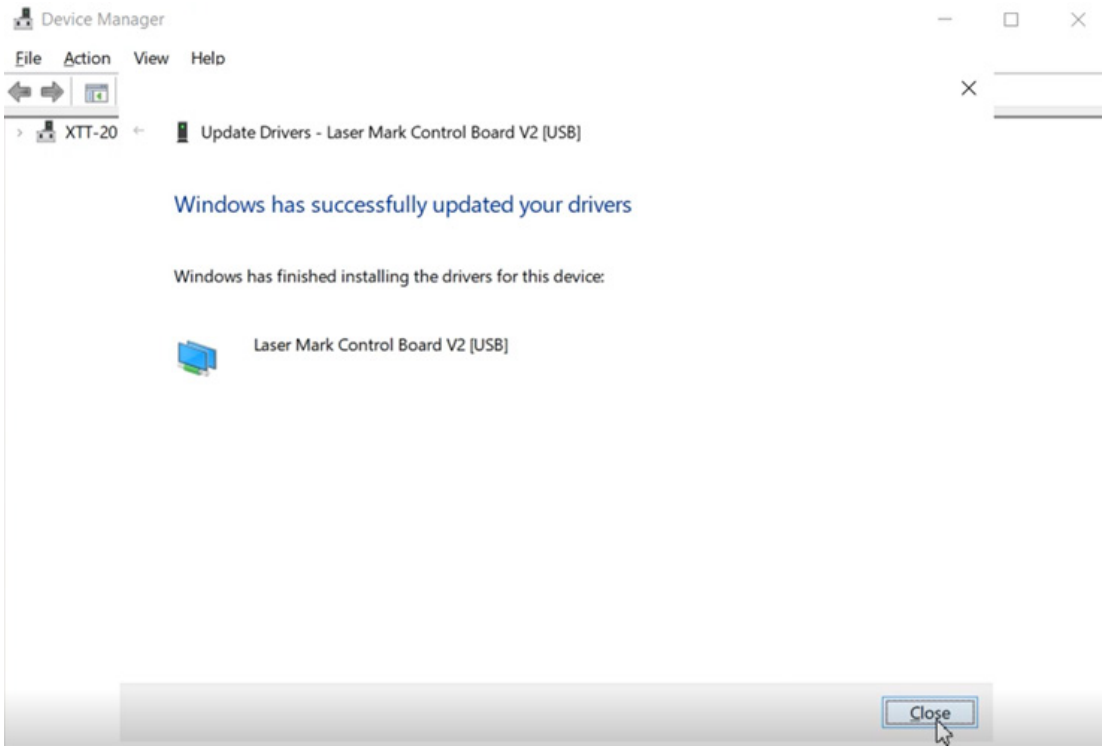

Device Manager
File Action View Help
Update Drivers - USBLMCV2
Browse for drivers on your computer
Search for drivers in this location:
D:\JCZ中文\32位板卡驱动
Browse...
Include subfolders
Let me pick from a list of available drivers on my computer
This list will show available drivers compatible with the device, and all drivers in the same category as the device.
Next
Cancel

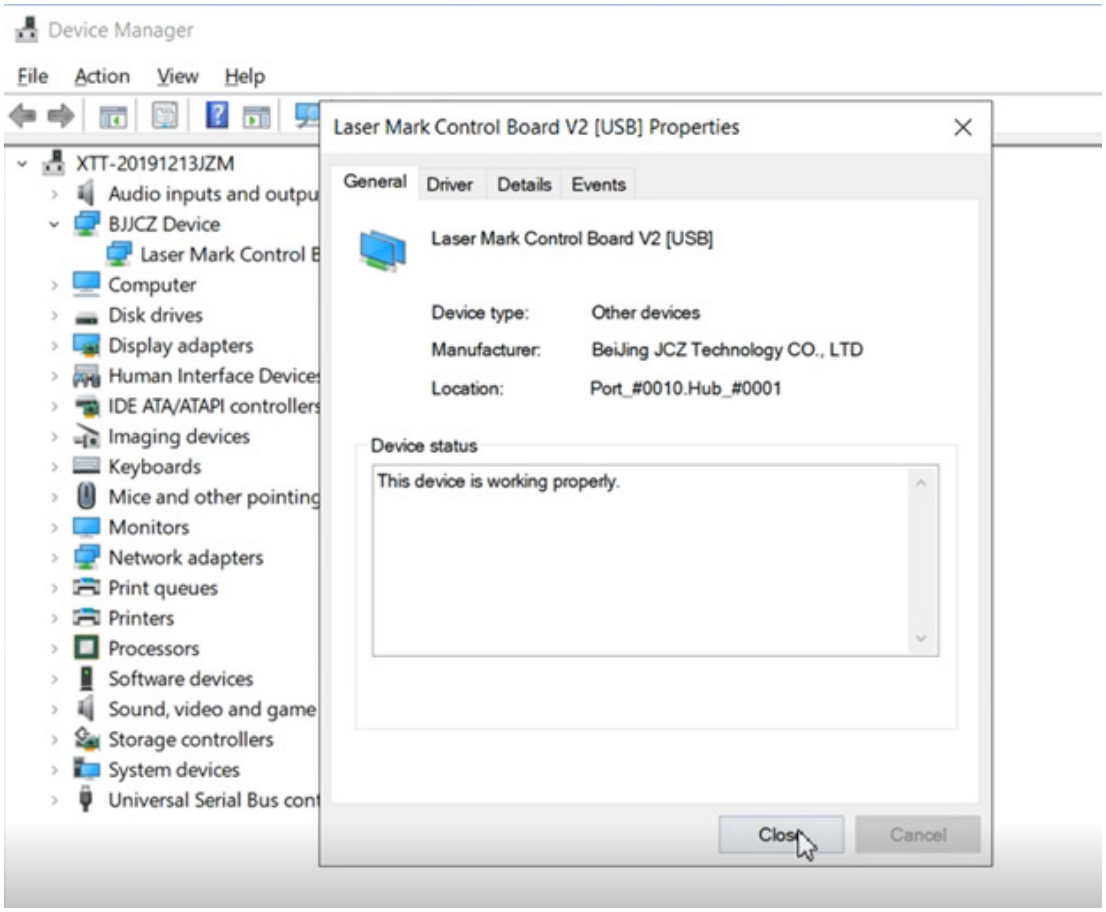
Learn More >>


Device Manager
File Action View Help
Update Drivers - USBLMCV2
Browse for drivers on your computer
Search for drivers in this location:
D:\JCZ中文\32位板卡驱动
Include subfolders
Let me pick from a list of available drivers on my compu
This list will show available drivers compatible with the device, and all driv
category as the device.
Browse For Folder
Select the folder that contains drivers for your hardware.
Pictures
Videos
系统 (C:)
软件 (D:)
32位板卡驱动
64位板卡驱动
AcroBatReade
Date created: 12/13/2019 6:00 PM
Ezcad2.7.6
jsf字体库
打标机软件
第一：视频安装教程
JCZ英文CD
MyDrivers
QMDownload
Folder:
32位板卡驱动
OK
Cancel
Workgroup:
Windows activation
Windows is activated
See also

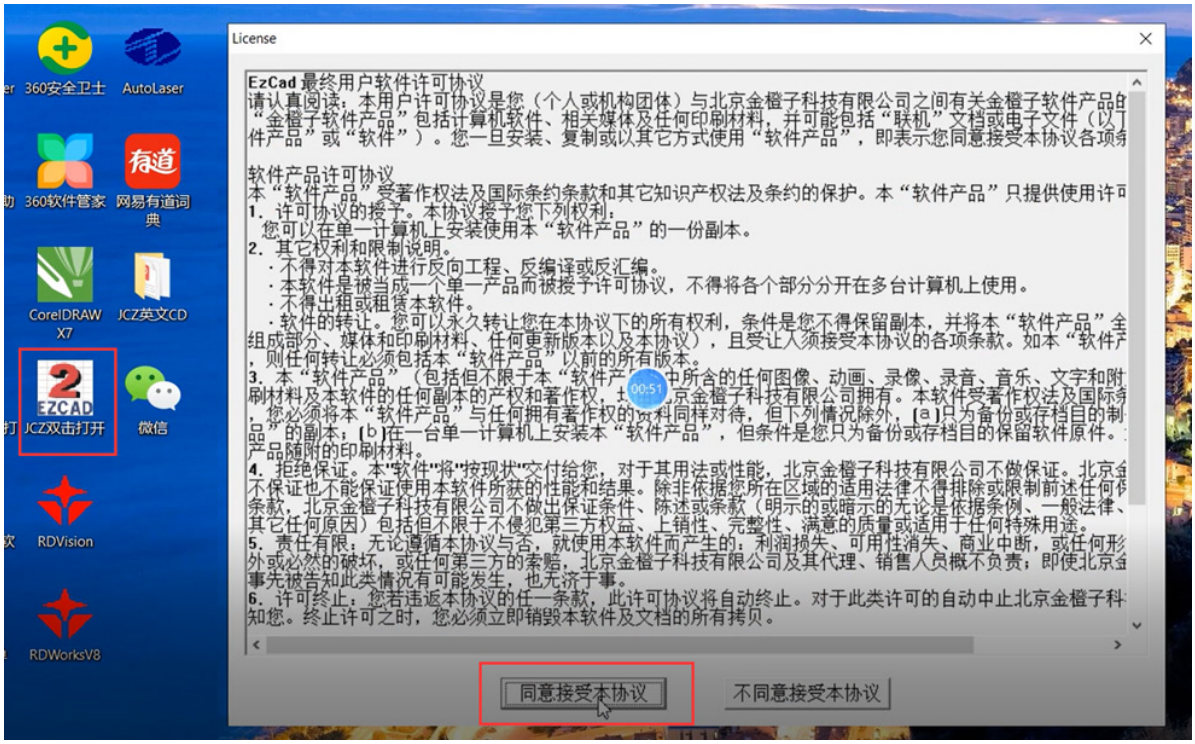

Update Drivers - USBLMCV2
Installing drivers...
Windows Security
Would you like to install this device software?
Name: BeiJing JCZ Technology CO., LTD BJJCZ D...
Publisher: BeiJing JinChengZi Technology Co.,LTD
Always trust software from "BeiJing JinC
Technology Co.,LTD".
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

Learn More >>

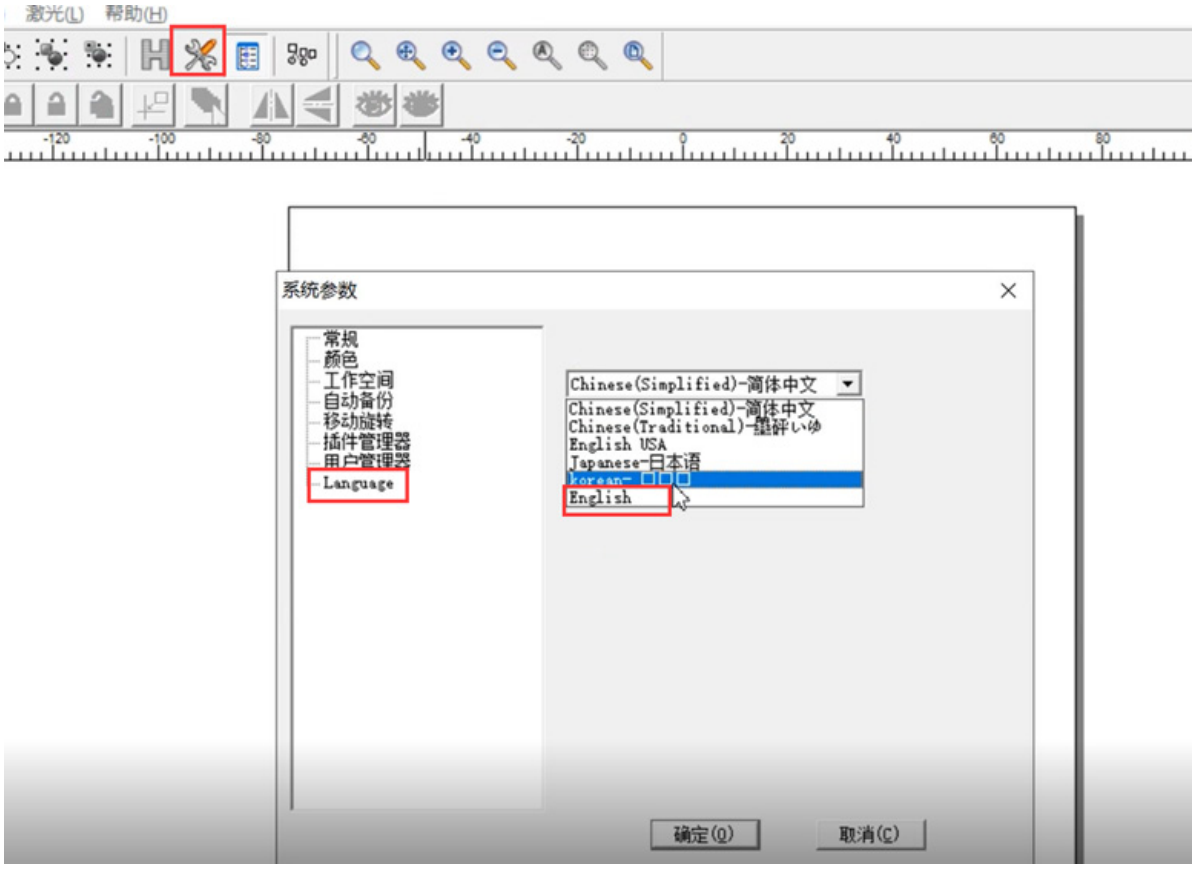

Device Manager
File Action View Help
XTT-20
Update Drivers - Laser Mark Control Board V2 [USB]
Windows has successfully updated your drivers
Windows has finished installing the drivers for this device:
Laser Mark Control Board V2 [USB]
Close


Device Manager
File Action View Help
XTT-20191213JZM
Audio inputs and outpu
BJJCZ Device
Laser Mark Control B
Computer
Disk drives
Display adapters
Human Interface Device
IDE ATA/ATAPI controller
Imaging devices
Keyboards
Mice and other pointing
Monitors
Network adapters
Print queues
Printers
Processors
Software devices
Sound, video and game
Storage controllers
System devices
Universal Serial Bus cont
Laser Mark Control Board V2 [USB] Properties
General Driver Details Events
Laser Mark Control Board V2 [USB]
Device type: Other devices
Manufacturer: BeiJing JCZ Technology CO., LTD
Location: Port_#0010.Hub_#0001
Device status
This device is working properly.
Close
Cancel

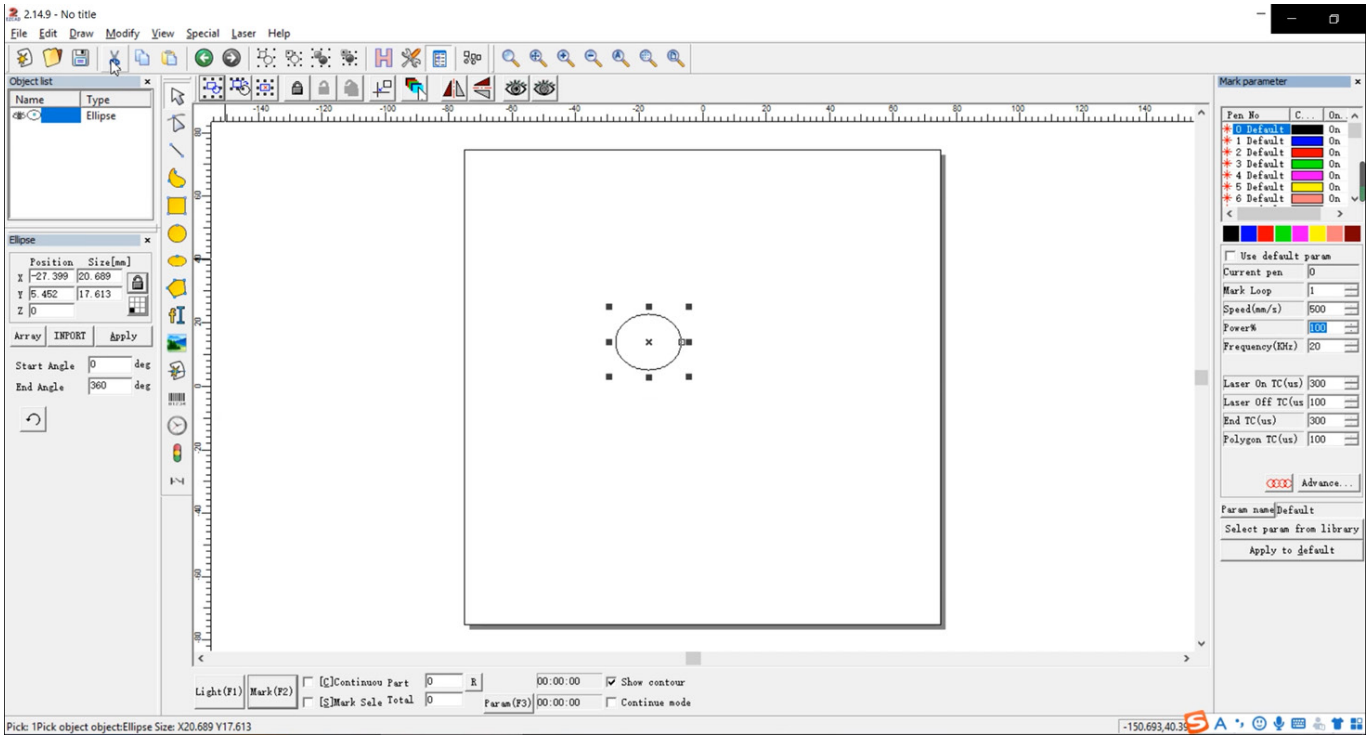
Learn More >>



Double click “JCZ双击打开”, click “同意接受本协议”.



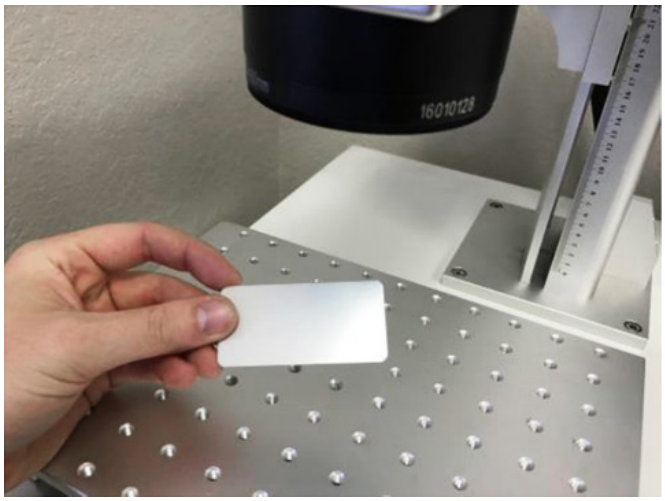
Learn More >>

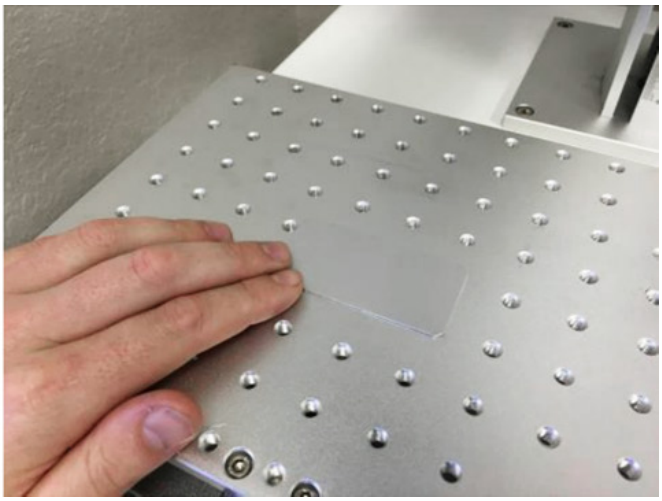


Step 5. Placing material on worktable.

Add a piece of material (metal) onto the worktable. Make sure it is right

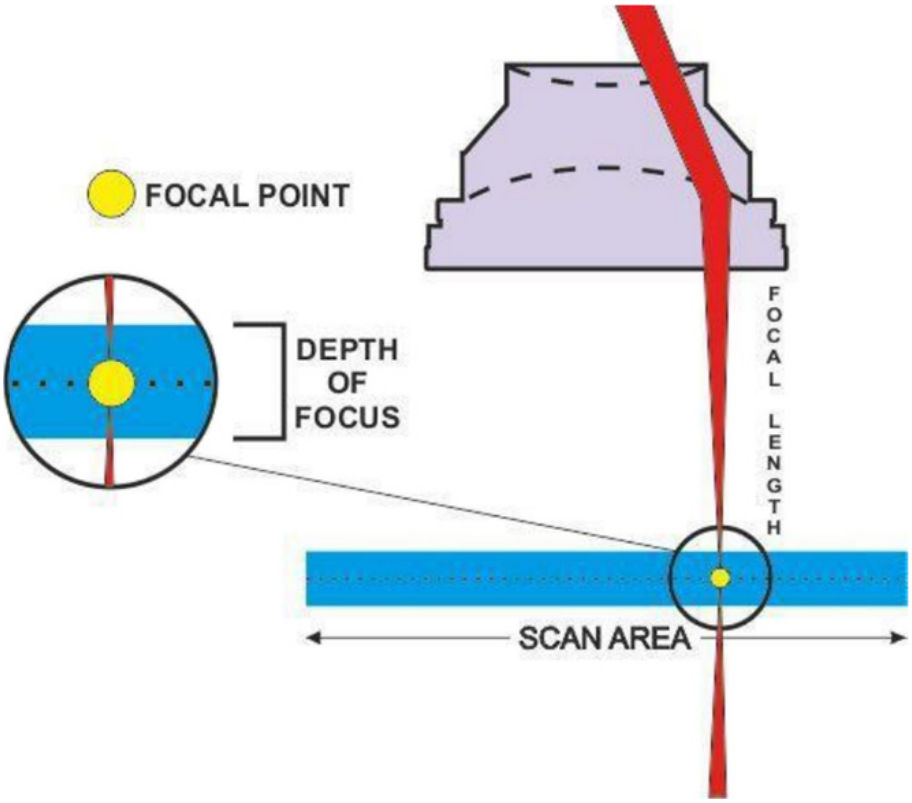
Note: No organic (wood) or plastic (clear acrylic) material. Fiber laser's wavelength are designed to engrave mainly on metal.





Step 6. Focusing the laser onto the material.

1. Now we will show you how to focus the laser on your material, but before we get into this, we would like to introduce you to the concept behind a laser being focused.



As you can see, the process of focusing the laser is extremely simple. All you have to do is find the right height between the lens and the material being engraved, also known as focal length.

2. Your system is equipped with external focus red dot pointer that is designed to merge with the internal red dot pointer to give you an idea of where the right focal length is (it does happen from time to time that the external red dot pointer shifts during shipping, therefore, laser may need to be calibrated manually.

Step 7. Creating the file. We are now ready to create our first file in EzCad2.

Please refer to the file “EzCad2 Software Manual”

3.1.5 The replacement of focus lens

Take out the scan focus lens from packing box carefully, remove protective plastic cover, thread will be shot has a head gently screwing machine lens fixing seat and make it complete fastening to cooperate, in the installation process, fingers or other objects do not touch lens mirror, to ensure that the mirror is clean and without damage.

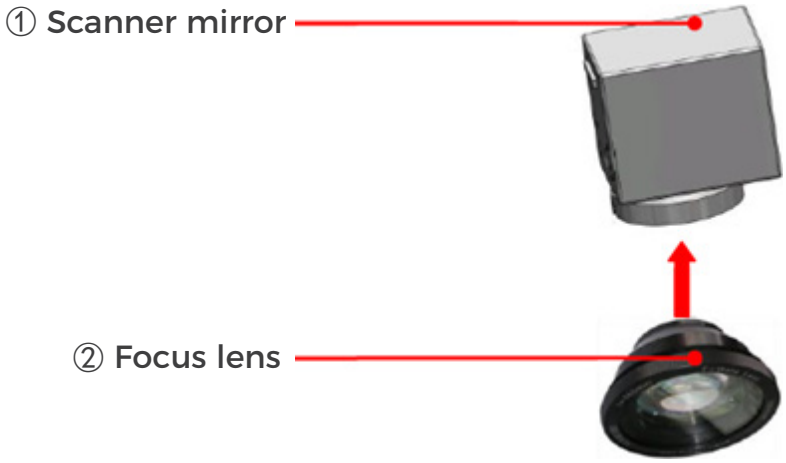


Fig.3-4 the installation of scanner mirror and focus lens

3.2 Equipment button instruction

3.2.1 Power button of laser generate

The laser power switch button is the reset button, after press down this button, laser generator on and the white light is lit, press down this button again, laser generator off and the light is out.

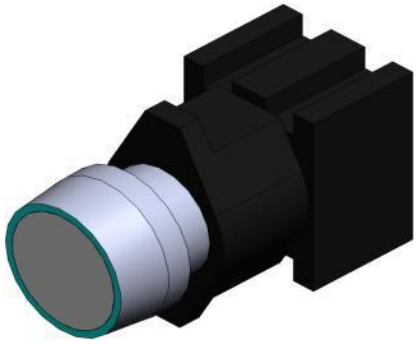


Fig.3-7 power button of laser generate

3.2.2 Key switch lock

Key switch lock for switch on machine, when the key clockwise rotation, machine switch on; when key anticlockwise turn back to the original position, machine switch off.

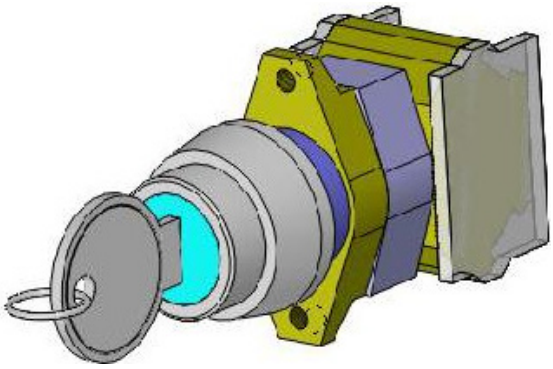
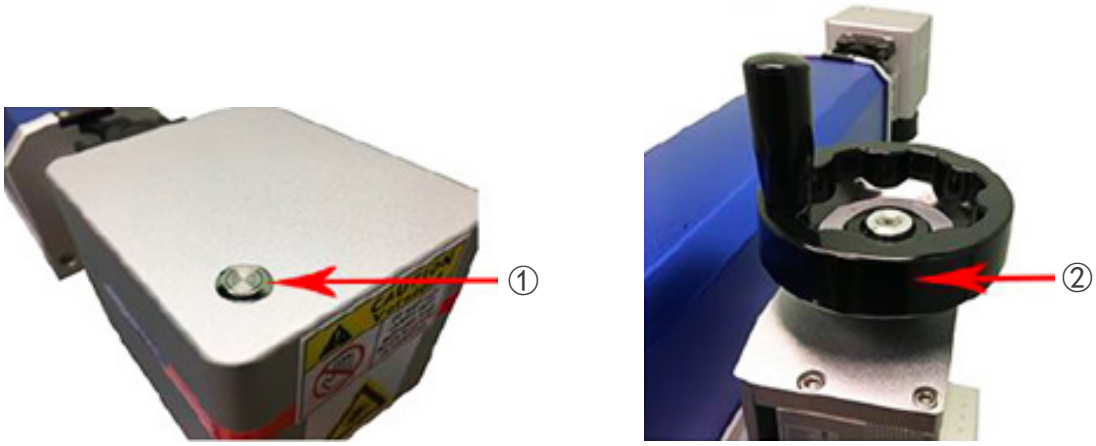


Fig.3-8 key switch lock

3.2.3 Red light positioning button



① Red light positioning button ② Z Axis Column Handle

Fig.3-9 Red ray positioning

Focusing: Turn the Z Axis Column Handle until the two red lights intersect at a point, which is the best focal length.

3.2.4 Pedal switch installation

The position of Pedal Switch is shown as below:

When carrying out batch marking work, you can use it instead of computer mouse, free hands.

Fig.3-5 Pedal Switch Interface

3.3 Equipment debugging

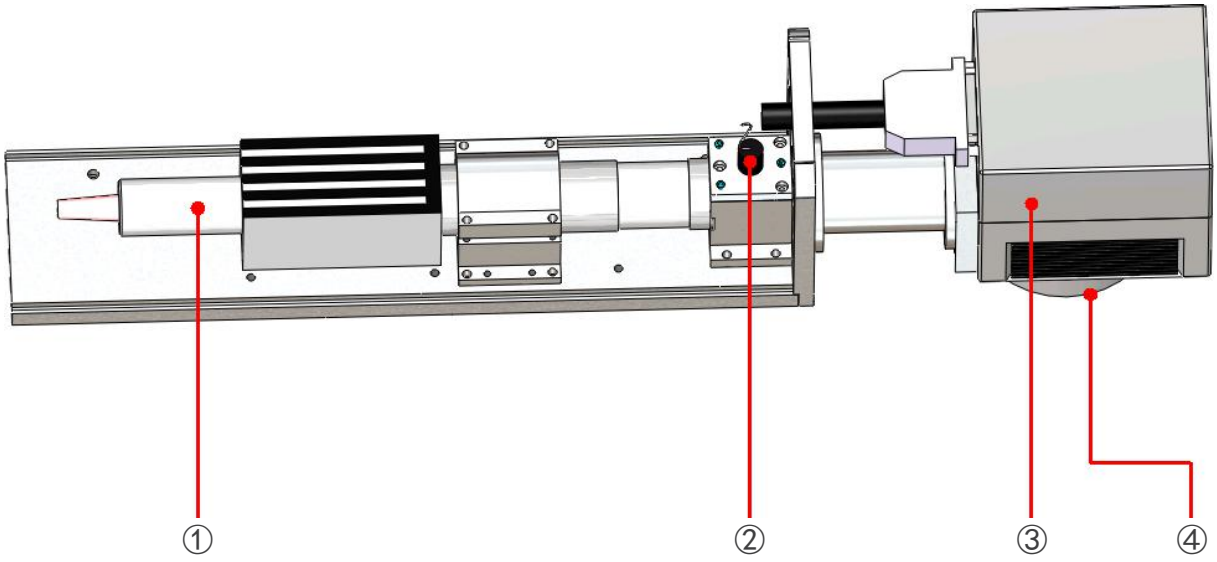
3.3.1 Debugging and test

After installation, the equipment needs debugging and processing test. Equipment debugging mainly completes state detection of each module of the machine, including mot ion module, laser module and electrical I/O module.

3.3.2 Laser debugging

3.3.2.1 The introduction of cavity components

LMM-DR-M series of laser marking machines adopt constant light path structure. Composed of fiber laser, red light punctuation, combined beams, vibration mirror and optical scanning field lens parts, such as concrete as shown in figure 3-10:



① Laser generator ② Red light graticule ③ Scanner mirror ④ Focus lens

Fig.3-10 Cavity component structure diagram

3.3.2.2 Cavity component parts introduction and regulation

3.3.2.2.1 Radio frequency laser

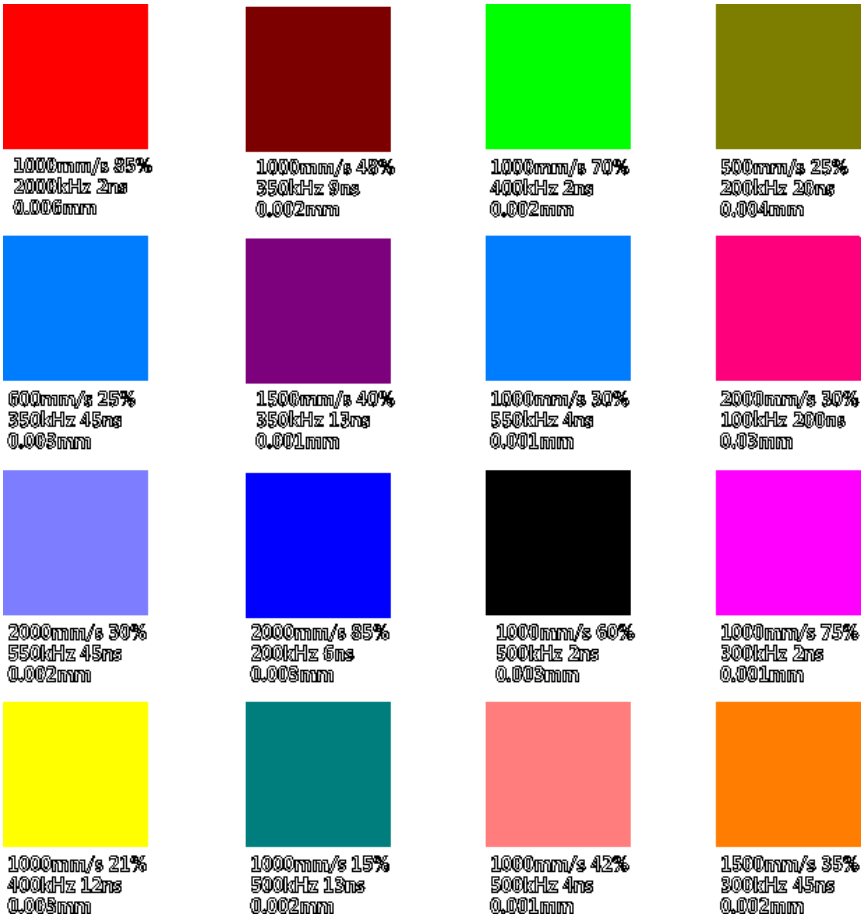
Radio frequency laser structure as shown in figure 3-11:

Fig.3-11 Pulse fiber laser

Remarks:

Fiber Laser Source: Max or Raycus (IPG fiber laser is optional), please refer to the actual orders!

3.3.2.2.2 JPT MOPA Color Marking Stainless Steel Parameters



3.3.2.2.3 Red light debugging

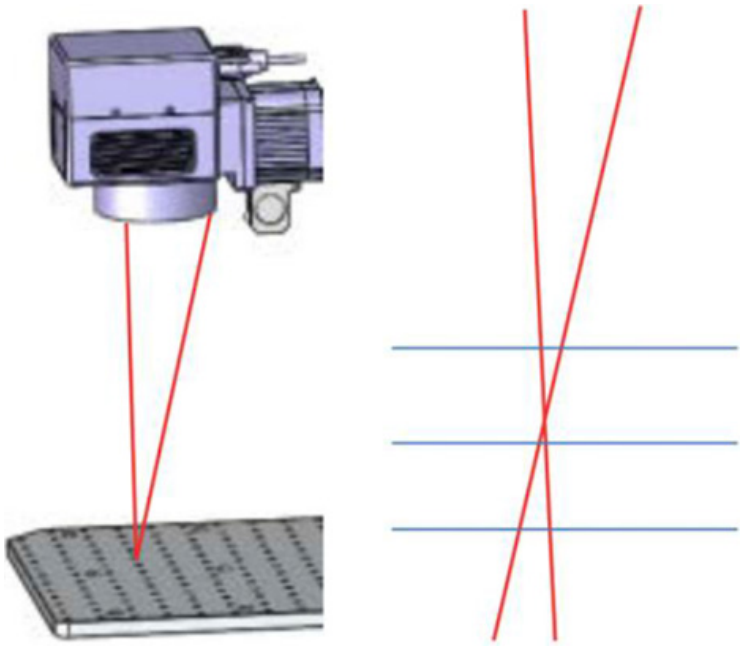
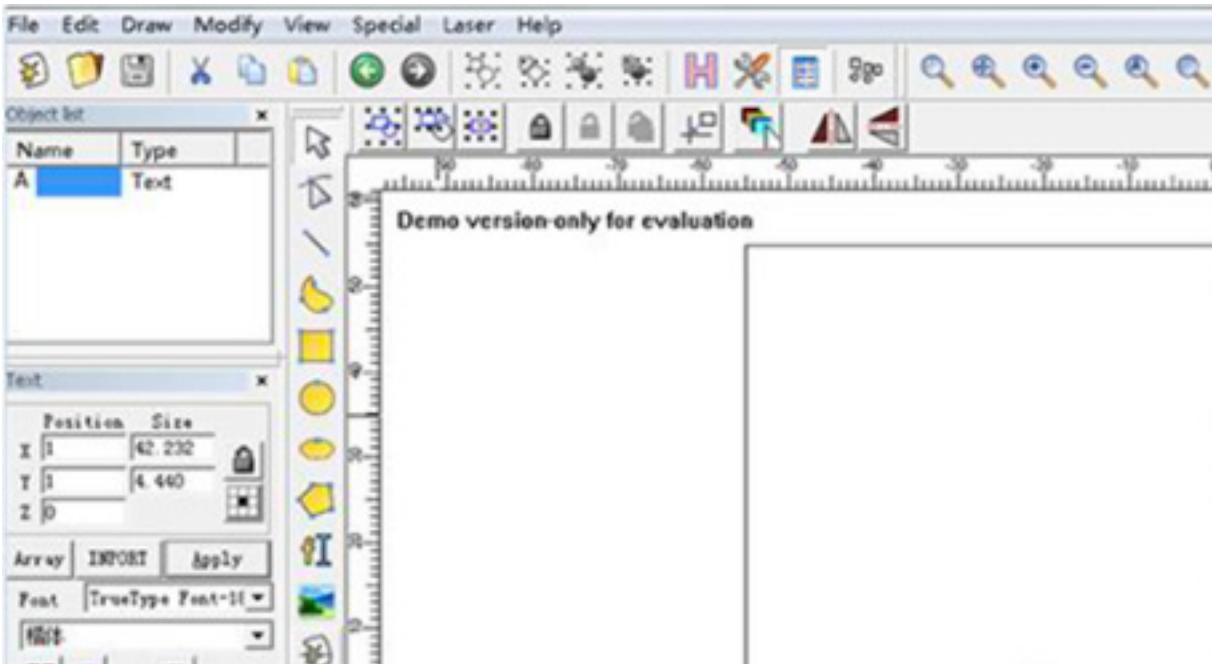
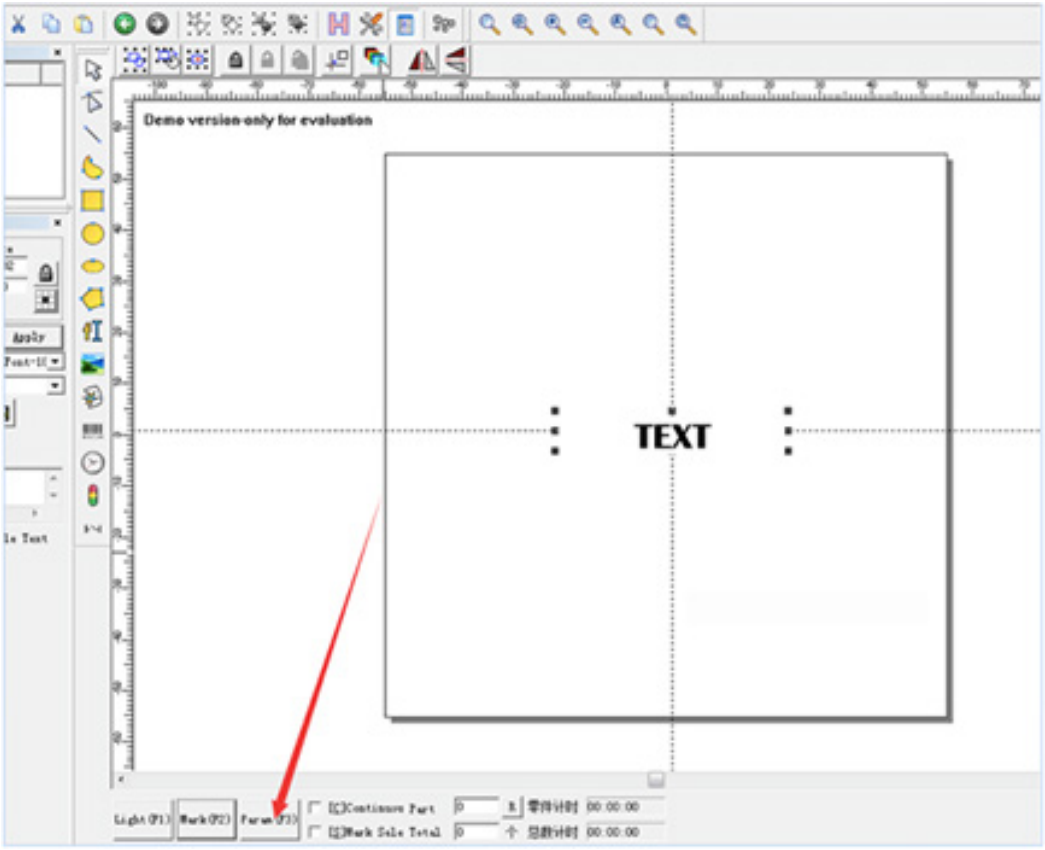


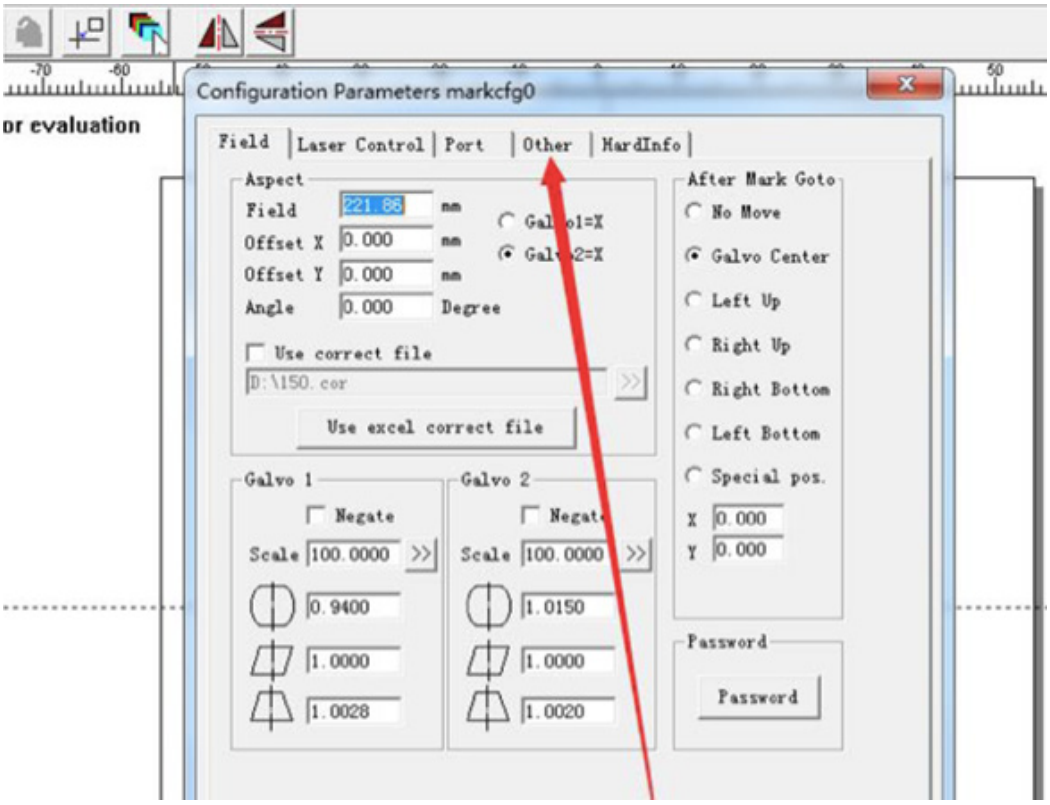
Fig.3-12 Red light auxiliary diagram

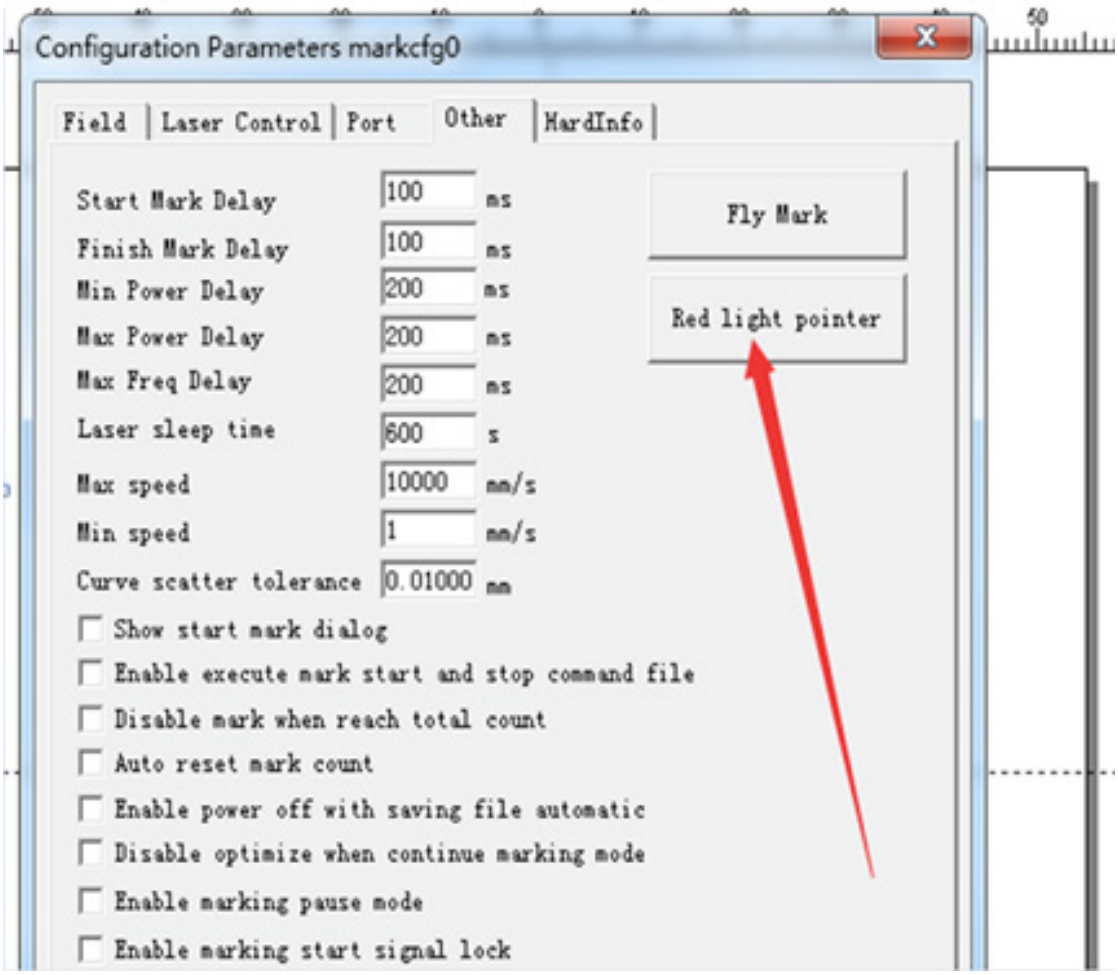
The first step: Mark text, click the red light again, Shown as below:

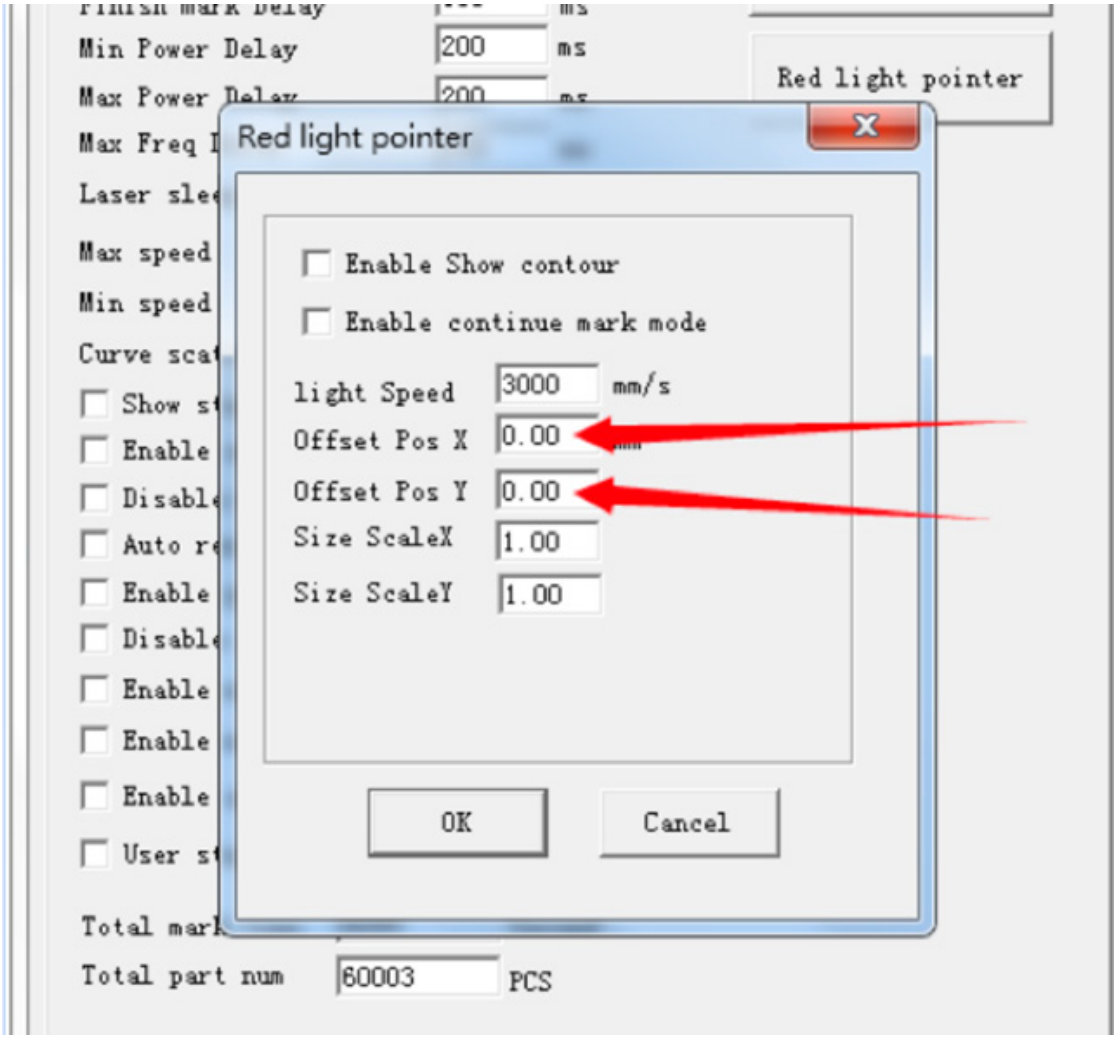


The second step: First of all, click on parameters, then click on others, then click on the red-light indication, Shown as below:


Demo version only for evaluation
TEXT


Configuration Parameters markcfg0
Field
Laser Control
Port
Other
HardInfo
Aspect
Field
Offset X
Offset Y
Angle
Use correct file
Use excel correct file
After Mark Goto
No Move
Galvo Center
Left Up
Right Up
Right Bottom
Left Bottom
Special pos.
Galvo 1
Galvo 2
Negate
Scale
Password


Configuration Parameters markcfg0
Field
Laser Control
Port
Other
HardInfo
Start Mark Delay
100
ms
Finish Mark Delay
100
ms
Min Power Delay
200
ms
Max Power Delay
200
ms
Max Freq Delay
200
ms
Laser sleep time
600
s
Max speed
10000
mm/s
Min speed
1
mm/s
Curve scatter tolerance
0.01000
mm
Show start mark dialog
Enable execute mark start and stop command file
Disable mark when reach total count
Auto reset mark count
Enable power off with saving file automatic
Disable optimize when continue marking mode
Enable marking pause mode
Enable marking start signal lock
Fly Mark
Red light pointer



The third step:

Mark text, click the red-light indication, 

Let's look at the x-axis first and see if the red light is left or right. The red light is left and needs to move to the right, that is, add a value.

For example, the original value is 0, the red light shifts to the right, and the value is added. Look at the difference between the red light and the actual one. If the difference is 1 mm, the value is 1 mm, and the red light shifts to the left, the value is subtracted. If the difference is 1 mm, the value is -1 mm.

Let's look at the Y axis again and see if the red light is above or below. Red light shifts downward and needs to move upward, that is, to add value. Red light shifts upward and needs to move downward. It's both a subtraction.

For example, if the original value is 0, the red light shifts upward and the value is subtracted, the difference between the red light and the actual light is 1 mm, the value is - 1 mm, and the red light shifts downward, the value is added. If the difference is 1 mm, the value is 1 mm.

The four steps:

After doing this, click OK, exit, re-mark the text, click Red Light again to make sure the location is correct.

This is the Red-Light Calibration Offset Course. If you have any questions, please feel free to consult.

3.3.2.2.4 Scan Mirror / Focus Lens

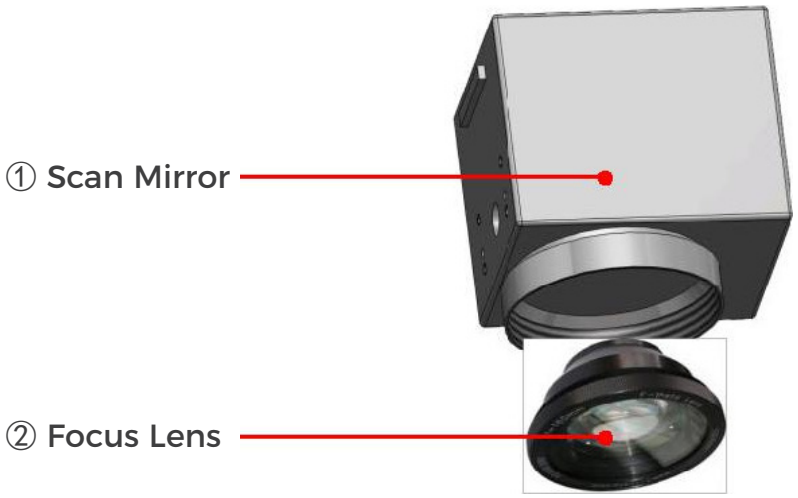


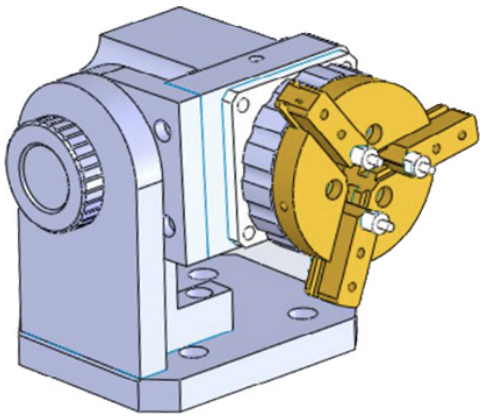
Fig.3-13 Scan Mirror / Focus Lens

To realize the X and Y direction movement through the galvanometer, through different level focusing lens to achieve a wide range of marking.

CS-LENS-1064			
Scan Field	**Wave Length**	**Focus Length**	**Thread**
110mm x 110mm (4.3in x 4.3in)	1064nm	164mm (6.46in)	M85
150mm x 150mm (5.9in x 5.9in)	1064nm	213 (8.39in)	M85
175mm x 175mm (6.9in x 6.9in)	1064nm	254 (10in)	M85
200mm x 200mm (7.9in x 7.9in)	1064nm	300 (11.8in)	M85
300mm x 300mm (11.8in x 11.8in)	1064nm	430 (16.9in)	M85

3.3.2.2.5 Other accessories

Rotary device



USB Cable

Laptop Bracket

Pedal

Inner Hexagon Spanner

Power Cord

Screwdriver

3.3.2.3 Mark Adjust

We have rallied mark effects are tested before leaving the factory machine. Under normal circumstances, you just need to connect power to machine which it will be working normally. Due to vibration in transit may be influence marking effect. In this case, it is needed to adjust machine and software parameters.

3.3.3 Test the process

Make one design for test:

> First, following the power on sequence for start the device.
> And then put the materials on the working table.
> Import or draw the design to our software.
> Set the processing parameters (layer parameter), and related technical data.
> Adjust the focus distance, and make the focus on the materials surface.
> Set the correct position by the RED light.
> Start work.

All the above steps is the standard, more details check the operation manual.

3.3.4 How to Properly Turn Off Your Machine

1. Put back the Lens Cap onto the Lens.
2. Shut down PC (Note: Wait for the PC to fully shut down)
3. Turn off the Laser On/Off button
4. Turn off the Scan Head button

Chapter 4. System Maintenance

The stable and normal working of the machine depends on the correct operation and routine maintenance. This chapter describes the daily maintenance of the equipment.

4.1 Mechanical Maintenance

Mechanical maintenance mainly includes the rise-fall device (Z Axis Column Handle and Z Axis Column) and the plate form. The following items must be done:

> Must clean all the parts of the laser fiber marking machine after work.

> No regular inspection on equipment, mainly to check whether there is loose connection of phenomenon, if there is any exception handling in time, avoid the problem of expanding.

The following maintenance details all the mechanical parts.

4.2 Electrical Maintenance

The electrical maintenance mainly includes electrical components, buttons, marking control card, and sensors.

4.3 Maintenance of Optical Path and Optical Devices

- The beam path system includes beam combiner and the lens. After long time work or the mechanical viberation, the beam path will be changed, so it is suggested that check the laser beam path first before start the work.
- Correctly, and regular maintenance of the optical system, which can effectively extend the service life of laser device and decrease the cost of the use of the lens.
- In the process of replacement, the placement of optical lenses, testing, installation, it is necessary to pay attention to keep the lens from damage and contamination. After being used, the new lens should be regularly cleaned. The correct cleaning methods, will prolong the service life of the lens, and reduce the costs; On the contrary, will reduce the service life.
- When laser working, inevitably optical element contact suspension. When the laser was cutting or engraving on the part of the cutting dust generating material cutting, carving, marking, material surface could release a large number

of corrosive gas and dust, the gas and dust will cause harm to the lens. When pollutants fell on the surface of the lens, will absorb energy from the laser beam, lead to the thermal lens effect. If the lens have not form the thermal stress, the operator can be disassembled and cleaned, of course, shall be made in a certain way to avoid damage to the lens and further pollution.

● General Operation Principles

In the installation and cleaning process of lens, any sticky material, even nail print or oil droplets, will increase the absorption rate of the lens and reduce service life. Therefore, the following precautions are required:

> Do not use suction device or inflatable equipment to avoid scratching the lens surface;

> Hold the edge of the lens rather than the surface film when take lens;

> The lens should be stored in a dry and clean place for testing and cleaning. A good console should have several layers of cleaning tissue or lens tissue on the surface;

> The operator should avoid talking over the lens, and keep food, beverages and other potential contaminants away from the working environment.

● **The correct cleaning method**

① Against mild pollution (dust, fiber particles) for flexible clean.

Before the following steps, use a balloon blowing off the dust on the lens surface; if it still cannot be removed, please go to step ②.

 Note	Avoid using workshop air pipes, because they contain a lot of water and oil. These pollutants can be harmful in lens surface absorption layer.

② For mild pollution (stains, fingerprints) for flexible clean

With acetone or isopropyl alcohol extract infiltrates an unused degreased cotton swabs about 30 seconds on the mirror surface cleaning, cleaning swab with slight pressure do from the center of the circle to the outside of the spiral movement. Swab control when dragging drag speed and strength, left behind a swab of liquid can evaporate immediately, so it cannot leave streaks. If the pollution still cannot be removed, please go to step ③.

 Note	Must control the operating strength, force will damage the lens coating film.

③ For moderate pollution (saliva, oil) of the lens to the cleanness of moderate intensity.

USES distilled white vinegar soak a unused degreased cotton swabs, cotton swabs with slight pressure to do from the center of the circle to the outside of the spiral movement (see operating technique step (2), with an unused degreased cotton swabs to wipe the lens on the extra distilled white vinegar. With an infiltrating acetone degrease cotton swabs gently wipe the surface of the lens, remove all of the acetic acid, please go to step ④.

④ For severely contaminated (splash) lenses must try super clean.

 Alarm	Only the lens in use process by high levels of pollution, and perform steps 1, 2, 3, still failed to achieve acceptable cleaning effect, this method can be used. If removed the coating film, the performance of the lens will be completely destroyed. If the color of the lens has obvious changes, the coating has been completely destroyed.

After fully shaking the container which fills with polish, open the container, drop out 4 or 5 drops in cotton ball. Move the cotton ball as draw circle path; during process please do not press the cotton ball, continuously rotate the mirror, avoid the over polish, the time no over 30 seconds. During this process, once find the color changed which means the coting film damaged, please stop the operation immediately and change color;

A. After use polish, use an unused degreased cotton swabs infiltration with distilled water. And then clean the mirror surface. Thoroughly wet the lens surface, remove the polishing residue as much as possible; do not make the lens surface dry , because it will be hard to remove the polishing residue.
B. Prompt use one unused degrease cotton swab soak with isopropyl alcohol, and

then soft clean the mirror surface. Put the head of the cotton swab on the surface as much as possible to clean the polish residue.

C. Use one unused degrease cotton swab soak with acetone, clean the mirror surface for remove the residual acetone and polish residue.

 Note	The last step must work at somewhere, which have good light and the black background, check the mirror surface carefully, if still have the polish residue, please repeat step ④B-④D

For the above procedures, please pay attention to the following precautions:

- Should always wear no powder finger or rubber/latex gloves, dirt and grease stain on the skin can lead to serious pollution optical element, make its performance fell sharply;
- Prohibit to use any tools for the procedures, including the tweezers;
- For the purpose to protect the lens should always be placed on the lens wiping paper (in the case of lenses removed clean up), it is forbidden to put the lenses on a hard or rough surface, it will make the lens scratches.

Focus lens (mirror) cleaning: the lens wiping paper folded several times, with a cleaning fluid (anhydrous ethanol) dip, dip in with the presence of water ethanol wipe mirror paper with spiral linear graze focus lens from inner to outer surface, repeated several times, until the mirror clean.

Chapter5. Troubleshooting

No.	Failure	Reason	Solution
1	Can't turn on the equipment	Can't turn on the equipment control box isn't turned on	Turn on the circuit breaker
		Key switch is damaged	Replace the key switch
		Intermediate relay is damaged	Replace the intermediate relay
		System short circuit	Check and repair the short circuit
2	Can't turn on the laser / galvanometer	Control button is damaged	Replace the control button
		Control switching power supply is damaged	Replace the switching power supply of same model
		Intermediate relay is damaged	Replace the intermediate relay
3	Can't find the control card	External switching power supply is damaged	Replace the switching power supply
		Control card power cord plug is loose	Reseat connector plug
		USB cable isn't plugged in properly	Reinsert the USB cable properly
		Driver is uninstalled or not installed	Reinstall the driver
		Control card is damaged	Replace the control card
4	Marking graph deformed	Correction parameter is incorrect	Modify the correction parameters
		Scale is incorrect	Modify the scale parameter
		Galvanometer signal cable isn't plugged in properly	Check the signal cable interface and plug properly
5	No laser ray	Laser control plug isn't plugged in properly	Insert laser control plug properly
		Laser switching power supply is damaged	Replace the switching power supply
		Laser heat dissipation poor	Check the operation of the cooling fan
		Laser failure	Replace or repair the laser

Notes

i. The warranty card should be filled by seller and kept by buyer. Alterations are prohibited.
ii. The guarantee period is two years. The repair is free of charge within 6 months and will be charged with material and labor cost after 6 months.
iii. No free repair is available for any damages caused by the improper use.

Thank you for choosing CALCALASER!

We appreciate your business!

WARRANTY CARD

MODEL		LOT #	
BUYER		DATE	
SELLER		TEL	