



AKEME Laser Marking Machine

User Manual

Contents

Particular Statement.....	1
Part1 Overview.....	1
1.1 Laser Marking Mechanism.....	1
1.2 Laser Marking Features.....	1
1.3 Product Description.....	2
Part2 Safety Precautions.....	2
2.1 General Safety Instructions.....	2
2.2 Laser Type.....	3
2.3 Hazard of Laser.....	4
2.4 Protective Glasses.....	4
2.5 Explosion and Fire.....	4
2.6 Electrical Safety.....	4
2.7 Workplace Markings and Labels.....	4
Part3 Technical Parameters and Applicable Place.....	5
3.1 Technical Parameters of Machine.....	5
3.2 Applicable Place for Machine.....	6
3.3 Equipment System Composition.....	6
3.3.1 Laser Power Supply.....	7
3.3.2 Fiber-optic Laser.....	8
3.3.3 Galvo Scanning System.....	8
3.3.4 Focusing System.....	8
3.3.5 Computer Control System.....	8
3.4 Equipment Installation and Positioning Requirements.....	9
3.5 Unpacking and Inspection.....	9
3.6 Equipment Operation Steps.....	9
Part4 File.....	10
4.1 New.....	10

4.2 Open.....	11
4.3 Save.....	12
Part5 Edit.....	12
5.1 Copy.....	13
5.2 Delete.....	14
5.3 Undo.....	14
5.4 Fill.....	14
5.5 Transform.....	15
Part6 Toolbar.....	16
6.1 Move to the Center.....	16
6.2 Log in.....	16
6.3 Upgrade Management.....	16
Part7 Entity property.....	19
7.1 Vector.....	19
7.2 Text.....	19
7.3 Composite text.....	21
7.3.1 Static Text.....	22
7.3.2 Time.....	22
7.3.3 Date.....	22
7.3.4 Scanner.....	22
7.3.5 Serialnumber.....	22
7.4 Random code.....	23
7.5 Ruler.....	23

Particular Statement

Dear users of AKEME Laser:



Users should read the “User Manual” carefully before using the machine. It can help you quickly master the usage and maintenance skills of the machine and make the equipment to serve you for a long time. The machine is constantly upgraded and improved. If there is any difference from the “User Manual”, please subject to the actual function. You are welcome to give criticisms and corrections, if there are omissions, shortcomings and inconsistencies in this edition

The information provided in this manual is subject to change without notice.

The company is not responsible for any loss caused by the operation not in accordance with the instructions in this manual.

All patent rights and intellectual property rights included in this specification are shared free of charge.

Part1 Overview

1.1 Laser Marking Mechanism

The laser has high brightness, high directivity, high monochromaticity and high coherence, which is unmatched by ordinary lighting sources. After the laser beam is focused, a high temperature of thousands or even tens of thousands of degrees can be generated at the focal point, making it possible to process almost all materials.

Laser marking is to use a laser beam to engrave permanent marks on the surface of various materials. The effect of marking is to expose the deep material through the evaporation of the surface material, or to "engrave" the trace by the chemical and physical changes of the surface material through the action of light energy, showing the pattern and text to be etched.

1.2 Laser Marking Features

1) Our equipment can process a variety of metal and non-metal materials, especially for marking high hardness, high melting point and brittle materials.。

2) Our equipment is in no-touch processing, does not damage the product, has no abrasion on tools and has good marking quality.



3) The laser beam is small, the processing material consumption is small, and the processing heat affected zone is small.

4) High processing efficiency, computer control, easy to automate.

1.3 Product Description

The marking machine adopts imported high-performance digital galvanometer scanning system, which is fast, high precision and can work for a long time. It can be used to write or make permanent anti-counterfeiting marks that are difficult to copy in most metal materials and some non-metal materials such as silicon, rubber, epoxy, ceramics, marble and other materials.

AKM-GT series of fiber laser marking machine have good laser optical mode ($M2 < 2$), machine in small size, has stable and reliable operation, no need to maintenance, no need to use water-cooling system; in high electro-optic conversion efficiency, low energy consumption; has good marking quality; laser power and frequency in computer control, easy for automation.

The company provides dedicated marking software based on the Windows platform. Real-time control on laser power and pulse frequency. The marked content can be text, graphics, pictures, serial numbers, barcodes and combinations thereof; can directly input and edit in the marking software, also can edited by graphic software such as AutoCAD or CorelDRAW, and use the computer to control the input and output.

AKM-GT series of optical fiber laser marking machine are designed to meet international safety and operational standards.

Part2 Safety Precautions

2.1 General Safety Instructions

AKM-GT series of optical fiber laser marking machine are specifically designed to reduce accidents that are exposed to hazardous radiation.

Warning

1.Operation, adjustment or control that does not follow the instructions in this manual may result in hazardous emissions. Therefore, the system must be operated and maintained after users are fully known the safety requirements and operating procedures.

To ensure the operation in safety and the optical performance of the equipment, please follow the tips and warnings below:

Warning: When using this equipment, be sure to ensure the equipment is in a secure connection to ground.

Warning: Before powering the laser unit, make sure that the input power is in 220V(The specific input voltage is subject to local) . Incorrect voltage input may cause damage to the equipment.

Warning: To prevent electric shock, please do not open the cover, otherwise the company will refuse to provide the promised quality assurance if there is any problem.

Warning: If you do not follow the instructions in this manual, the protective measures of this device will not function as intended. In addition, the instrument can only be used in normal working conditions.

Warning: Directly gaze to the laser output or lens is prohibited. When operating the equipment, it is necessary to avoid directly gazing at the marking operation, for protecting your eyes.

2.2 Laser Type

AKM-GT series of optical fiber laser marking machines use lasers in Class IV. Improper operation will cause harm to the human body,users should take protective measures according to the requirements of this manual.

The laser used in the laser marking machine is invisible and with a laser wavelength of 1064 nm.

Avoid directly exposure of the eyes or skin to laser radiation.

Do not attempt to open the device. Any maintenance and service can only be done by the technician authorized by our company.

2.3 Hazard of Laser

The laser output is in invisible infrared light, which can cause tertiary burns even in the case of deviation from the focal length.



The beam output by the device contains visible and invisible radiation. Harmful to the human eye. It is forbidden to look directly at the laser beam. To prevent accidental exposure of the human eye to the output beam or its reflected beam, all people around the device must wear special protective glasses. Directly gazing at the laser beam is prohibited even with protective glasses.

2.4 Protective Glasses

All people around the device must wear special safety glasses and must ensure that the protective glasses provide sufficient protection for the radiant energy of the 1.064 μ m wavelength laser.

2.5 Explosion and Fire

AKM-GT series of optical fiber laser marking machine are not suitable for use in flammable and explosive places. Also, do not use in the presence of volatile solvents such as alcohol, gasoline, etc.

2.6 Electrical Safety

AKM-GT series of optical fiber laser marking machine should not be disassembled with indulgence. The equipment has high voltage inside, which is easy to cause damage to the human body. In the event of a malfunction, only a professional technician can open the equipment.

2.7 Workplace Markings and Labels

In the workplace of AKM-GT series of optical fiber laser marking machine installation and operation should be awake to the target "beware of laser" in the conspicuous position.

AKM-GT series fiber laser marking machine has three kinds of labels affixed to the surface to remind users to pay attention.

1) Laser radiation warning sign

The mark in Figure is a laser radiation mark. Located at the laser output of the laser marking machine.



2) Hazard warning signs

The sign in Figure is a hazard warning sign. Located at the laser output of the laser marking machine.



3) Beware of electric shock sign

The sign in Figure is a hazard warning sign. Located at the power output of the laser marking machine.



Part3 Technical Parameters and Applicable Place

3.1 Technical Parameters of Machine

AKM-GT series of optical fiber laser marking machine adopt imported high-performance galvanometer scanning system and focusing system, fully enclosed, maintenance-free, air-cooling mode, with red light positioning function.

Power input;

Machine Input voltage: 220V AC \pm 10

Frequency: 50Hz

Machine input power: \leq 500W Laser output

Laser wave length:

1064nm Laser



Working mode: pulse type
Modulation frequency: 20kHz~80kHz
Laser power: 20~100 W
Instability: <5%
Laser beam quality: $M^2 < 2$
Peak power: $\geq 5KW$
Output fiber length: <5m Marking parameters
Marking size:(optional) 110*110mm
Max scanning speed: <7000 mm/s
Scanning accuracy tolerance: < 2 mRad
Repetition accuracy tolerance: < 5 μ Rad
Min line width: 0.2mm~0.2mm
Single marking depth: 0.01mm~0.2mm (depend on materials)
Focal length of F-theta lens (optional):
F=100mm, effective focus scanning range: 65mm X 65mm
F=160mm, effective focus scanning range: 110mm X 110mm
Mark repeatability: 0.001mm
Cooling method: air cooling
Working temperature & humidity:
Temperature: 0 ~ 42°C Humidity: 45 ~ 85
Safety: over-current protection; over-temperature protection;
over-voltage protection
Continuous working time: $\geq 16h$

3.2 Applicable Place for Machine

AKM-GT series of optical fiber laser marking machine should be installed in a workplace with dust-free, oil-free, non-corrosive gas, with an ambient temperature of 0 to 42°C and a humidity of 45 to 85 .

3.3 Equipment System Composition

AKM-GT series of optical fiber laser marking machine are a high- tech product that highly integrates laser, computer, automatic control and precision machinery technology. It mainly includes the following sections.

- 1)Laser power supply;
- 2)Optical fiber laser source;
- 3)Galvanometer scanning system;
- 4)Focusing system;
- 5)Computer control system.

The relationship between the parts is shown in below picture.

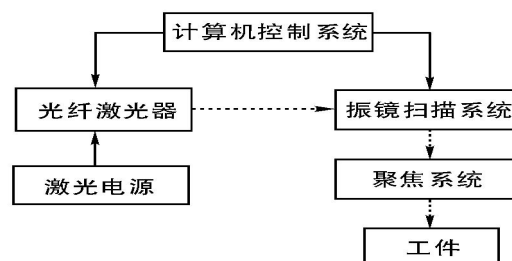


Image 5-1

The structure of the optical fiber laser marking machine is shown in below picture.

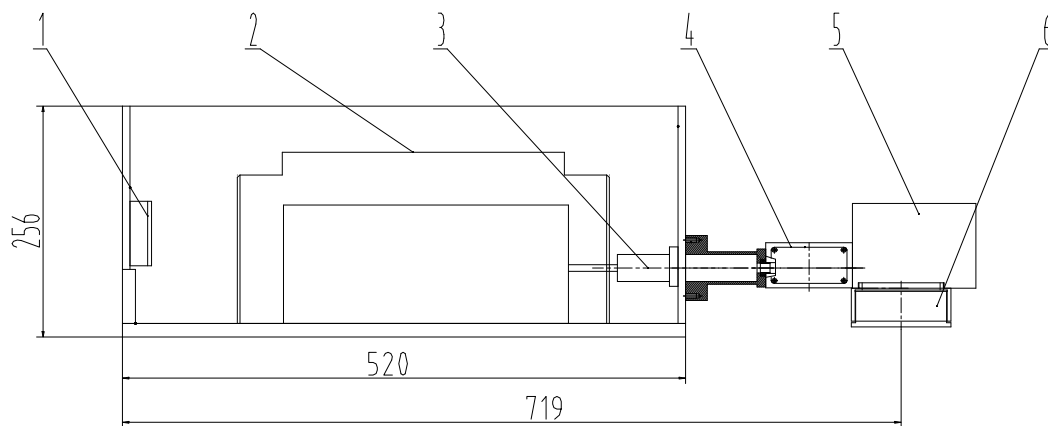


Image 5-3

- 1)Optical fiber port
- 2)Laser source
- 3)Optical fiber and coupling device
- 4)Red-light indication system
- 5)Galvanometer scanning system
- 6)F-theta lens

3.3.1 Laser Power Supply

The laser power supply of AKM-GT series of optical fiber laser marking machine is a device for powering the optical fiber laser source, its output laser mode is good and its service life is long. It is designed to be installed in the marking machine casing.

3.3.2 Fiber-optic Laser

AKM-GT series of optical fiber laser marking machine adopt imported pulsed optical fiber laser source. Its output laser mode has a long service life. It is installed in



the machine cabinet.

3.3.3 Galvo Scanning System

The galvanometer scanning system consists of two parts: an optical scanner and servo motor. The entire system is designed and manufactured by using new technologies, new materials, new processes, and new working principles.

The optical scanner uses a servo motor with a moving magnetic deflection mode, it has the advantages of large scanning angle, large peak torque, large load inertia, small electromechanical time constant, fast working speed, stable and reliable, and so on. The precision bearing anti-backlash mechanism provides the ultra-bottom axial and radial runout tolerance; the “Electronic Torque Bar” replaces the traditional elastic material torsion bar, which greatly improves the service life and long-term reliability; the zero-power hold operation at any position reduces the power consumption and reduces the heating effect of the device, eliminating the need for thermostats; advanced high-stability precision position sensing technology provides high linearity, high resolution, high repeatability, and low drift performance.

The optical scanner is divided into an X-direction scanning system and a Y-direction scanning system, a laser reflecting lens is fixed on each servo motor shaft. Each servo motor is digitally controlled by a computer to control its scanning trajectory.

3.3.4 Focusing System

The function of the focusing system is to focus the parallel laser beam at one point. Mainly adopt F-theta lens, the focal length of different F-theta lenses is different, the marking effect and range are different as well. The optical fiber laser marking machine adopts imported high-performance focusing system, its standard F-theta lens focal length $f=160\text{mm}$, effective scanning range is $110\text{mm} \times 110\text{mm}$. Users can choose the suitable F-theta lens as needed.

Optional F-theta lenses are available in:

110*110mm/170*170mm/200*200mm/300*300mm

3.3.5 Computer Control System



The computer control system is the center of laser marking machine controlling and commanding, and is also the carrier of software installation. The marking process of the workpiece is completed by coordinated control of the acousto-optic modulation system and the galvanometer scanning system.

The computer control system of AKM-GT series of optical fiber laser marking machine mainly includes chassis, main board, CPU, hard disk, memory stick, D/A card, display, keyboard, mouse, and so on.

3.4 Equipment Installation and Positioning Requirements

AKM-GT series of optical fiber laser marking machine should be installed in a well-ventilated, clean and bright room. In order to ensure good ventilation and maintenance needs, the distance between the machine and the wall and other obstacles is at least 0.6m.

3.5 Unpacking and Inspection

Only authorized worker of AKEME Laser can open the package, install and debug it.

Unpacking should be safe and take care to avoid damage to the equipment and accessories.

Check the number of equipment and random related documents according to the List of Equipment and Accessories.

If you find any damage to the package before opening the package or if some parts of machine are damaged during the installation, you should immediately notify AKEME Technology Wuxi Co., Ltd.

Lay the host of the optical fiber marking machine flat on the table prepared in advance. The table must have sufficient load-bearing capacity and stability, and use 6 (or 4) M6 screws to firmly connect the table to the host of the optical fiber marking machine.

3.6 Unpacking and Inspection

- (1) Correctly connect the laser and control card and power supply, turn on the power switch
- (2) Turn on the main control key switch
- (3) Ensure that the emergency stop switch is not turned on

(that is, the switch bounces up, which is a self-closing state)

- (4) Turn on the laser power switch
- (5) Start the computer and turn on the computer monitor
- (6) Start to control the power switch of the galvanometer
- (7) Open the laser software in the computer to adjust the relevant parameters of the software for laser marking. At this time, ensure the laser working focal length (that is, the distance from the working to the laser marking head)

Part4 File

The File menu implements normal document operations, including New, Open, Save as and Save. See image 2-1

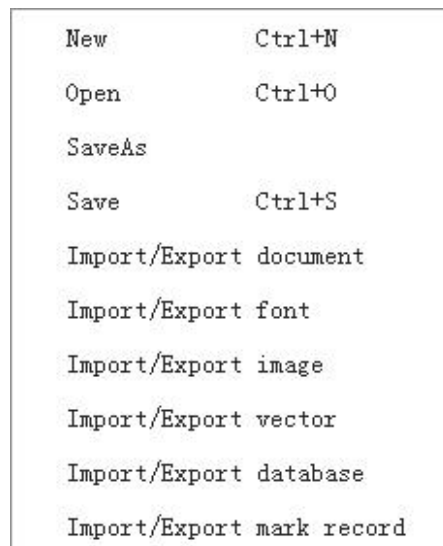


Image 2-1 File

4.1 New

New a empty document, shortcuts is Ctrl+N.




Image 2-2

Same as toolbar button .

4.2 Open

Open lasermark document file(with file suffix as lmf3),shortcuts is Ctrl+O.

Same as toolbar button .

Double click the document you want,or enter the sub-directory to browser documents. Select the document and click rename button can change the document name.

Click U disk(**Warning**:only support U disk format as FAT32 currently) button can browser removable device documents if some removable device(such as U disk) has plugin in.

Input keyword can search document quickly.

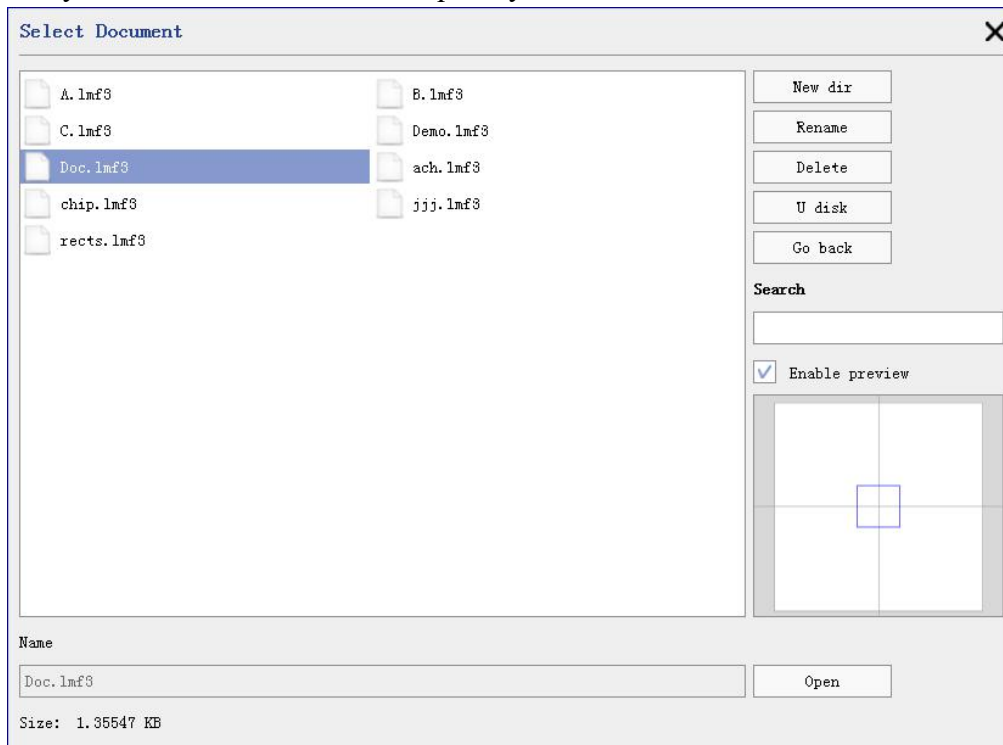



Image 2-3

If document contains much more contents,un-checked **Enable preview** could be have fluent view.

You can press left/right/up/down key to select document.

4.3 Save

Save current edit document to storage,shortcuts is Ctrl+S.

Same as toolbar button .

Part5 Edit

See Image 3-1

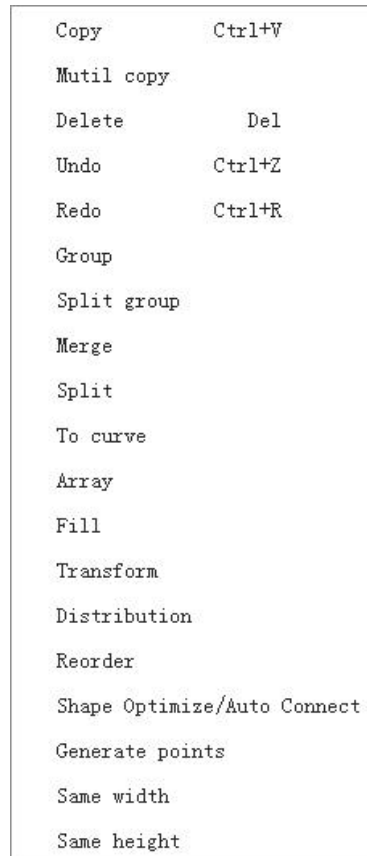


Image3-1 Edit menu

5.1 Copy

Clone selected objects,shortcuts is Ctrl+C.

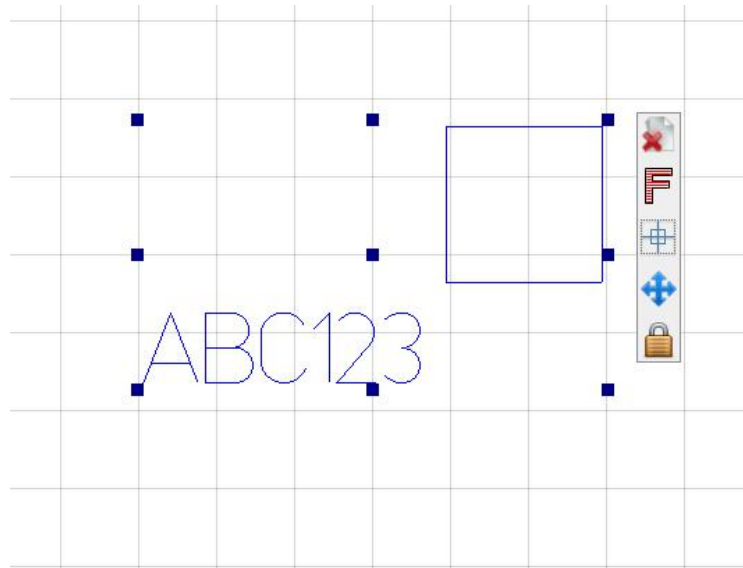


Image3-2 Select a normal text and a graphic

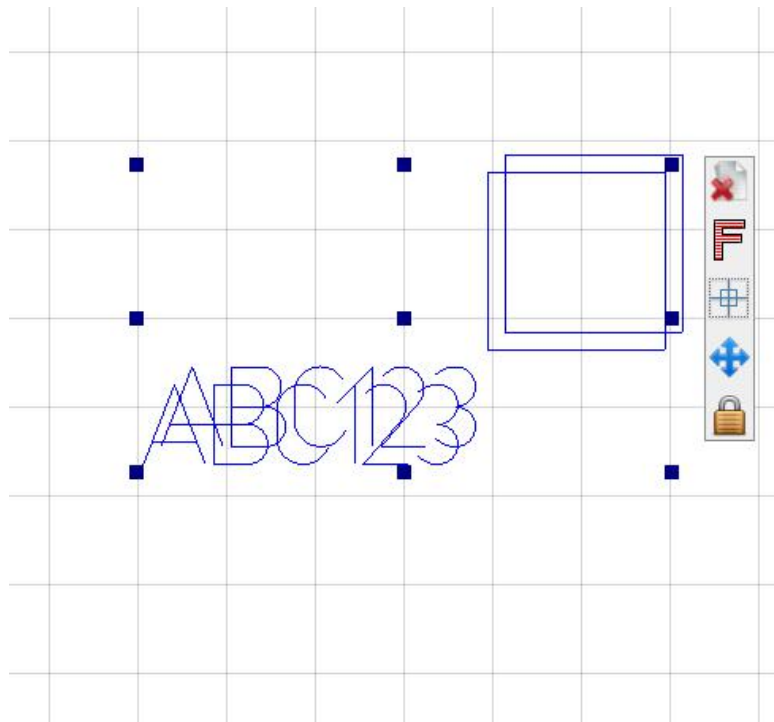



Image3-3 After clicking copy, a new marker with the same parameters will be generated directly in the upper right corner


5.2 Delete

Delete selected objects.

Same as toolbar button. 

5.3 Undo

Back to previous operation, shortcuts is Ctrl+Z.

Same as toolbar button .

5.4 Fill

Fill closed-polygon with lines.

Select object and click , the setting see Image 3-6

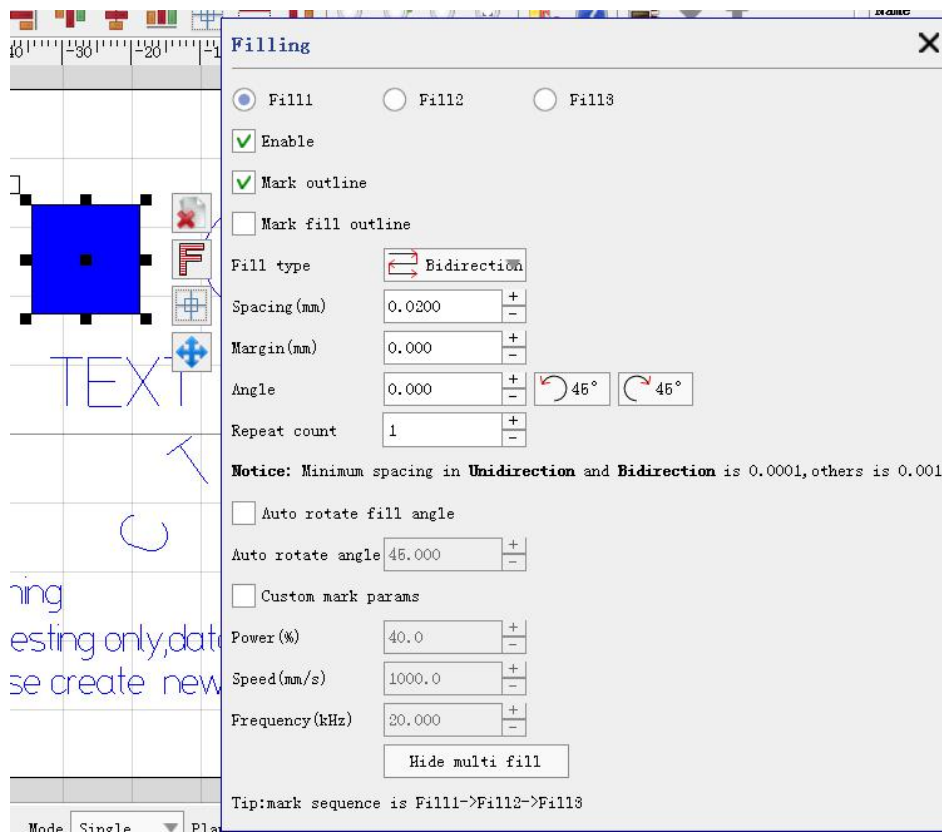


Image 3-6

Mark outline: whether enable outline mark.

Fill type:

Unidirection: always scan fill from left to right.

Bidirection: scan fill as bidirection (from left to right then right to left).

Bow: fill connected lines if two nearby line in the same fill block.

OptimizedBow:similar with bow.

Spacing:line spacing.

Margin:fill line margin.

Angle:fill line rotation angle.

Repeat count:repeat fill count while marking.

Auto rotate fill angle:change fill angle after mark finish current and prepare next.

Custom mark params:enable to change mark effect.

Power:laser mark power.


Speed:laser mark speed.

Frequency:laser mark frequency.

Click **show multi fill** can setting multi fill.Mark sequence is Fill1,Fill2,Fill3.

5.5 Transform

The transform menu includes move, zoom, rotate, flip and tilt. The shortcut

buttons are  as shown in Figure 3-11.

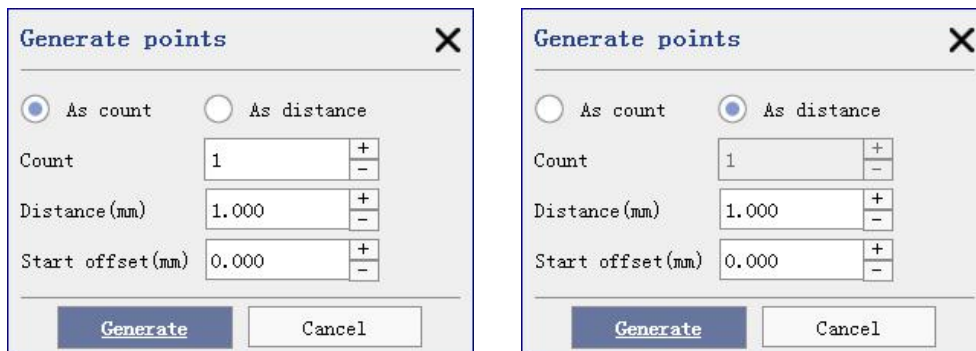






Image 3-11

The transform implements move,scale,rotate,invert and tilt,see Image 3-7.

Move:click  button to move selected object with **step** offset.Or setting object absolute position with **X** and **Y** value.

Scale:scale selected objects' size. button will increase/decrease objects with proporting unchanged.

Rotate: rotate selected objects' with angle value.  button will rotate objects left/right with 90 angle.

Invert: invert selected objects in horizontal or vertical line.  button will invert objects in horizontal or vertical line.

Tilt: tilt selected objects with clock or anti-clock wise angle.

Part6 Toolbar

6.1 Move to center



, move selected objects to view center

6.2 Log in



, engineer default password is 000000, manager default password is 111111.

User has no edit permission in unlogin state, and can open document to print only.

Engineer can edit document and modify mark params. Manager has the highest permission, it can modify laser params, correction params and other hardware parameters.

6.3 Upgrade manager

When you click the upgrade management menu or insert a USB flash drive (only FAT32 format USB flash drives are supported for the time being), the upgrade management dialog box will pop up, as shown in Figure 5-26.

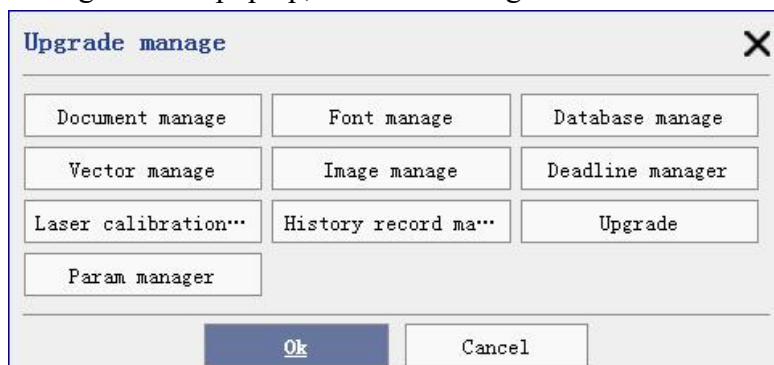


Image 5-26

In the upgrade management, you can manage the documents or other resource files used in the laser marking machine, including documents, fonts, databases, vector diagrams, pictures, laser calibration, marking records and system parameters. The management interfaces of these major types of files are similar. The document management interface is described below, as shown in Figure 5-27.

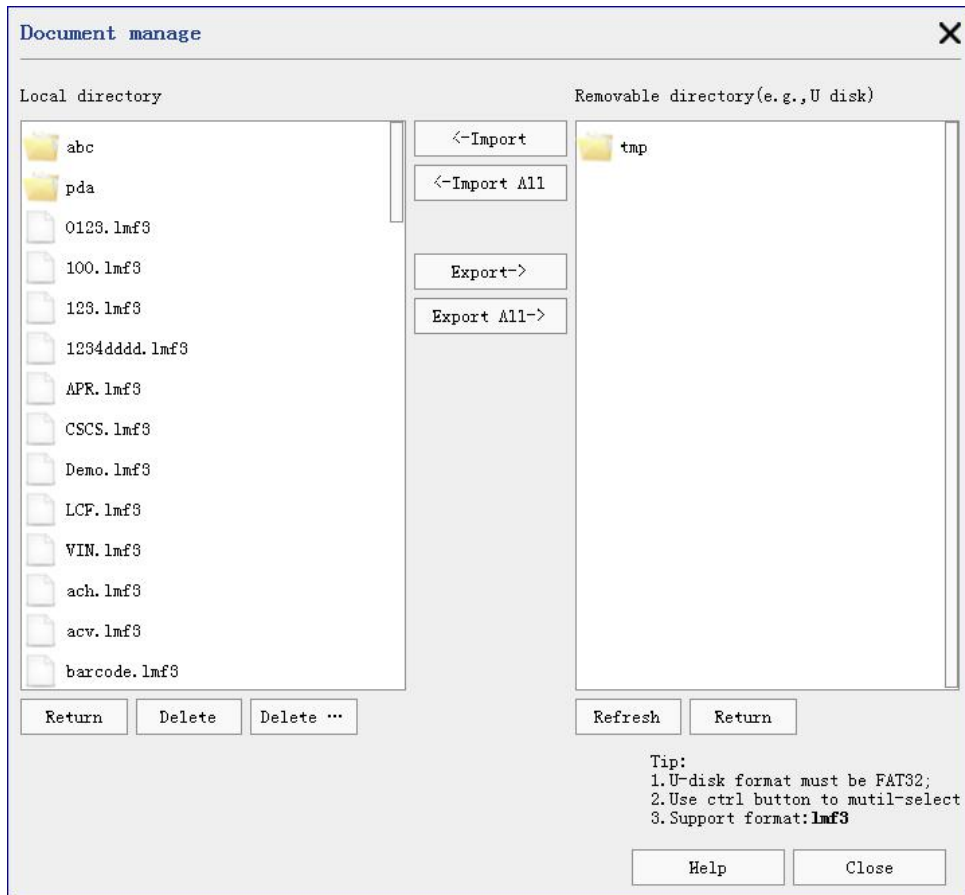


Image 5-27

In the document management interface, the list on the left is the list of files on this machine, and the list on the right is the list of corresponding files on the U disk. Since the document supports folder import and export, the folder will be displayed, while other resource files only support Import and export under the root directory of the USB flash drive.

Import/export supports select file operations or all file operations. When selecting files, hold down the CTRL key and click on the file list to perform multiple



selection operations.

The delete operation can only be performed on the resource files of the machine, and some resources such as fonts can only delete the files imported by the user and cannot delete the internal resources of the system.

Document: The supported format is .lmf3 format.

Font: Supported fonts are in .shx, .ttf and .lyf formats.

Database: Supports the .txt and .csv formats that conform to the format (comma separated, etc.) and the .db3 file generated by the laser marking machine.

Vector graphics: The supported vector graphics are in .plt and .dxf formats.

Picture: Supported pictures include mainstream formats such as .jpg, jpeg, png, and .bmp.

Laser calibration: the saved laser calibration file.

Marking record: Save the historical marking information, which can be exported to the computer for viewing.

System parameters: including laser calibration, red light calibration, laser parameters, IO configuration, serial port parameters, etc.


Upgrade: Used to update the system software version.

Ciphertext unlocking staging: Import the key to unlock advanced function modules (such as IC chip marking, etc.).

Get/send data.

Part7 Drawing and Object Attribute Bar

7.1 Vector

Click the  icon to insert a blank vector map mark into the editing area. The vector graphics attributes are shown in Figure 7-7.




保持宽高比
 宽 (mm) 36.784 + - 高 (mm) 42.033 + -
 X (mm) 0.000 + - Y (mm) 0.000 + -
 Z (°) 0.000 + -  打标控制
 选择文件 优化缓存
 去除重复
 自动连接相邻线段
 连接误差 (mm) 0.100 + -
 优化线条顺序
 提示: 优化后的图形可在菜单栏[文件]->[另存为矢量图]

Image 7-7 Vector graphics attributes


The general attributes are the same as 7.1.

The vector file dialog box will list all vector files that have been imported into the laser marking machine, including PLT format and DXF format. Double-click the file name or click the select button after clicking the file name to display the currently selected vector file on the marker.

Remove duplication, automatically connect adjacent line segments, connect errors, optimize line order: refer to 3.13 line optimization.

Optimize the cache: After the vector diagram is imported into the system, the system automatically generates the corresponding cache file. Click this button, the system will remove the old cache file and read the vector file again. It is used to solve the problem of re-importing the system after the vector diagram is changed, but the display and marking are still the old data.

7.2 Text

Click the icon  to insert a normal text mark into the editing area. Common text attributes are shown in Figure 7-8.

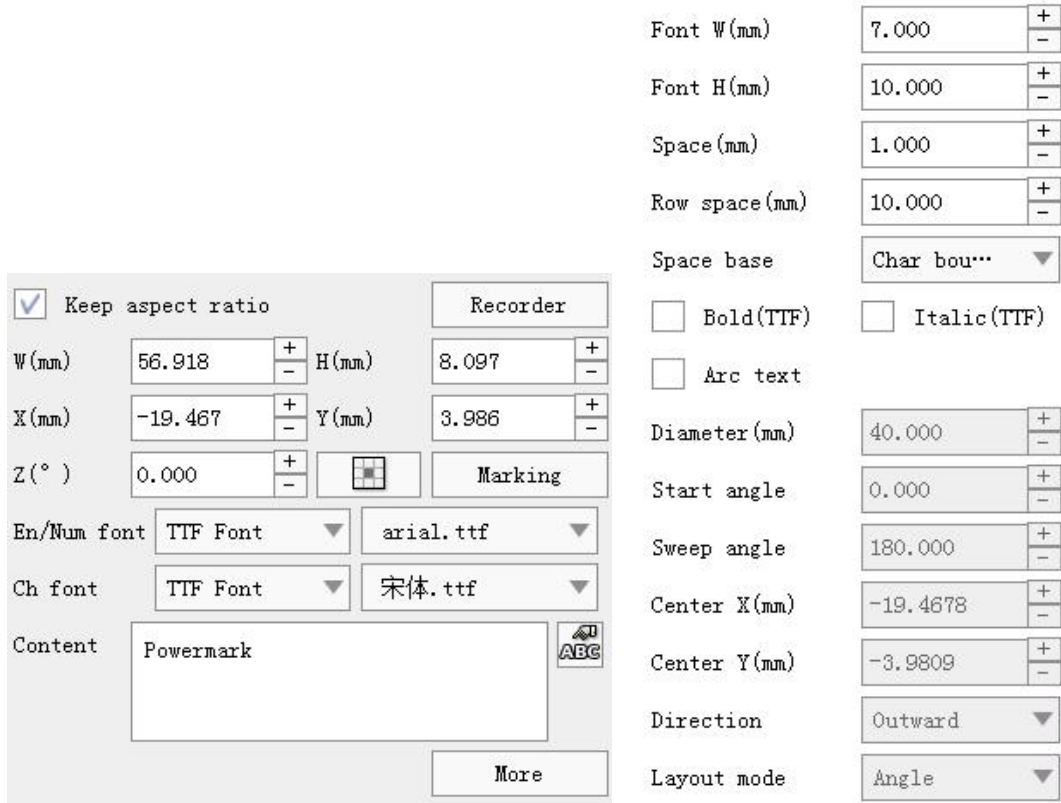


Image 7-7 Text property

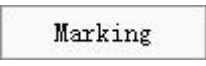
General property: see [7.1 Point](#).

Text **font** support SHX, TTF, DMF (dot matrix font), LYF (custom font).


Support multiline text input in the content editor.

Space used again with **Space base**. Default **char base** is **char bounding**, that means the space is between right end of previous character and the left begin of next character. If **char base** is **auto**, **space** in the setting will be ignored, and its layout space read from the font. If **char base** is **char center**, then the position of characters will never change, regardless of the different characters.

Bold and **italic** will only be valid in the TTF font.

Click  button, **fix width** will restrain the current entity's width.

Offer data without marking, normally used by the **bridge text** as the source content.

Click  button, see Image 7-8.

Output to record
 Duplicate check

Image 7-8 Recorder setting

Checked **output to record** and select to target file.the print result/content will be write to this file.**Max record count** can be setting in **History record manager**.

Click button will show the setting UI of advance **history record manager**.

7.3 Composite text

<input checked="" type="checkbox"/> Keep aspect ratio	<input type="button" value="Recorder"/>	Font W (mm)	7.000	<input type="button" value="+"/> <input type="button" value="-"/>
W (mm) 22.853	H (mm) 8.097	Font H (mm)	10.000	<input type="button" value="+"/> <input type="button" value="-"/>
X (mm) -19.467	Y (mm) 3.986	Space (mm)	1.000	<input type="button" value="+"/> <input type="button" value="-"/>
Z (°) 0.000	<input type="button" value="Marking"/>	Row space (mm)	10.000	<input type="button" value="+"/> <input type="button" value="-"/>
En/Num font TIF Font	arial.ttf	Space base	Char bou...	<input type="button" value="▼"/>
Ch font TIF Font	宋体.ttf	<input type="checkbox"/> Bold(TTF)	<input type="checkbox"/> Italic(TTF)	
Align Left	<input type="button" value="More"/>	<input type="checkbox"/> Arc text		
StaticText	<input type="button" value="Add"/> <input type="button" value="Rename"/>	Diameter (mm)	40.000	<input type="button" value="+"/> <input type="button" value="-"/>
	<input type="button" value="Delete"/> <input type="button" value="Up"/>	Start angle	0.000	<input type="button" value="+"/> <input type="button" value="-"/>
	<input type="button" value="Edit"/> <input type="button" value="Down"/>	Sweep angle	180.000	<input type="button" value="+"/> <input type="button" value="-"/>
		Center X (mm)	-19.467	<input type="button" value="+"/> <input type="button" value="-"/>
		Center Y (mm)	-3.980	<input type="button" value="+"/> <input type="button" value="-"/>
		Direction	Outward	<input type="button" value="▼"/>
		Layout mode	Angle	<input type="button" value="▼"/>

Image 7-9 Composite text property

General property:see 7.1 Point.

Text,marking control and recorder property:see 7.8 Text.

7.3.1 Static Text

Input fix text.

7.3.2 Time

Current time text. Select period option, change the display text in relative time.

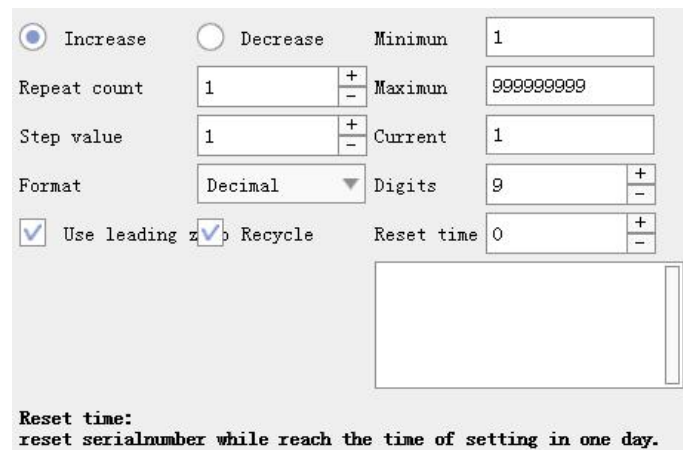
7.3.3 Date

Current date text. User can change the display text in the edit list in relative date.

7.3.4 Scanner

The same as keyboard input. Press enter will insert input text.

7.3.5 Serialnumber



Increase Decrease Minimum 1
 Repeat count 1 + - Maximum 999999999
 Step value 1 + - Current 1
 Format Decimal Digits 9 + -
 Use leading zeros Recycle Reset time 0 + -
 [Empty text area]
Reset time:
 reset serialnumber while reach the time of setting in one day.

Image 7-10 Serialnumber property

Increase/Decrease: the change action.

Repeat count: the marking repeat count before changing to next value.

Step value: value increased/decrease while changing to next value.

Digits: digit count of the value.

Reset time: decide the reset count in different time.

7.4 Random code

Dynamic code,support custom format.

7.5 Ruler

Support straight and round ruler.

Type	Straight ▼	Total cell	30
Dist cell (mm)	1.000	Cell num	1.000
Begin num	0.000	<input type="checkbox"/> Revers	Advance

Line wd(mm)	0.000	Decimal	0
Larger cell count	10	Font name	TTF Font ▼ Arial.ttf ▼
Larger height(mm)	10.000	Ch Width(mm)	2.450
<input checked="" type="checkbox"/> Show smaller text		Ch Height(mm)	3.500
Middle cell count	5	Ch space(mm)	0.350
Middle height(mm)	7.500	Align	Align ce... ▼
<input type="checkbox"/> Show middle text		Angle	0.000
smaller cell count	1	Text offsetX(mm)	0.000
smaller height(mm)	5.000	Text offsetY(mm)	1.000
<input type="checkbox"/> Show smaller text			

Image 7-21 Ruler

If straight ruler selected,total length = total cell count * dist per cell.Calculate begin start number and accumulate with number per cell.

If round ruler selected,total angle = total cell count * angle per cell.Calculate begin start number and accumulate with number per cell.

Three scale support:larger,middle and smaller.



Thank you for using

The above is a brief description, detailed operation and product marking parameters can be contacted after sales