

LASER MARKING MACHINE **USER MANUAL**

激光打标机使用手册

For series: EZcad



·10D ·20D ·30D ·50D ·60D
·100D ·UV3 ·UV5 ·UV10

RELIABLE PROFESSIONAL LASER EQUIPMENT SUPPLIER!

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Dear Customers:

Thanks for choosing our EzCad Series Laser marking machine. Please carefully read this instruction before using, which is helpful to you use this machine well.



Our aim is continuous improvement and improving existing products. So, maybe the machine is differing from the instruction. If there is going to be some change, we will tell you by attached sheet.

We regret any inconvenience. Please contact with our After-sale service department if anything is unclear, we will try our best to meet your requirement.



Because the I/O, laser power or laser source is electrical, please be more careful when you operate the machine to avoid electrical shock. Pay attention to the personal safety.

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Chapter 1 – Safety

Laser Safety 	This laser marking system contains the laser source laser of class 4 that emits intensive and invisible laser radiation. Without safety precautions the direct radiation or even diffuse reflected radiation is dangerous! The laser operator should observe the following: ● NEVER operate the machine with any of the panels removed. Be aware that removal of any portion of the cabinet will greatly increase the risk of injury and/or fire. Remember that the laser beam is invisible! ● NEVER operate your machine unattended. There is a significant risk of fire if the machine is set improperly. ● DO NOT disassemble the machine or remove any of its protective covers while the unit is plugged in. ● DO NOT look into the beam of the Alignment Laser (visible red diode laser) ● NEVER operate the machine without a properly operating ventilation system. Most materials produce an irritating smoke when engraved. Some materials, including but not limited to paint, varnish, composition board and plastics, produce compounds that can be harmful if concentrated.
Electrical Safety 	● DO NOT open any of the machine's access panels while the unit is plugged in. Opening a panel may expose the operator to the unit's AC input power. ● DO NOT make or break any electrical connections to the system while the unit is turned on ● DO NOT access the electronics area with hands or tools unless the unit is disconnected from power. The power supply of some models is capable of outputting more than DC 20,000V. Always make sure to give the supply capacitors adequate time to discharge before accessing the electronics area. Your laser shipped with silicone terminal covers that prevent access to bare wiring.
Fire Safety 	Please read the warnings and recommendations and them closely at all times! Laser marking systems represent a significant fire hazard due to the extremely high temperatures generated by the laser beam. While the objective of most operations is to vaporize material without burning, most materials capable of being cut or engraved are inherently combustible and can easily ignite. Usually this is a small flame of burning material issuing from the mark zone. However, it is possible for the flame to propagate and set fire to the machine and threaten its surroundings. ● NEVER leave the laser system unattended during operation. ● KEEP the area around the machine clean and free of clutter, combustible materials,

	explosives, or volatile solvents such as acetone, alcohol, or gasoline. ● ALWAYS keep a properly maintained and inspected 5lb or larger fire extinguisher on hand. We recommend a Halogen fire extinguisher or a multi-purpose dry chemical fire extinguisher. Halogen extinguishers are more expensive than a dry chemical, but offer certain advantages should you ever need to use an extinguisher. The Halogen extinguisher discharges a clean, easily removable substance that is not harmful to the mechanics or wiring of the laser system. The dry chemical extinguisher discharges a sticky, corrosive powder that is very difficult to clean up. ● BE CAREFUL when the machine is working. Many materials have the potential to burst suddenly into flames – even materials that may be very familiar to the user. Always monitor the machine when it is operating. ● KEEP YOUR LASER SYSTEM CLEAN – A build up of marking residue and debris is dangerous and can create a fire hazard. Keep your laser system clean and free of debris. Regularly clean any small pieces that have gotten stuck or fallen through.
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In order to use the product quickly and effectively, operating personnel have the following conditions:

1. The operator needs certain computer expertise and can use relevant editing and drawing software, such as Coreldraw, Photoshop, Autocad and other drawing software.
2. The operator has certain optical knowledge and relevant mechanical and electrical equipment repair and maintenance knowledge.
3. Confirm whether you are familiar with the operation process of the equipment and can operate according to it before starting the equipment.

Due to the continuous updating of product features, the products you received may differ in some respects from the statements in this note. We are deeply sorry.

Chapter 2 –Product Introduction

- If your AC voltage is unstable, we suggest buy an extra voltage stabilizer/ regulator.
- The machine should be in a dust-free and radiation-free environment with room temperature between 15-25 degrees
- The laser source are used to output the laser, and then the marking function is realized by the high-speed scanning galvanometer system;
- laser marking electro-optical conversion rate up to more than 70%, compared with semiconductor laser marking machine has higher beam quality
- Long maintenance free time for the whole machine
- High speed, with high speed galvanometer;
- The most models are air cooling, but some models are water cooler. If the product you purchased is water-cooled,

Equipment accessories

Standard accessories: power cord, data line, foot pedal, U disc, tool, focal length ruler, ground wire (different configuration accessories have difference).

			
Power cord	Data line	Foot pedal	U disc
			
Tool	Focal length ruler	Ground wire	Tool protection

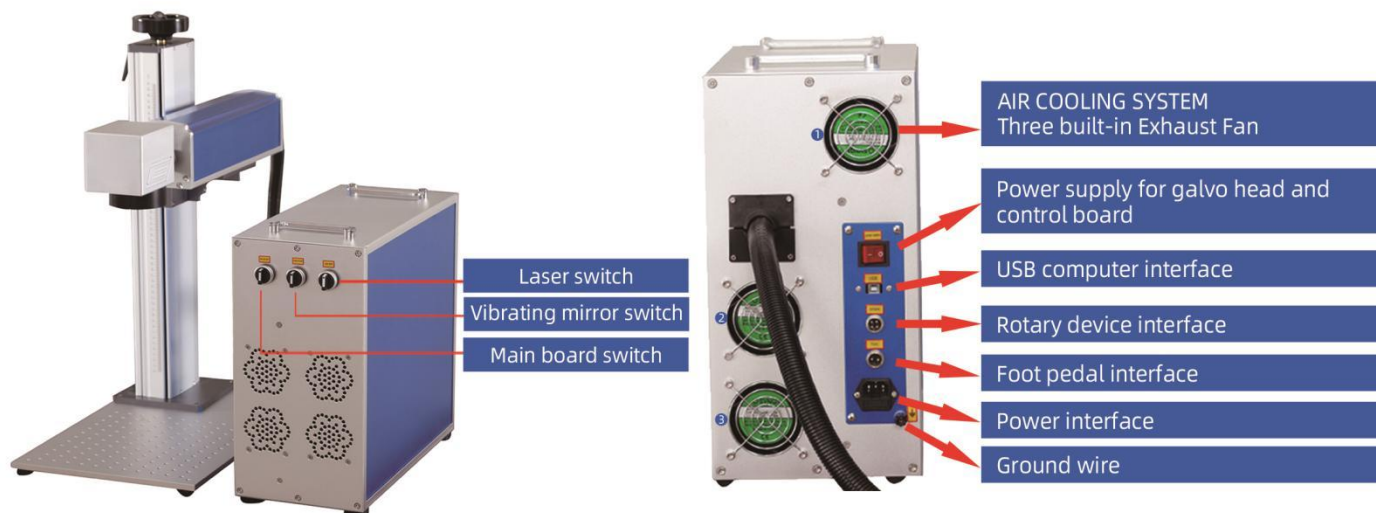
Host operations

Mainly divided into front operation surface and rear operation interface.

The front operating panel is mainly composed of main board switch, galvanometer mirror switch and laser source switch .

As shown in the picture

The rear operation panel mainly includes the main power interface, the main power switch, the USB interface, the foot pedal interface and the rotary shaft interface. (The location of different models will be different).

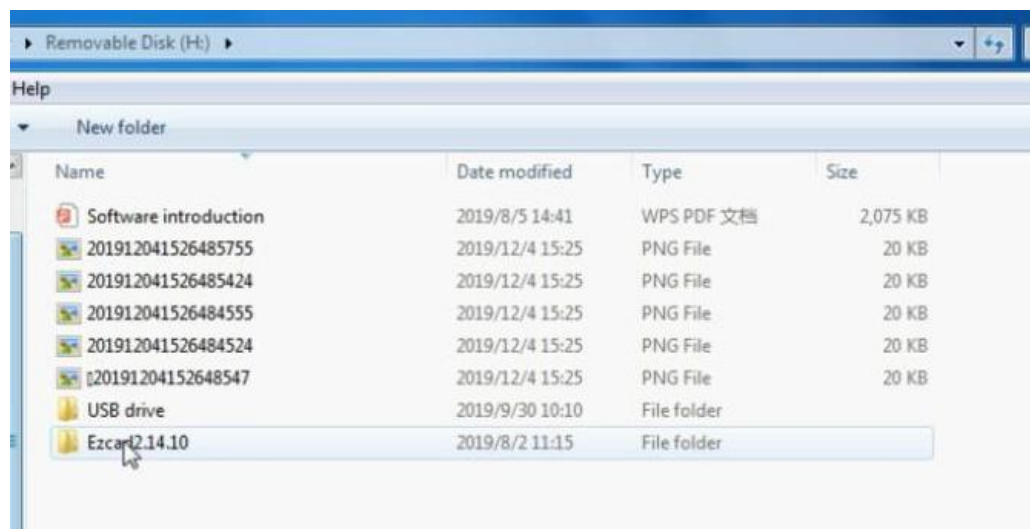


The above is only for split type and cabinet type laser marking machine. Other styles may be different.

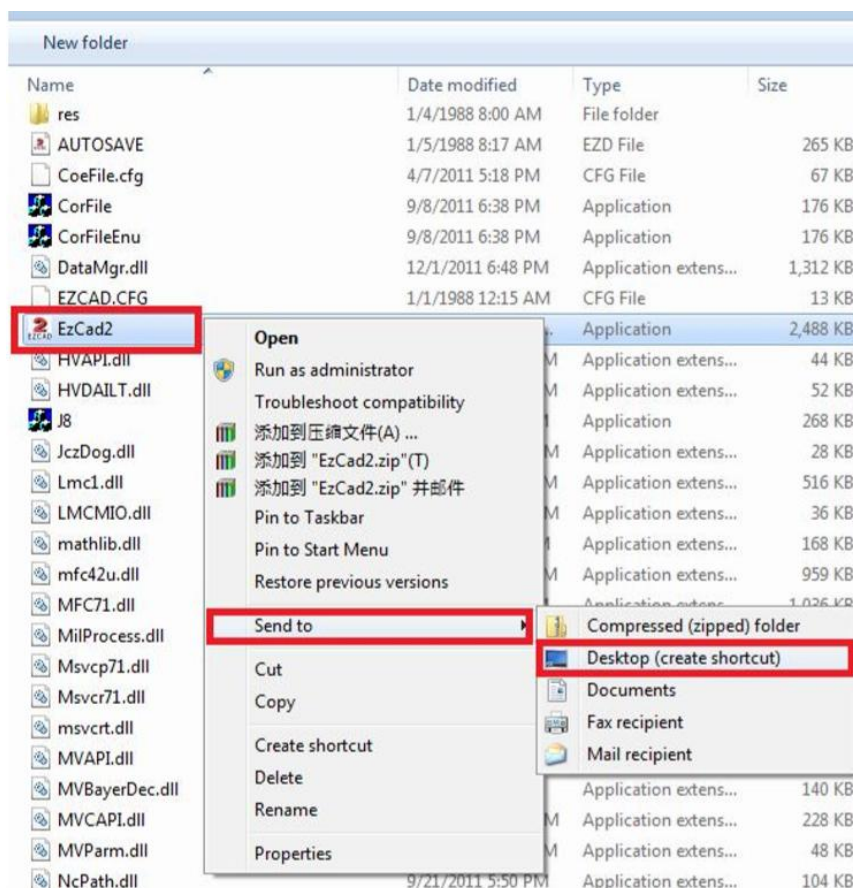
Chapter 3—Software Installation

If your machine comes with a computer, we have installed the software in the computer before delivery, the following installation information will guide you to install the software once you change the computer or use your own computer.

1, Please copy the Ezcad software folder to your computer. You can find EZcad software folder from the U disk. (We recommend that you back up all the contents of the U disk to your computer for later use.)



2, Open the Ezcad software folder, find the “EzCad2”, Send EzCad2 to desktop, as shown in the figure.





3, You will see the corn at the desktop of your computer.

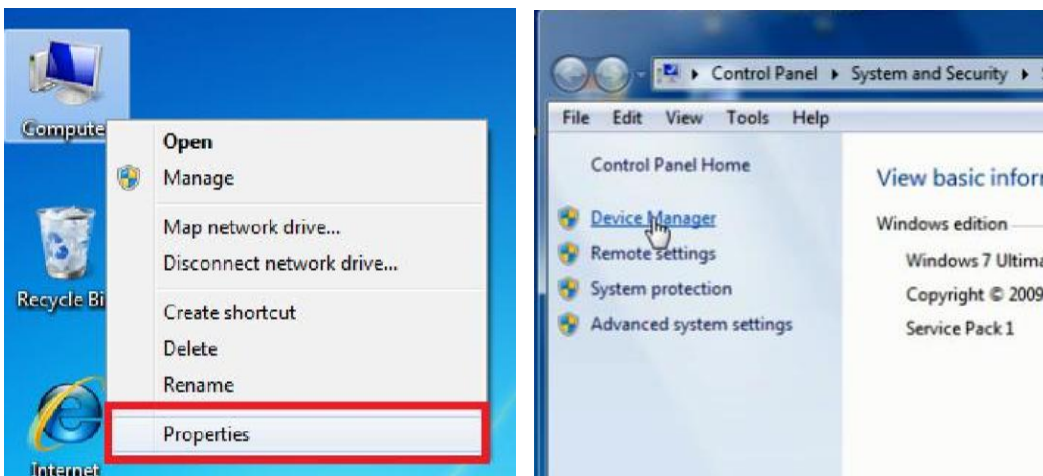
4, Control Card Driver Installation

Power on the laser marking machine, connect the computer with USB cable, then the computer will show

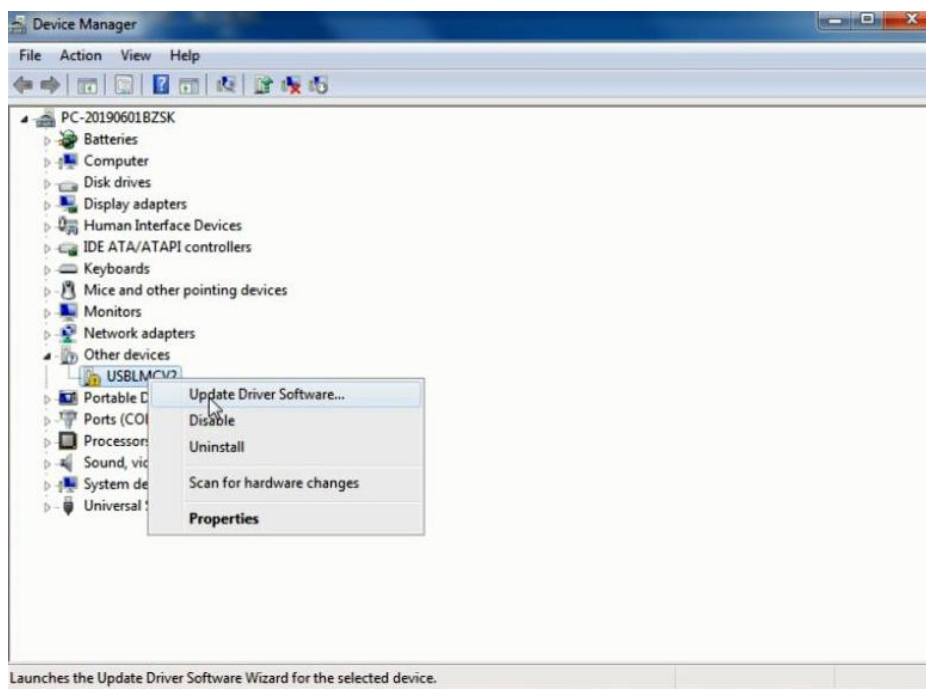


“ ”. Usually, you need to install the driver manually at the first time (The driver can not be installed well automatically).

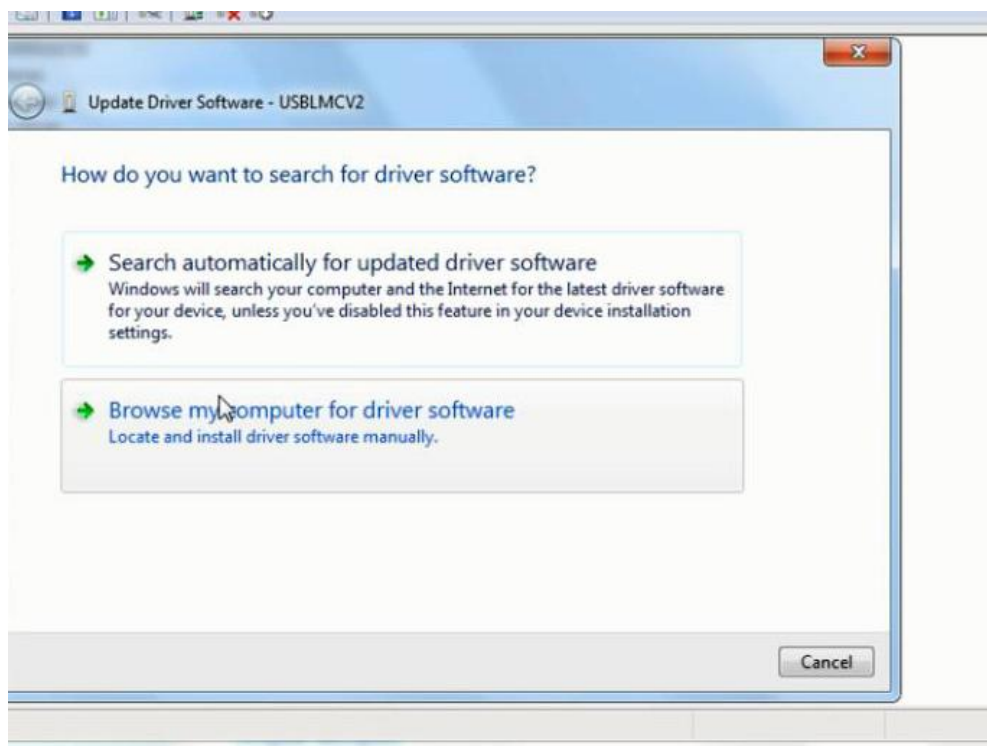
Find “My Computer”, choose “Properties” and “Device Manager”, as shown in the figure :



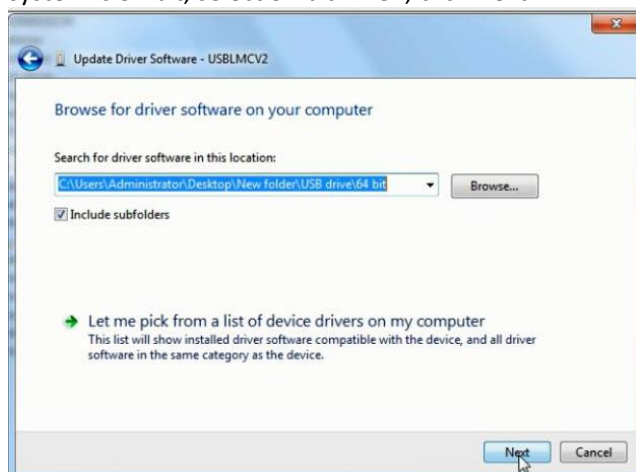
Choose “Other Devices” and you will see “USBLMCV2”, right-click to choose “Update Driver Software USBLMCV2”, as shown in the figure.



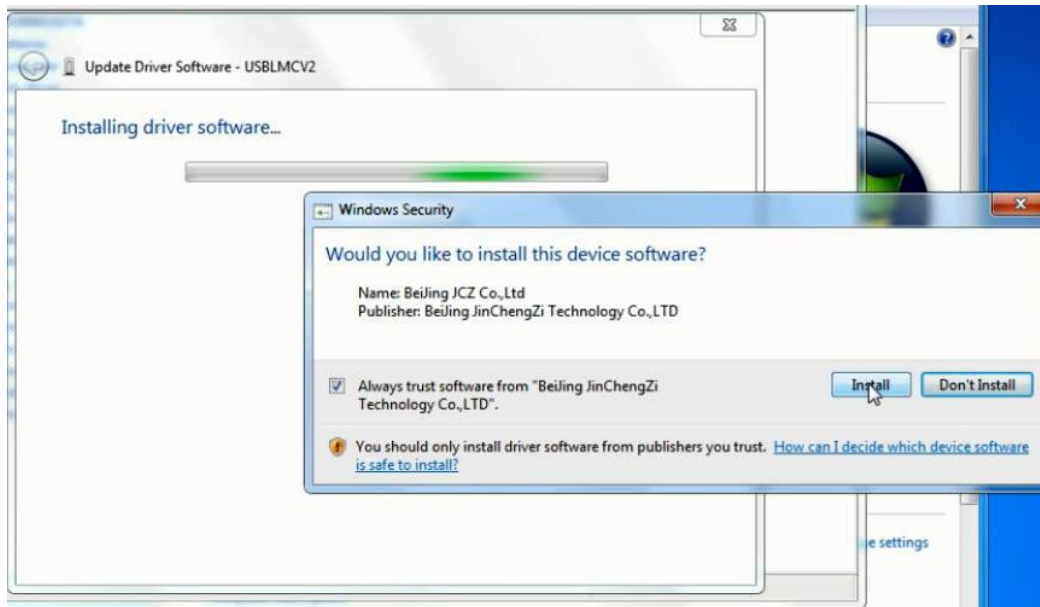
Choose the path of Driver, as shown in the figure



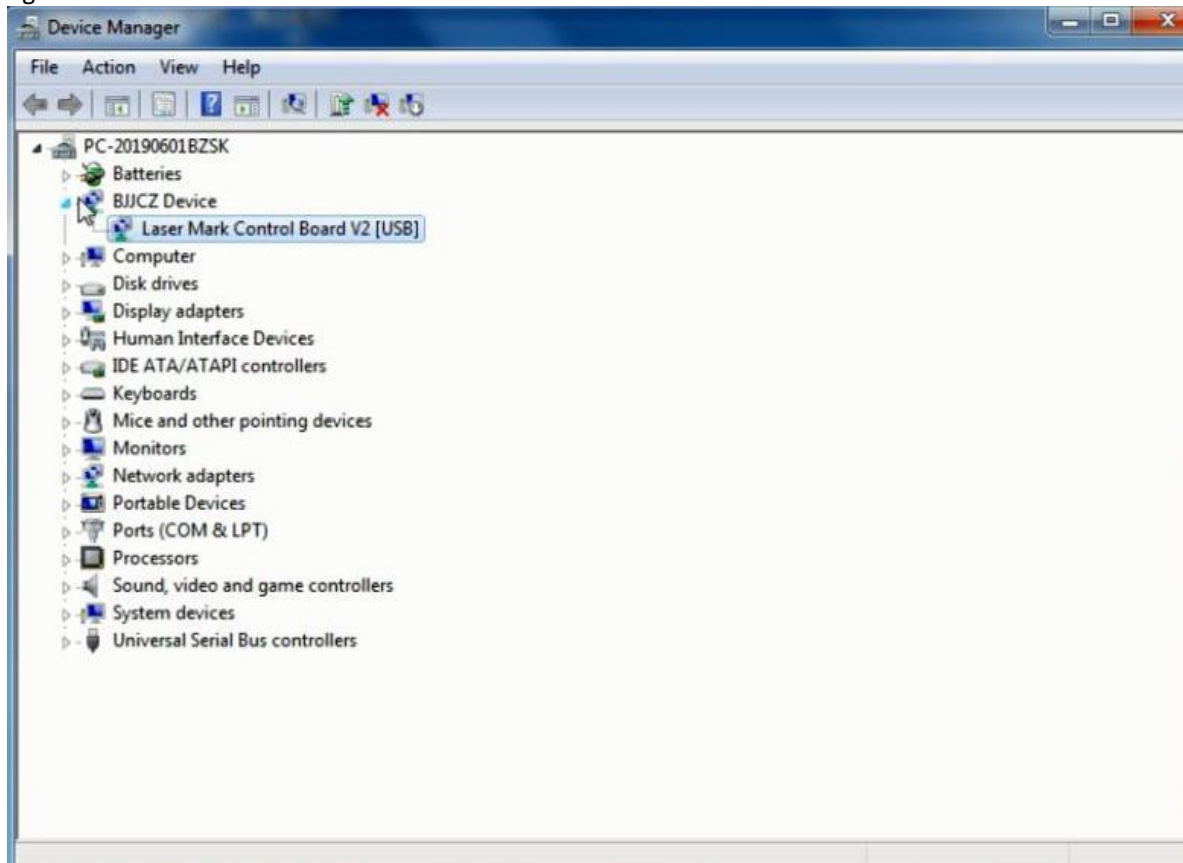
Please choose the USB drive folder(you just copy or from the USB disk), If your computer system is 64 bit, select 64 bit; if your system is 32 bit, select 32 bit. Then, click Next:



You must trust the software, and click Install:



After finishing the driver installation, you will see “Laser Mark Control Board V2 [USB]” on “Device Manager”, as shown in the figure



Now, the Control Card Driver is installed well.

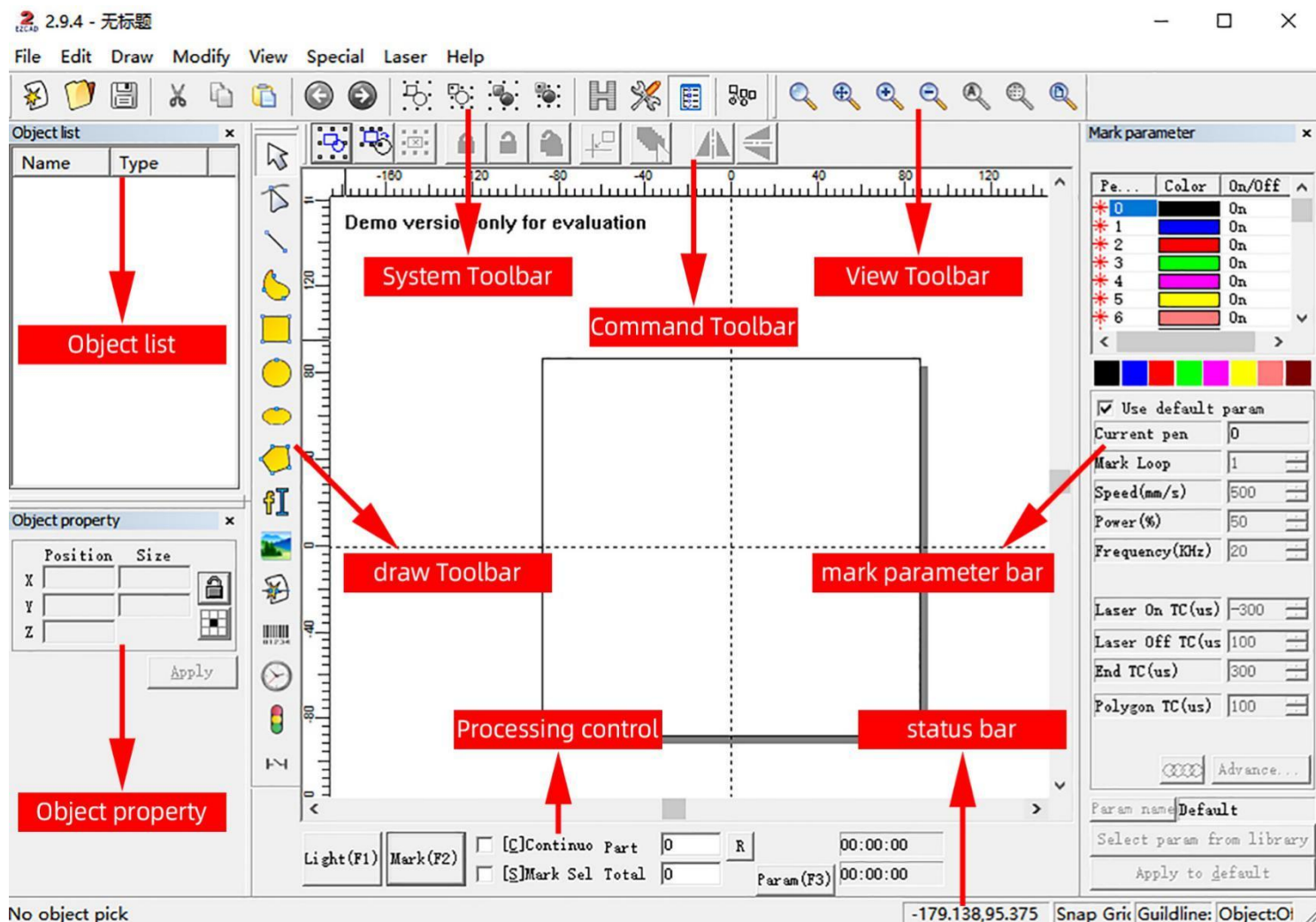
Chapter 4—EzCad Introduction

Software starting interface

The picture appears while running the program, and meanwhile the initial operations takes place in the background.



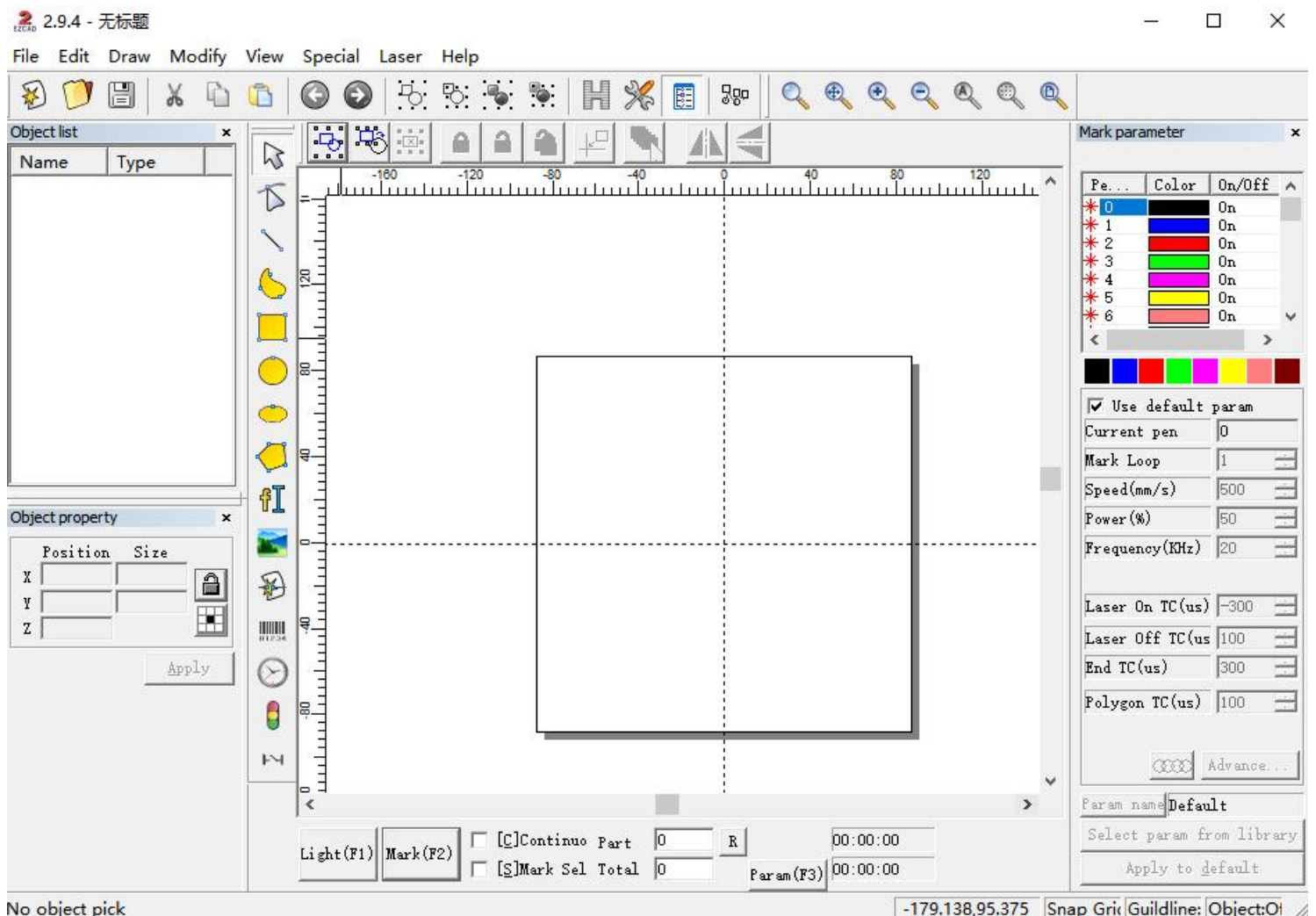
Main Interface



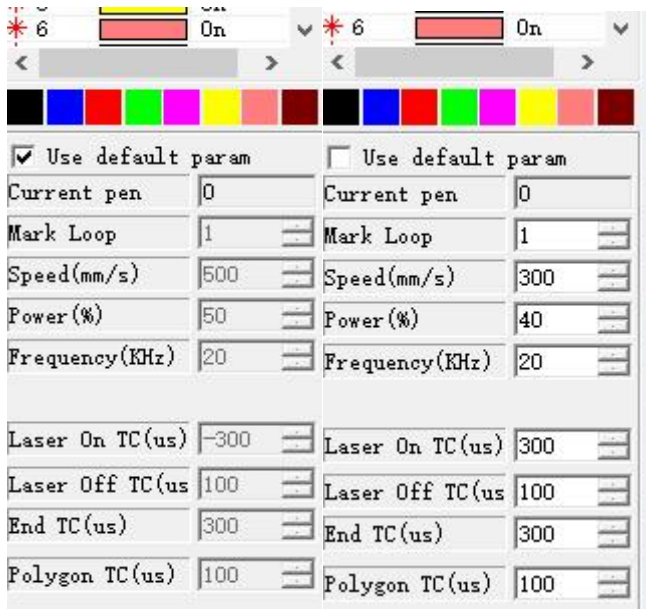
Chapter 5 –Marking Test

Operating steps:

- 1) Connect the computer and the laser marking machine with the USB cable.
- 2) Turn on the computer and plug in the power cord.
- 3) Open the power switch on the machine operation panel.
- 4) Open the main board switch, galvanometer switch and laser switch of the front operation panel successively (When you turn off the machine, you need turn off the laser switch first, then the galvanometer switch and finally the main board switch).
- 5) Open the software



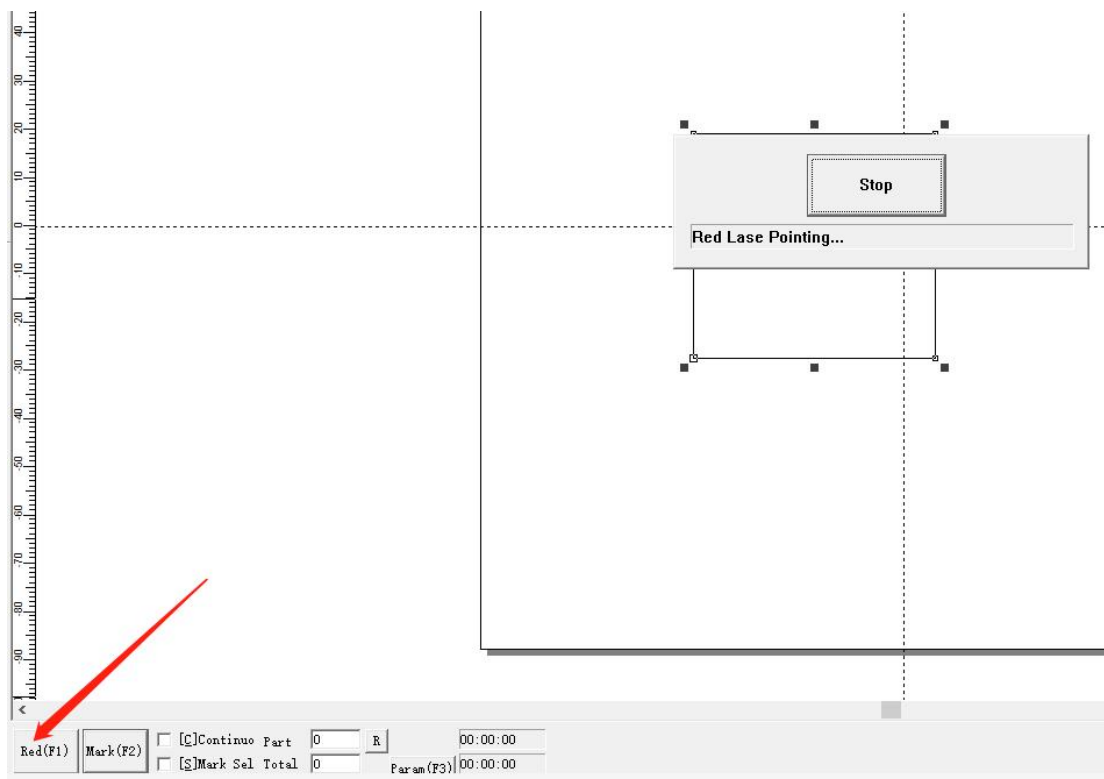
- 6) Drawing or importing drawings, then adjust the corresponding parameters (such as speed, frequency and power); Check "Use Default Parameters". According to the material, marking effect using different speed, power.



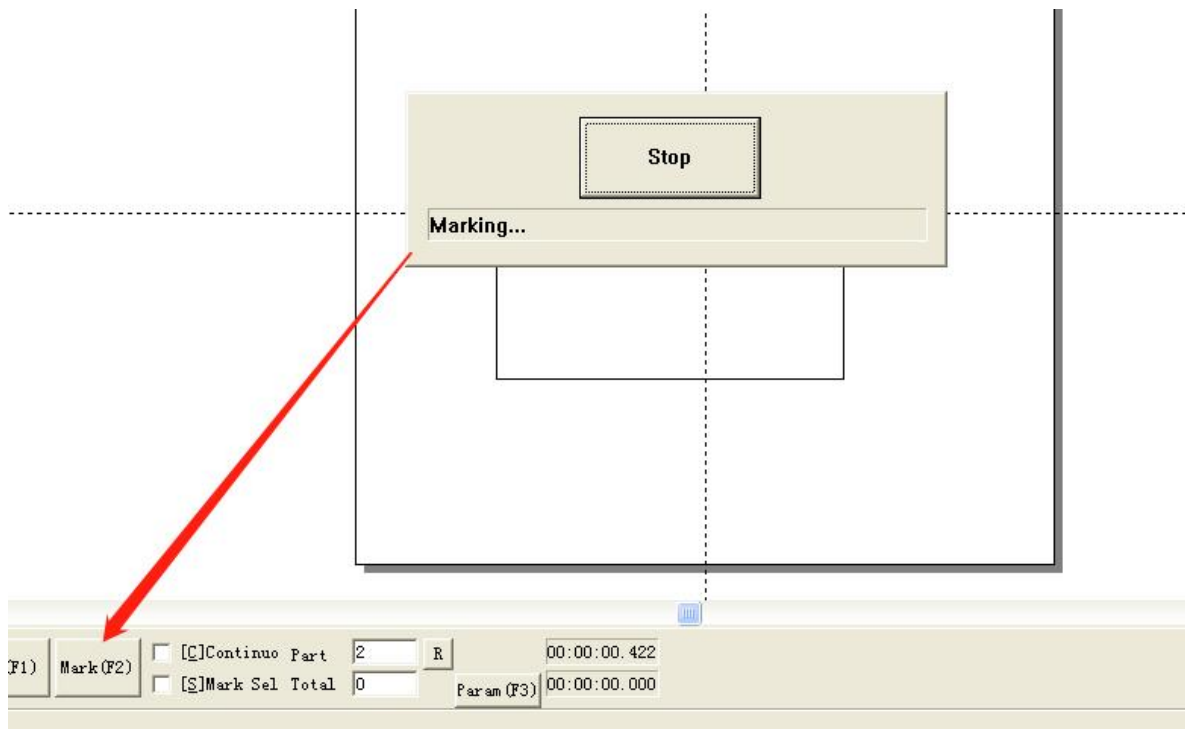
7) Adjust the distance between the marked object and the field mirror according to the focal length. As shown in the diagram, adjust the focal length as shown in the figure (for example: the focal concentration of the 110X110 field mirror is between 160mm-170mm, and the equipment is equipped with a focal length ruler).

Click "Red Light" or "F1", and the indicated contour will appear on the machining table.

Note: If you choose Double red light focusing machine, you don't need ruler to adjust the focal distance. When you shake the lifting wheel, there are Three red spot, you need to make them focusing in one red spot.



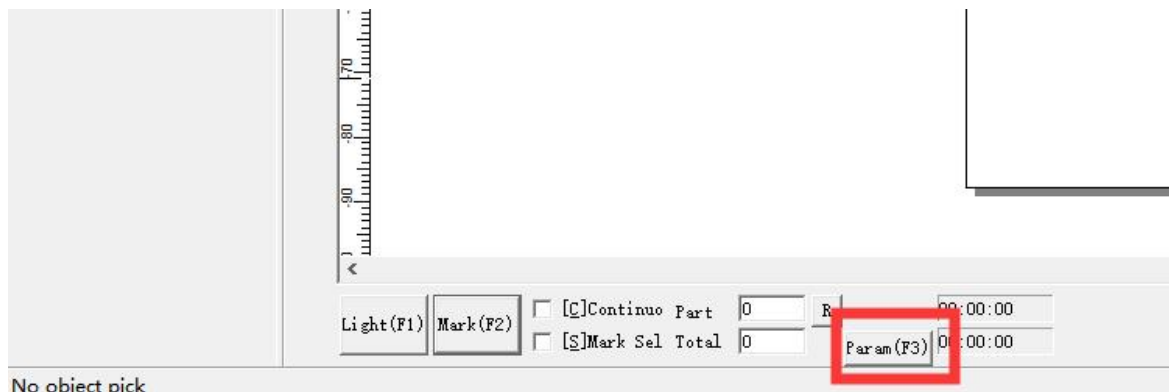
8) Click "Mark" or "F2" to display "Marking".



A mark is made on the surface of the material. The marking is completed.

Chapter 6 –Parameter Settings

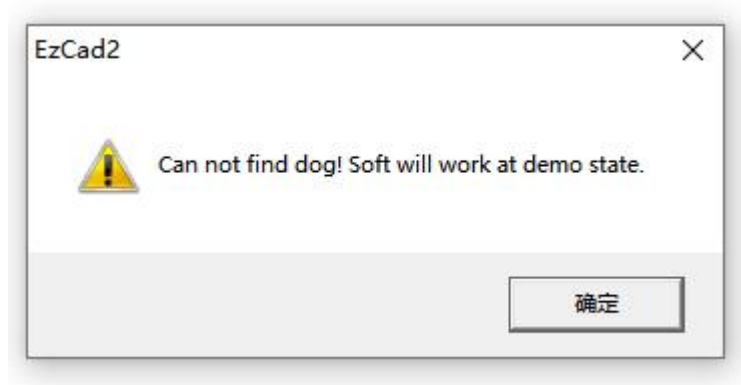
By default, we have set parameters for you with EzCad software in U disk, and you do not need to modify. If you make the parameters wrong, you can press “F3” on the computer keyboard or click the option “Param(F3)” in the software.



Then you can find the parameter pictures of factory settings in U disk, and compare, modify them.
(We recommend that you back up all the contents of the U disk to your computer for later use.)

Chapter 7—Software Error

Work in the Demo version



It means the software can not connect the control card, the reasons might be:

- 1) You did not power on the machine, the control card is not in ready mode.

Solution: Just power on the machine.

- 2) USB connection between the control card and software.

Solution: Just check your USB connection or replace the other USB cable.

- 3) The Control Card got some problems

Solution 1. Replace a new card;

Solution 2. Reboot your machine before you run the software.

- 4) The operator did not install the Control Card Driver properly.

Solution 1: Check which driver you did not install, then just install it.

Solution 2: Uninstall the software and reinstall it after you connect the machine and computer. Before reinstalling the software, we advise you to shut down the anti-virus software in advance.

Chapter 8– Maintenance& Common Faults Analysis

Equipment maintenance:

1. Check if the data line and power line are firmly connected before marking.
2. Check to see if the entrance field mirror cover is removed before marking.
(It is easy to break down the cover of field mirror, marking finished you must cover the mirror well to ensure the mirror is clean.)
3. Cleaning of Galvanometer lens: Wipe with lens paper or cotton swab, take medical alcohol. Wait for the alcohol to completely evaporate before opening.

Common software troubleshooting:

Fault appearance	Analytical method	Approach
Prompt LMC hardware problem	The laser marking machine is off.	Turn on
	Board driver failure	Reinstall the board driver
	USB data cable problem	Replace the data cable
No processing data, files are not loaded	"Select processing" is checked, and the files to be added are not selected for red light and marking	Select the file to be processed
The software won't open	Prompt operating system failure	Right click on the EZcad icon and select Windows XP in Compatibility

Common hardware failure repair:

Fault appearance	Analytical method	Approach
No red light, no laser	1. Whether the marking field lens cover is removed	Take off the lens cover
	2.Problem of red light	If 5V power has 5V , red light is broken , if not has 5V, the power is broken, change it.
	3. The laser power supply is 24V, the laser is broken (use a frequency multiplier to put it into the light outlet, test to see if there is any laser, and if it is, the fiber optic is good)	Returned to the factory testing
No laser at work	1. There is red light, the red light indicates normal.	The optical fiber device or the laser power supply is broken. If the laser power supply is 24V out of the box, the laser is broken, and the 24V laser power supply is broken.
	2. There is red light, the red light indicates abnormality, and the marking is chaotic.	Galvanometer lens is broken, return to factory for repair
	3. There is a red light spot, no red light indication.	Main board problem, replace
No laser at work	1. No red light can be marked.	Red light is bad or 5V is bad
	2. No red light can not mark but there is laser.	Main board problem

Appendix

20W laser marking machine marking parameter reference list

(Note: It's just for reference. The parameters change according to different material and the marking effect.)

Material	Effect	Filling	Speed	Power	Frequency
Anodized aluminum	Black	0.01	300	50	250
Stainless steel	Black	0.01	100	40	80
Stainless steel	white	0.05	1000	65	35
Nickel white copper	white	0.03	1000	100	50
Stainless steel	Deep black	0.05	500	80	20
		0.01	200	40	80
		0.01	200	40	80
Stainless steel	Black	0.01	200	40	80
		0.01	220	40	80
White lampshade	Black	0.03	1200	90	25
Red button	White	0.01	1300	65	35
White black paint button	White	0.04	1000	65	35
Silver	White	0.05	1200	100	35
Stainless steel	Brushed	0.09	1000	70	35
		0.12	1000	70	35
		0.25	1000	70	35
Red copper	deep engraving white	0.02	100	100	20
		0.02	1000	70	80
Red copper	Deep engraving red	0.01	100	100	20
		0.01	100	100	80
White plastic water pipe	Black	0.03	1200	65	25
Blue paint on white	white	0.03	800	85	40
Circuit board	white	0.01	1000	95	32
Abrasive aluminum	white	0.05	100	95	45
Brass	white	0.05	1000	80	40
Black hard plastic	White	0.05	1500~2000	60~75	25~45
Iron	White	0.05	1000	55	35
Laser source cover	Black	0.01	100	100	20
brass	Deep engraving Black	0.01	100	95	20
Aluminum alloy	Deep engraving black	0.01	200	100	30

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Yours sincerely

