Dana FS Series Static Laser Marking Machine

User Manual

Content

1. Product Overview

This series of fiber laser marking machines mainly adopts Raycus/Jept fiber laser, high-speed customized galvanometer scanning system, and Dyna self-developed control software, with fast speed and stable performance; good laser mode, long service life, continuous working up to 100,000 hours, high electro-optical conversion efficiency, and low power consumption of the whole machine. The system is easy to operate and flexible and convenient to change. The full Chinese interface is compatible with files output by various software such as AUTOCAD, CORELDRAW, PHOTOSHOP, CAXA, etc., and can mark barcodes, QR codes, graphics and text, etc. It supports file formats such as PLT, PCX, DXF, BMP, and directly uses SHX and TTF fonts. The system can automatically encode and print serial numbers, batch numbers, dates, etc.

1.1. Hardware Working Environment

Environmental requirements	
Protection level	≥IP54
Cooling	Air
Ambient temperature	-5-45℃
Humidity	Relative humidity 90%RH, non-condensing
Power supply	220V,0.6KVA

1.2. System Technical Parameters

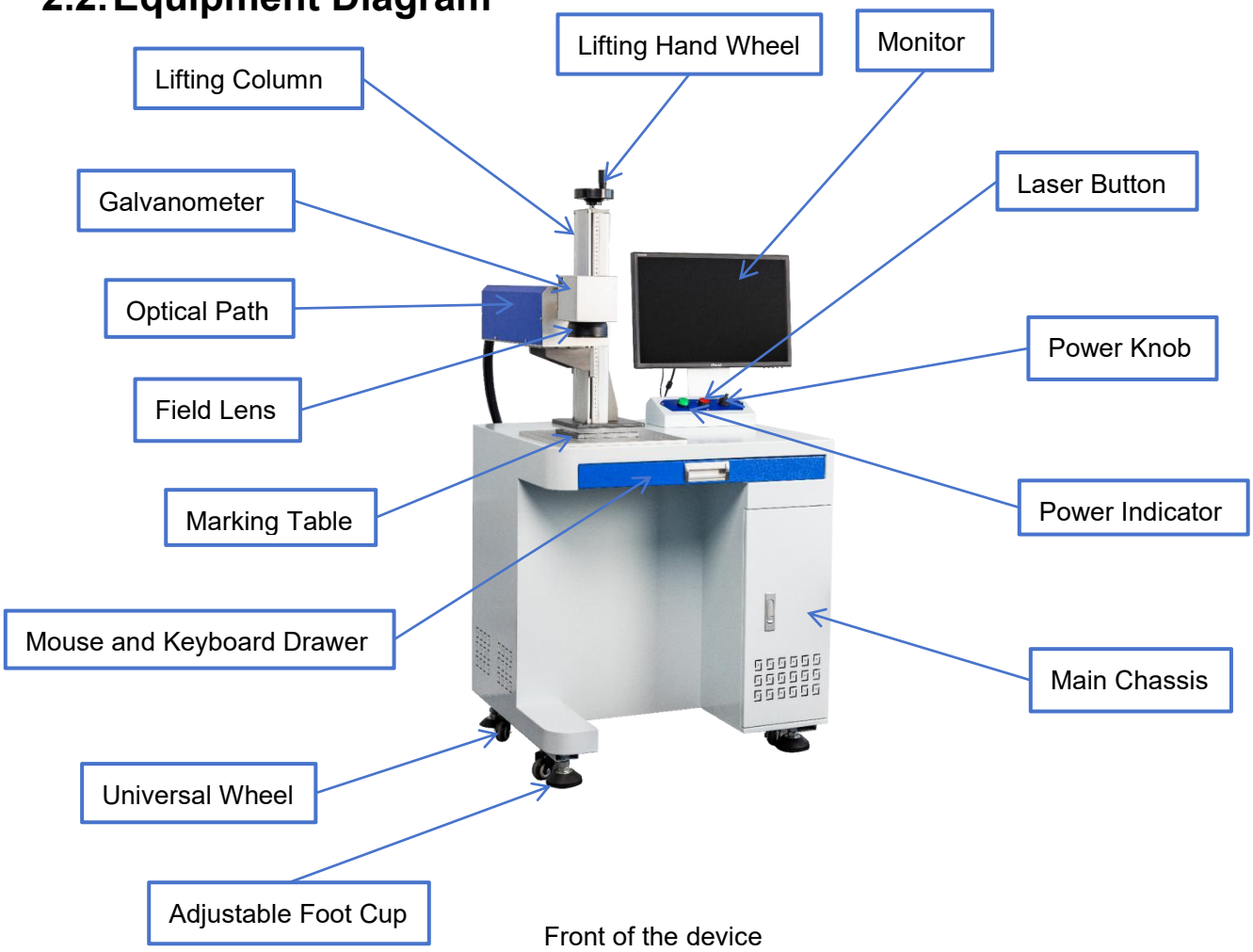
Technical Parameters	
Laser type	Fiber laser wavelength: 1064nm, can meet the working requirement of 100,000 hours
Output power	30W
Focal length	210mm（standard）
Maximum linear marking speed	10000mm/S
Marking parameters	
Marking range	110mm×110mm, maximum marking range: 300×300mm

Number of marking lines	Arbitrary setting of the number of lines within the effective marking range
Minimum line width	0.02mm
Character height	0.2-70mm
Font	Single-line font, dot-matrix font, TrueType font
Marking content	Text, graphics, barcode, Two-Dimensional code, dynamic serial number, real-time clock, TXT file, RS232 communication data, etc.
Marking angle	Any angle, three-dimensionally adjustable
Operation language	Chinese, English (other languages can be supported)

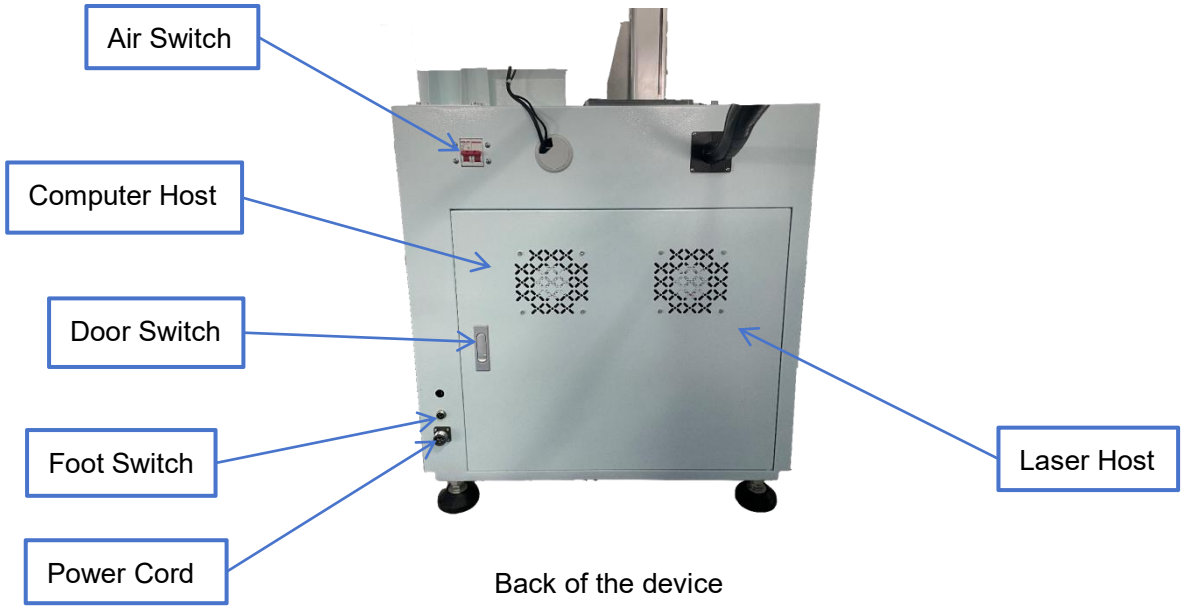
2. Hardware Introduction

2.1. The Packing List Accessories Are As Follows

2.2. Equipment Diagram

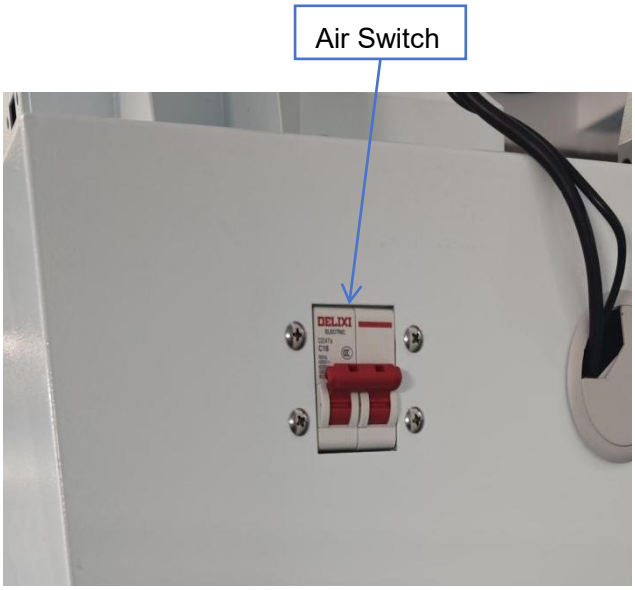


Front of the device



Back of the device


Power Indicator
Laser Button
Power Knob
电源指示灯
激光器按钮
电源旋钮


Air Switch


Foot Switch
Power Cord Socket

Computer Restart

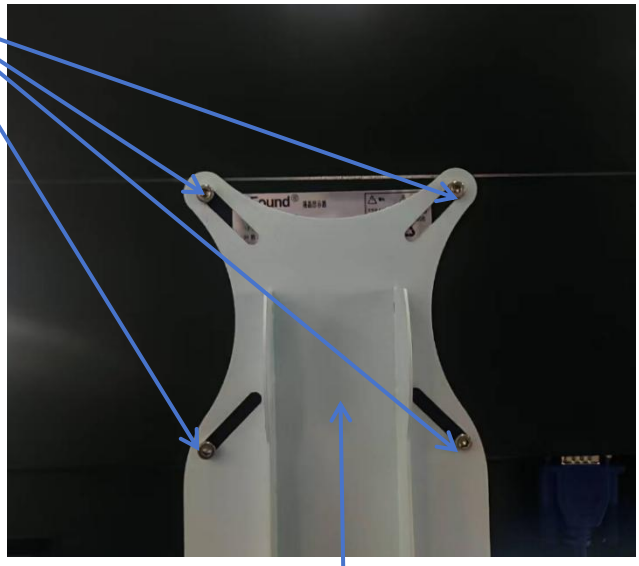
Computer Power Button

Water Cooler Power Button

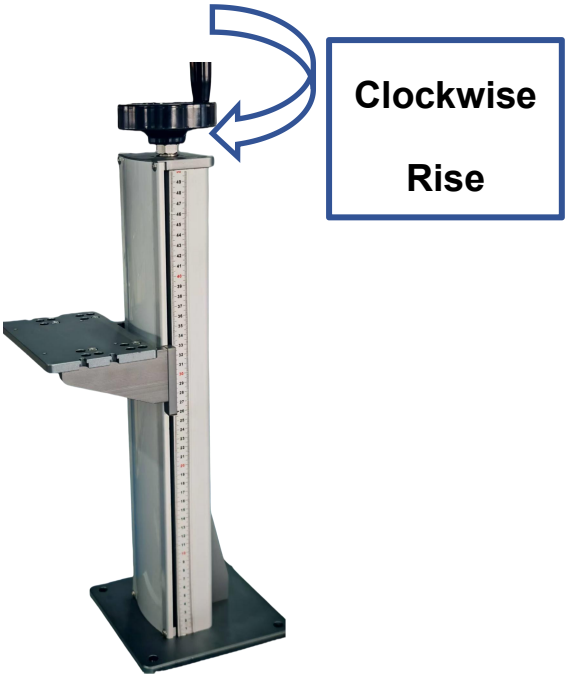
Actual Temperature

Set Temperature

Monitor Fixing Screw



Monitor Bracket



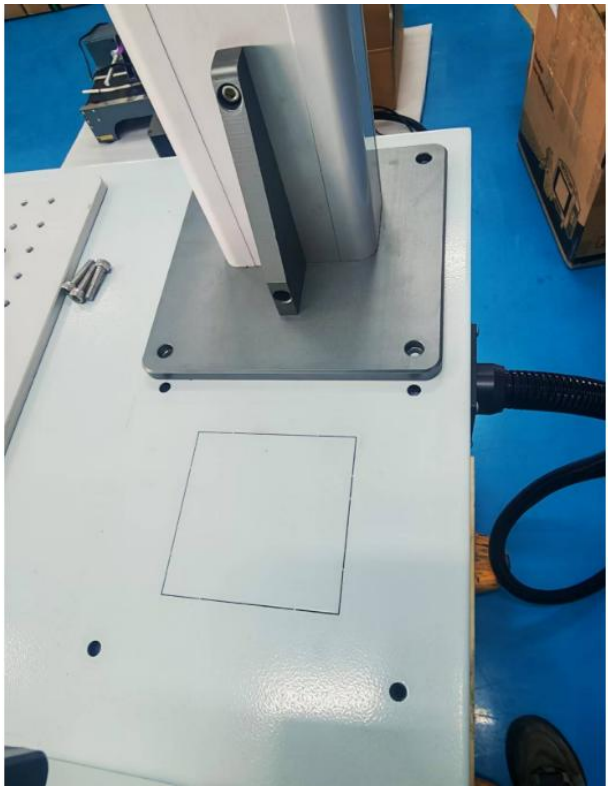
Four positions are mounting holes for fixing the optical path

Corresponding to the four screws on the optical path

The optical path moves forward and backward: by changing the position of the screws in the optical path bottom plate slot

2.3. Installation Flowchart

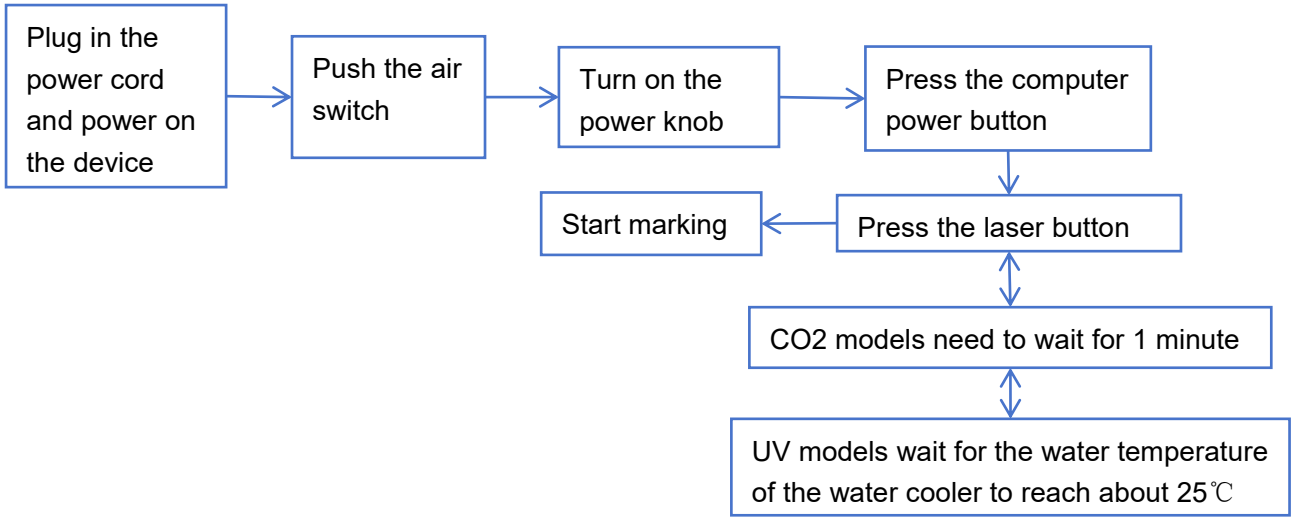
Step 1: Take out the lifting column, find the corresponding four screws, overlap the four holes on the bottom plate of the lifting column with the four holes on the cabinet countertop, and tighten the screws, as shown below:



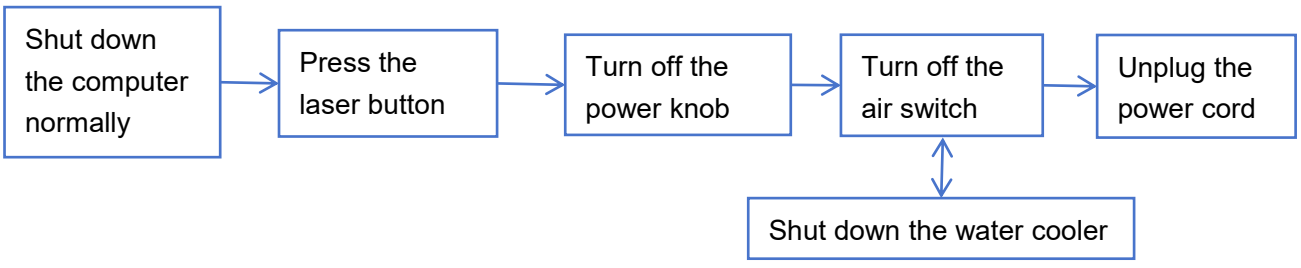
Step 2: Fix the optical path to the lifting column, as shown below:

Step 3: Fix the display, as shown below:

2.4. Boot Process



2.5. Shutdown Process



Note: Please follow the above process strictly.

3. Software Introduction

3.1. Software Introduction

EzCad2.14.9 International Edition software is upgraded from the original software. The software fully supports Unicode, so it can basically support the languages of all countries. EzCad2.14.9 International Edition software can run on Microsoft Windows XP, VISTA, Win7 and Win10 operating systems. All instructions after this manual default to Microsoft Windows 7 operating system. EzCad2.14.9 International Edition software is very simple to install. Users only need to copy the EzCad2.14.9 International Edition directory in the installation CD directly to the hard disk, and then remove the read-only attribute of all files and folders. Double-click the EzCad2.exe file in the directory to run the EzCad2.14.9 International Edition program. If the dongle is not read correctly, the user will be prompted when the software is started that "the system cannot find the dongle and will enter the demonstration mode". In the demonstration mode, the user can only evaluate the software but cannot process and store files.

3.2. Software Functions And Technical Features

(1) Freely design the graphics to be processed.

(2) Support TrueType fonts, single-line fonts (JSF), SHX fonts, dot matrix fonts (DMF), one-dimensional barcodes and two-dimensional barcodes.

(3) Flexible variable text processing, real-time text changes during processing, can directly read and write text files, SQL databases and Excel files.

(4) Can directly read text data through the serial port.

(5) Can directly read text data through the network port.

(6) There is also an automatic text segmentation function to adapt to complex processing conditions.

(7) Powerful node editing function and graphic editing function, can perform curve welding, cutting and intersection operations.

(8) Support up to 256 pens (layers), and can set different processing parameters for different objects and pen numbers.

(9) Compatible with common image formats (bmp, jpg, gif, tga, png, tif, etc.).

(10) Compatible with common vector graphics (ai, dxf, dst, plt, etc.).

(11) Common image processing functions (grayscale conversion, black and white conversion, dot processing, etc.), can process 256-level grayscale images.

(12) Powerful filling function, supports filling methods such as circular filling, one-way filling and two-way filling.

(13) Powerful IO control function, multiple control objects, and added port control function, which can make your machine easily automated, and users can freely control the system to interact with external devices.

(14) Directly support SPI's G3 version fiber laser and the latest IPG_YLP, IPG_YLPM fiber laser, and can adjust current, pulse frequency, duty cycle and other parameters according to different laser parameters by software.

(15) Support dynamic focusing (3-axis processing system).

(16) Open multi-language support function, which can easily support languages from all over the world.

(17) Password control can prevent parameters from being modified at will.

(18) Two correction methods, built-in traditional trapezoidal correction, barrel (pillow) correction and parallelogram correction. We have also developed special calibration software to obtain extremely accurate calibration results.

3.3. Software Installation and Initialization

3.3.1. Driver Installation

After the device is connected, open the device manager and the following figure will be displayed:

Figure 1-1 Driver Installation

Among them, USBLMCV2 is the marking card,After selecting USBLMCV2 ,right click and the following dialog box pops up:

Figure 1-2 Driver Installation

Select "Update Driver Software" and select the corresponding driver folder. After installing the corresponding driver, it will be displayed as follows:

Figure 1-3 Driver Installation

At this point, the hardware driver installation is complete and you can start the software.

3.4. Common Problems and Fixes

When opening the EzCad2.exe program, the following problems may occur due to improper software settings or hardware problems:

(1) "Unable to find the dongle", as shown in the figure:

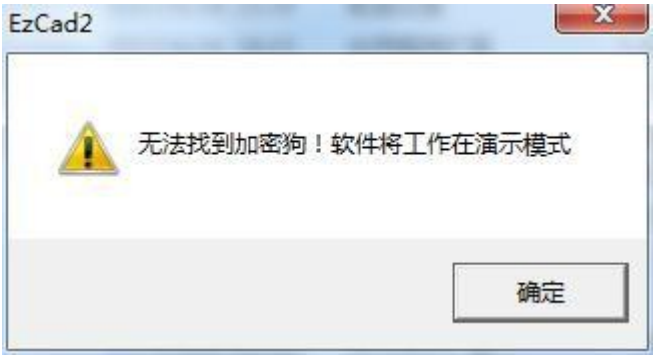


Figure 1-4 Frequently Asked Questions

After opening the software, the dialog box shown above pops up, showing "Cannot find the dongle! The software will work in demonstration mode". This error means that the EzCad2 software currently cannot find the control card.

Solution:

1. Adjust the output voltage of the power supply switch of the board to make the board power supply voltage 5V.

2. Check whether the USB communication cable is properly plugged in, replace the USB communication cable, and replace the USB socket.

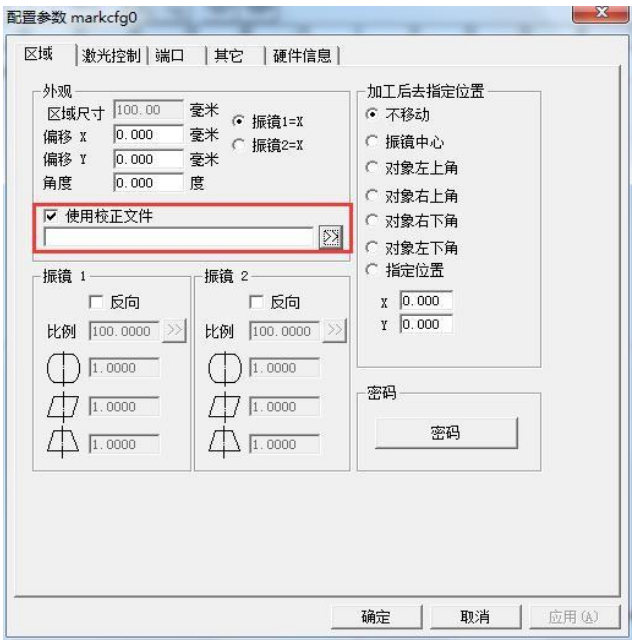
3. If there is a lot of electromagnetic interference on site, ground the board, etc.

(2) "Can not open correct file!", as shown in the figure:

Figure 1-5 Frequently Asked Questions

After opening the software, this dialog box appears, which displays “Cannot open calibration file”.

Solution: 1. Import the calibration file with the correct path. If there is no calibration file, uncheck "Use calibration file" in F3 parameters, as shown in the figure:



3.4.1.Hardware Environment

(1) CPU P4 1GHz or above, memory 1G or above, video memory 512M or above, hard disk 20G.

(2) Others include: keyboard, mouse.

Software environment Windows XP or higher.

3.4.2.Interface Introduction

When the program starts running, the startup interface is shown in Figure 1-7, and the program performs initialization operations in the background. Figure 1-8 is the main interface of the software.

Figure 1-7 Startup interface

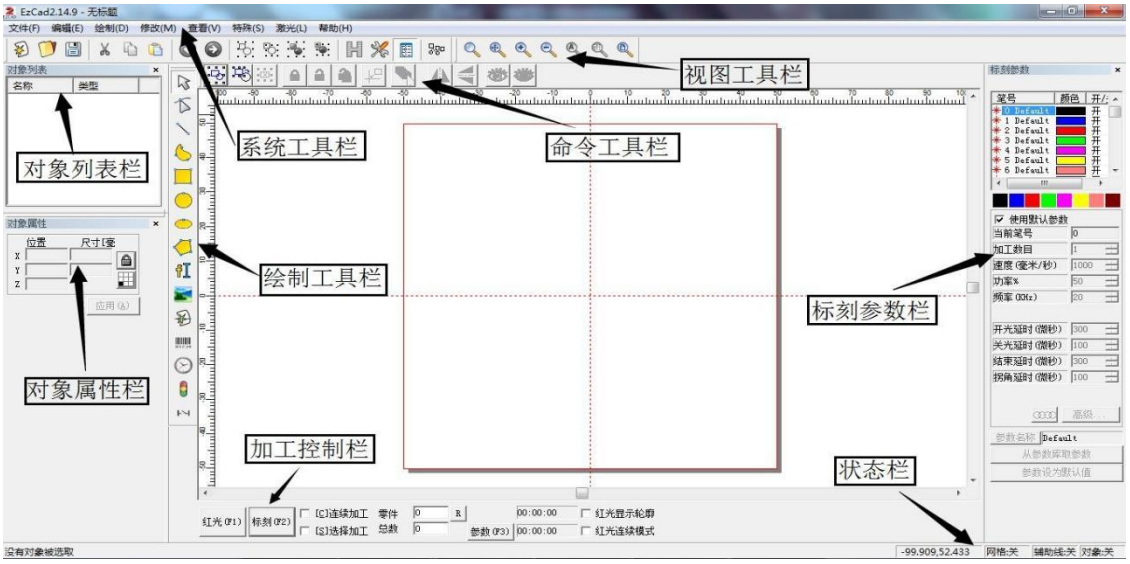


Figure 1-8 Main interface

4. Device Configuration Introduction

4.1. Configuration list

NO.	Product name	Unit	Qty.	Brand
1	Laser	Unit	1	Raycus/JPT
2	Galvanometer	Unit	1	DANA Custom
3	Field mirror	Set	1	Pixel Optics
4	Touch control system	Unit	1	DANA
5	Chassis	Set	1	DANA
6	Bracket	Unit	1	DANA
7	Power supply	Set	1	DANA

4.2. Random spare parts list

No	Name	Qty	Specifications	Illustrate
1	Metal dimmer	1	pcs	
2	Foot switch	1	sets	
3	Laser protective glasses	1	pcs	
4	Hexagon socket	1	sets	
5	Cleaning kit	1	sets	

5. Equipment Maintenance Instructions

5.1. Galvanometer part

1. Wipe the scene lens once every two days (depending on the on-site environment. If there is too much dust on the scene lens, the marking effect will be poor). Wipe it with a cotton ball or cotton swab dipped in alcohol. Wipe in one direction, clockwise or counterclockwise.

2. The galvanometer structure is made of aluminum alloy to facilitate heat dissipation. The temperature of the galvanometer will increase when the equipment works for a long time. In order to dissipate heat, try to keep the surface of the galvanometer clean.

5.2. Chassis

Principle:

There are air inlets on the outside of the chassis and cooling fans on the inside. Air enters through the air inlets and is exhausted to the outside of the chassis through the cooling fans. Dust in the air will be brought into the chassis with the air. Dust is generally corrosive and will corrode the circuit system. Therefore, the inside of the chassis needs to be cleaned regularly.

Method:

It should be cleaned about once every three months (depending on the site environment). Remove the chassis cover and use high-pressure air or a high-power blower to thoroughly blow the inside of the chassis while the device is powered off. Pay attention to cleaning the air intake holes and make sure that the air blown out does not contain water.

5.3. Appearance

When the power is off, wipe the exterior of the device with a wet cloth and let it dry before powering it on. Note: Avoid pouring water directly on the chassis when the device is running.

5.4. Security Section

Avoid direct contact of laser with skin, eyes, etc.

Regularly check whether the bottom line is in good contact.

Never disassemble or assemble the machine while it is powered on.

5.5. UV laser part

For water-cooled machines, change the water regularly. It is recommended to change the water once every quarter. Note: Try to add water with less impurities, such as distilled water. In winter, if the room temperature is below zero, it is recommended to add antifreeze, antifreeze: water = 1:2.

6. Equipment Warranty Card

Product model		Date of manufacture	
Unit number		Laser number	
Control panel number		Galvanometer number	
User name			
User address			
Contact number		Zip Code	
Purchase date			
Maintenance record	Maintenance date	Maintenance record	Maintenance person