Good-Laser

Light 530

Smart CO2 Desktop Laser Cutting Machine

Product User Manual

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Statement

Thank you for choosing Good-Laser products.

To ensure that you can fully understand and correctly use this product, please read carefully all the accompanying instructions of the product before installing and using this product for the first time.

If you fail to use the machine in accordance with the instructions and requirements of the user manual, or operate this product incorrectly due to misunderstanding, etc. Good-Laser will not be responsible for any losses caused thereby.

We will continue to pay attention to product updates and technological developments, revise and update the manual content in a timely manner. If there is a difference between the user manual and the actual product due to technological upgrades, please refer to the actual product. Meanwhile, you can also contact our technical support team at info@good-laser.com to request the latest version of the manual to meet your usage needs.

Thank you again for your trust and support, and wish you a pleasant experience!

Safety instructions

Operational safety

Light 530 is equipped with an advanced integrated safety system. Once the protective cover is opened, the safety system will be triggered immediately and the equipment will not be able to process, thus effectively preventing potential risks of injury. Therefore, during operation, please make sure that the protective cover is closed to avoid accidental interruption of processing. If you do need to interrupt processing, please press the 【Stop】 key first and then perform other operations safely.

When the equipment is working, please pay attention to the following safety precautions:

To ensure safety, it is recommended to have a carbon dioxide fire extinguisher near the equipment in case of emergency.

It is strictly forbidden to place flammable items inside the equipment, and after each processing is completed, the remaining materials must be cleaned up in time to avoid the risk of fire.

Please keep the air circulating around the device and do not cover the device with anything during operation to ensure its normal operation and heat dissipation.

The machine operator must be present when operating the equipment. It is strictly forbidden to use the equipment without supervision to prevent accidents.

When performing cutting process, please ensure that the air blow assist function is turned on to provide the necessary assist effect.

Since the laser beam is invisible, in order to prevent potential eye damage, be sure to wear special goggles when maintaining laser equipment.

The adjustment of the optical path must be performed by professionally trained personnel. Any non-standard or irregular operation may cause laser damage, so please be careful.

Please note that it is strictly forbidden to disable limit switches and safety devices. Otherwise, personal injury and equipment damage caused by this will not be included in the warranty scope.

Before processing materials, please make sure whether the materials will release toxic substances and verify whether the exhaust filtration equipment can properly handle these potentially harmful substances.

Please be aware that under no circumstances should you use a CO2 laser cutting machine to process PVC (polyvinyl chloride) to avoid possible safety risks.

• Laser Safety

Based on the assessment of the potential risks of laser machines, the safety level of the equipment is defined as Level 1. Light 530 belongs to this safety level, which is mainly due to its sturdy protective shell and safe circuit configuration. However, please note that improper operation and maintenance may reduce the safety level of the equipment, thereby causing the risk of laser radiation.

This laser engraving system is equipped with a Class 4 Carbon Dioxide (CO2) laser source, which produces intense, invisible laser radiation. Both direct and diffuse radiation can present serious risks if necessary safety measures are not taken.

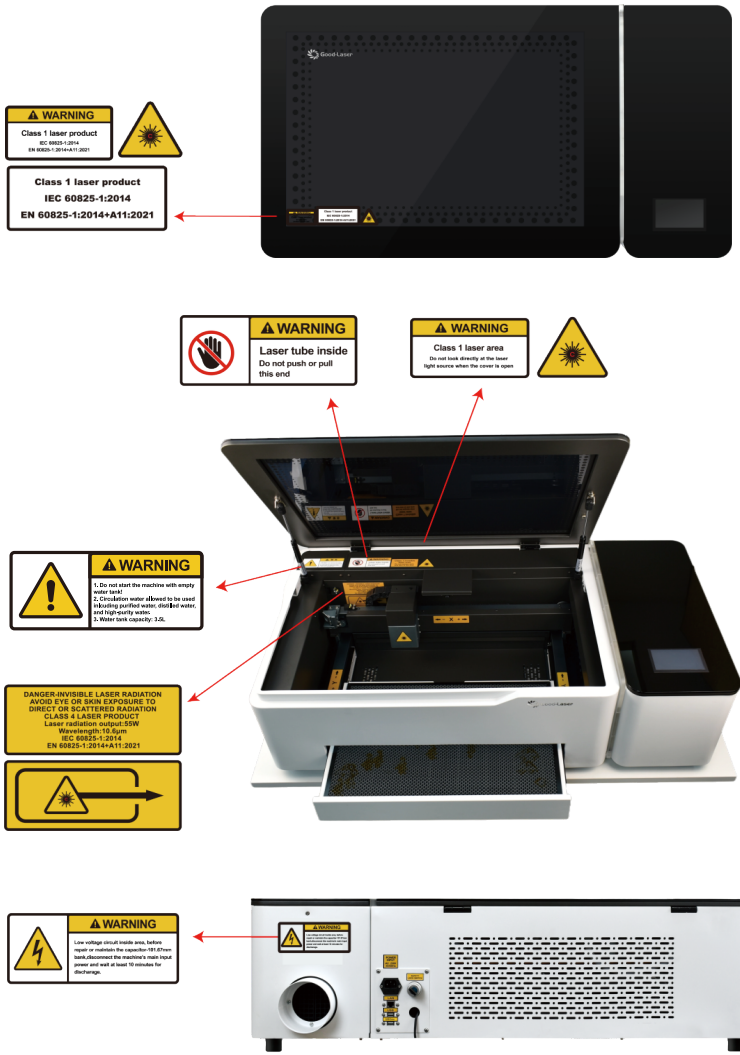
In the absence of safety protection measures, direct laser exposure can cause the following harm to the human body: the eyes may suffer corneal burns, the skin may be burned, and clothing may even catch fire.

Do not perform any modification or disassembly operations on the laser machine, and it is strictly forbidden to start the modified or disassembled laser machine.

In addition to the normal operation, use and adjustment of the equipment may cause laser radiation, other improper behavior may also trigger harmful laser radiation. Therefore, when operating a laser machine, be sure to remain highly vigilant and follow all safety regulations.

· Warning and instruction signs

The warning labels on the equipment are intended to provide customers with key precautions and warnings of possible dangerous consequences when installing and operating the equipment. To ensure safety, please be sure to carefully read and strictly follow the instructions on the labels.



· List of package items


Light 530 machine*1


Power cable*1


USB 3.0 extension cable*1


Network cable*1


USB Cable*1


USB drive*1


Steel ruler*1


Fuse * 2


Smoke exhaust pipe*1


Airduct locking steel ring*2


Screw-drivers*2


Hexagon wrench sets*1

Rail oiler pot*1

Funnel*1


Measuring cup*1

Cotton swab*1


Acrylic board*2


Plywood board*2


Metal connector*1

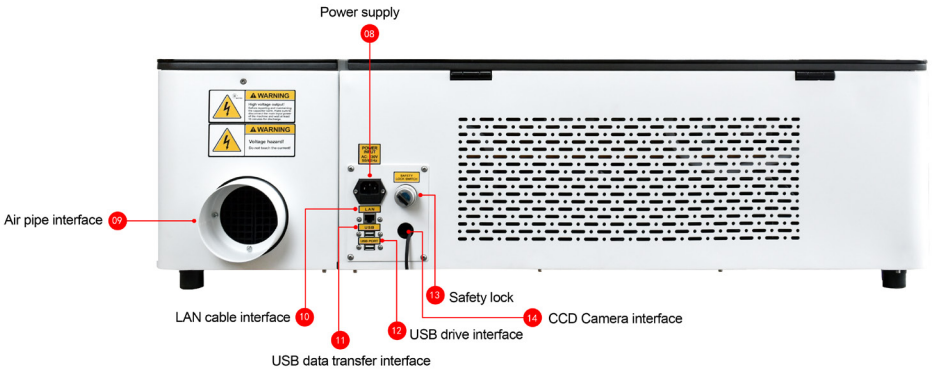

Safety lock key*1


User manual*1


Quality certificate card*1


Warranty card*1

Meet Light 530



WARNING

- **Before operating the machine for the first time, make sure to fill the built-in cooling water tank with purified water or distilled water first, in extremely cold weather(under 0°C), please add anti-freezing agent in the cooling water tank too. For guidance on adding antifreeze, please check on page 45 of this manual.**
- **The machine must be properly grounded according to the power grid, otherwise it will affect the normal operation and cause machine fault.**

Light 530 Technical Specification

Laser Type	Sealed CO2 Glass Laser Tube
Laser peak power	55W
Work area	500×300 mm
Maximum operating speed	1--600mm/s
Positioning accuracy	≤0.025mm
Laser head lifting stroke	≤30mm
Maximum cutting thickness	20mm (Acrylic)
Thickness of material that can be placed	≤ 22mm
Focusing method	Autofocus, Manual focus
Connection	Support USB connection, network cable connection, WIFI connection.
Support system	Windows, Mac OS
Supported Software	Ps, Ai, CorelDRAW, AutoCAD, Solidworks, etc.
Power supply system	220V/110V AC 50HZ/60HZ
Supported file formats	JPG, DXF, AI, DST, PNG, BMP, TIF, SVG, etc.
power supply system	220V/110V AC 50HZ/60HZ.
Laser tube service life	≥4000-6000 hours
Operating software	Good-Laser LightMaker or Lightburn (PC) LightMaker (mobile)
Supported processing materials	Wood board, cardboard, corrugated board, acrylic board, cloth, leather, pad, two-color board, PET, rubber, veneer, fiberglass, plastic, glass, ceramic and other non-metallic materials.
Equipment working noise	≤60db
Total Weight	70kg

Control method	5-inch LCD touch screen/mobile phone APP/ PC software LightMaker
Transmission form	Stepper motor X-axis linear guide + 3M synchronous belt; Y-axis linear guide + 3M synchronous belt.
Safety protection	CE approved safety interlock switch: stop when cover is opened, stop when drawer is opened, emergency button, safety key, working status indicator.
Cooling method	Built-in water cooling system (water tank & water cooler)
Focusing method	Support automatic focusing when identifying materials

Material requirements for cutting/engraving

Maximum cutting size: 500 (length) * 300 (width) * 20 (thickness) mm

Types of materials that can be cut/engraved

Materials		Line drawing	Cutting	Shallow engraving	Deep engraving
Wood board	Solid wood	√	√	√	√
	Plywood	√	√	√	√
	density board	√	√	√	√
Plastic	Acrylic	√	√	√	√
	ASB two-tone panel	√	√	√	√
	PET	√	√	√	√
Paper	Printing paper	√	√	√	—
	Corrugated paper	√	√	√	—
	Cardboard	√	√	√	—
Textile	Cotton cloth	√	√	√	—
	Denim	√	√	√	—
	Felt	√	√	√	—
Laser rubber		√	√	√	√
Foam cotton		—	√	—	—
Bamboo		√	√	√	√
Ceramic		—	—	√	√
Glass		—	—	√	—
Metal（coated surface）		—	—	√	—

Note: “√” means it can be processed, “-” means it cannot be processed.

Unprocessable materials

Material	Hazards of processing
PVC/Vinyl/Chrome(VI)	When cutting, chlorine gas is produced, which is highly toxic and has a strong pungent smell. It can corrode the metal of the equipment and damage optical devices and motion control systems.
Polycarbonate (>1mm)	Poor cutting effect, easy to discolor, even catch fire, and damage the optical system of the equipment.
ABS plastic/contains epoxy resin material	Processing will melt and easily catch fire, and cutting will release highly toxic hydrogen cyanide.
High-density polyethylene (HDPE) /baby bottle plastic	Processing is very easy to melt, even catch fire.
Polystyrene foam/polypropylene foam	Processing can burn rapidly, melt and catch fire.
Other highly reflective materials	Processing can easily lead to diffuse reflection hazards

Note: Using the above non-machinable materials may cause damage to the equipment, and the resulting damage will not be covered by the warranty service.

Common material processing parameter table for cutting/engraving

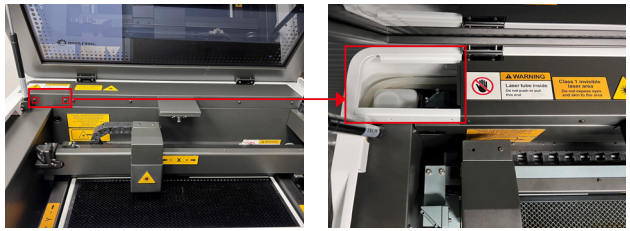
Material	Processing methods	Speed	Minimum power%	Maximum power%
3mm basswood board	**laser cutting**	25	25	25
	Laser cutting (Not cut through for line drawing)	200	10	20
	Laser engraving	300	12	12
3mm acrylic	**laser cutting**	10	50	60
	Laser cutting (Not cut through for line drawing)	100	15	20
	Laser engraving	300	20	20
Paper	**laser cutting**	200	20	20
	Laser cutting (Not cut through for line drawing)	200	10	12
	Laser engraving	300	15	15

Install Light 530

1. Installation

1. Use the hex wrench in the toolbox to first install the black air duct metal connector at the outlet on the back of the machine, and then use the locking duct steel ring to lock the gray exhaust pipe and the black metal connector.

2. Use the hexagonal wrench in the tool box to unscrew the screws and open the water tank protective cover , and fill up purified water or distilled water to the water tank. Tip: The water tank capacity is 3.5L, and antifreeze needs to be added in cold weather's period of time(under 0℃).



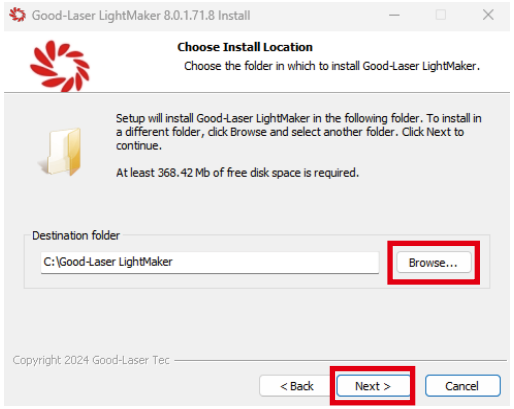
3. Connect the power supply. Note: The power supply voltage and the operating voltage must be consistent (AC 230V 50/60 Hz), refer to the information label next to the connection socket.

2. Install the laser software LightMaker

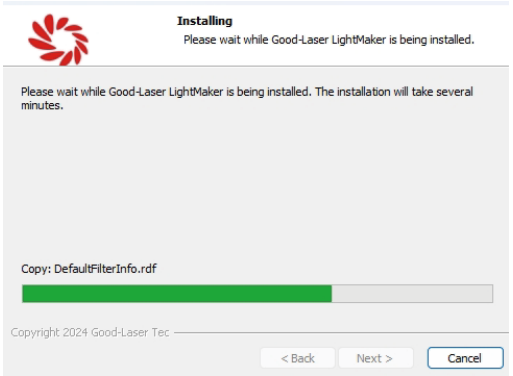
1. Find the file named《Good-Laser LightMaker software installation package》in the USB flash drive, doule click the installation package to install it directly.

Note: LightMaker installation requires that the computer must be running Windows system, and the version of Windows 8 or later.

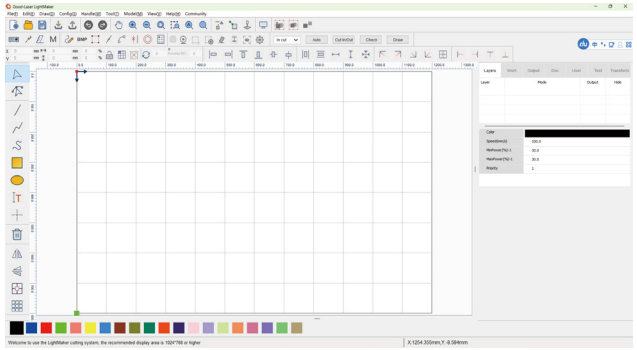
Click 【Browse】 Browse... to select the installation location, and click 【Next】 Next > after confirmed.



2. The installation is successful after the installation progress bar is completed.



The interface of the LightMaker software after installation completrd is as follows.



Use Light 530

1. Turn on the machine

Use the safety switch key to turn it to the right, turn on the emergency stop switch in the direction of the arrow, and the laser head will automatically reset and calibrate, and the device will be in standby mode.

Note: Indicator light status description

Yellow light means the device is turned on and in standby mode.

If the red light is steady on, indicating that the device cannot process and is in an alarm or abnormal state.

If the green light is steady on, indicating that the device is processing and in working condition.

2. Connecting the machine to the computer

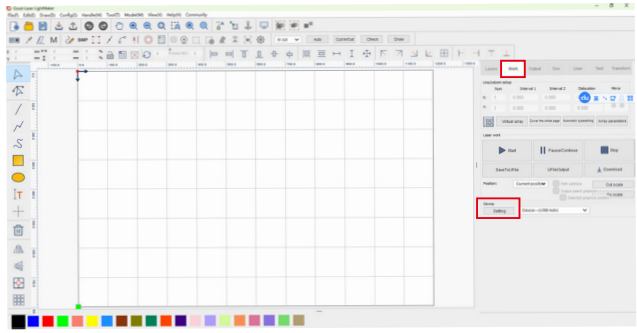
There are two ways to connect your computer to Light 530. You can choose one of them according to the actual needs.

2.1 Use a USB cable connection

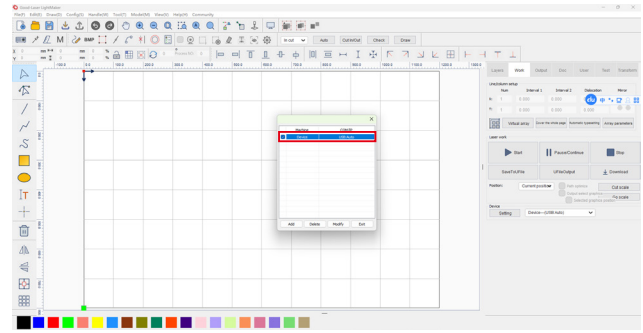
Tips: Using a USB cable is the fastest and easiest way to connect the machine and computer. For users who are using the laser machine for the first time, we recommend that you use a USB cable to connect.

2.1.1 Plug the USB cable into the USB port on your device and the other end into your computer.

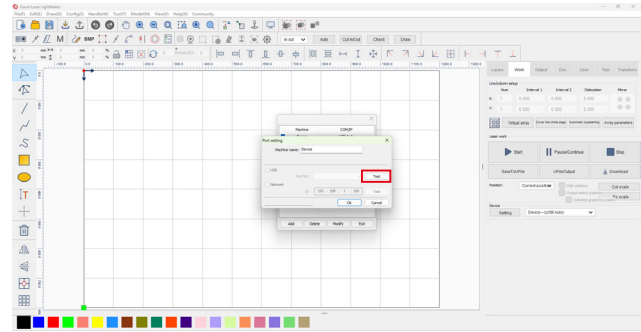
2.1.2 Open the LightMaker software and locate the【Work】Work area in the right border bar of the main interface and click it to find the【Setting】Setting button.



Select【USB】Device USB:Auto connection port and double click to enter the connection method window.



Click【Test】Test in the Set Port dialog box.



2.1.3 After “Communication test successful" is displayed --- click【Ok】Ok continuously --- and then click Exit.

2.1.4 After completing the above operations, download and transfer the files to be processed to the device for testing in LightMaker. If the files can be transferred to the device, the connection is successful and it can be used normally.

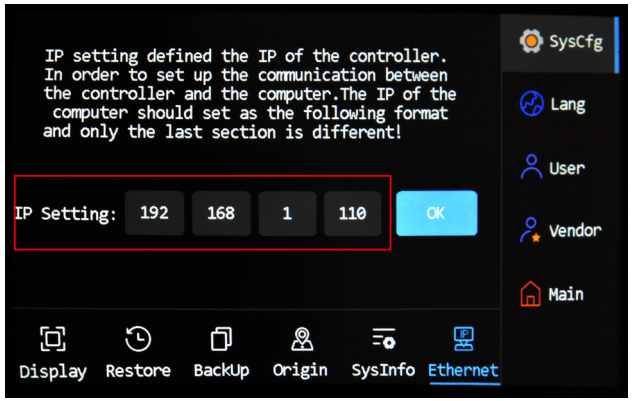
2.2 Use a network LAN cable connection

2.2.1 Plug the LAN cable into the LAN port on your device and the other end into your computer.

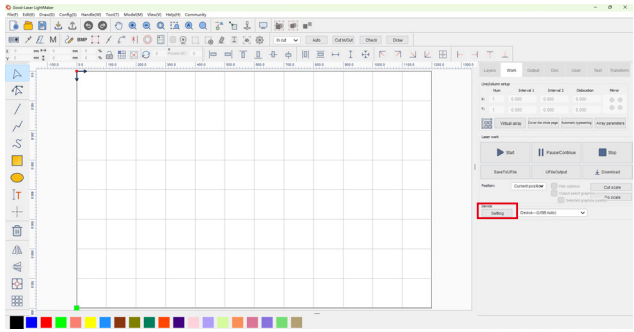
2.2.2 Find your computer's IP address. For example, your computer's IP address is 192.168.1.100.

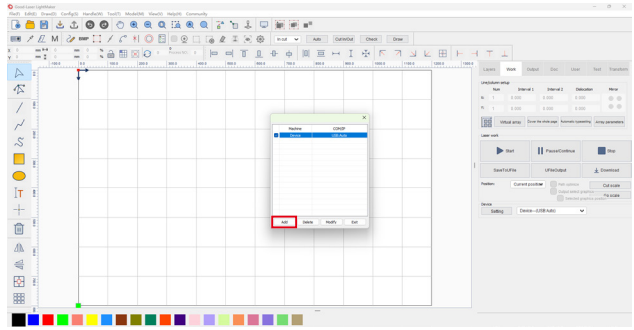
2.2.3 Go to the machine's operating panel. Find the machine's IP address setting, click the function button one by one as Manual --- System --- IP address.

2.2.4. Enter an IP address on the machine that is consistent with the first three static codes of the computer IP, but inconsistent with the last one. For example. your computer's IP address is 192.168.1.100 , then enter the IP address to the machine as 192.168.1.110.

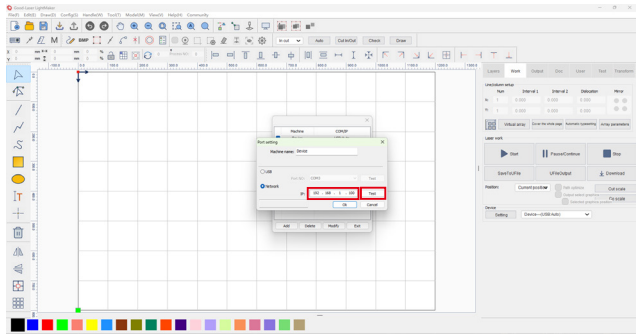


2.2.5 Open the LightMaker software and click the 【Setting】 Setting button at the bottom right of the software main interface.

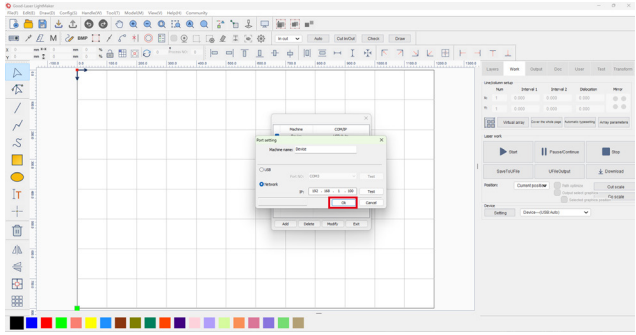




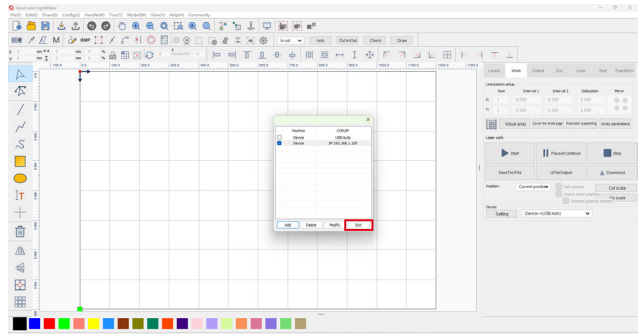
2.2.6 Select the【Network】 Work communication port and confirm or enter the IP address that consistent with the IP address of the machine operation panel.



2.2.7 Click 【Test】 Test . When the Test Success window pops up, click【OK】 Ok .



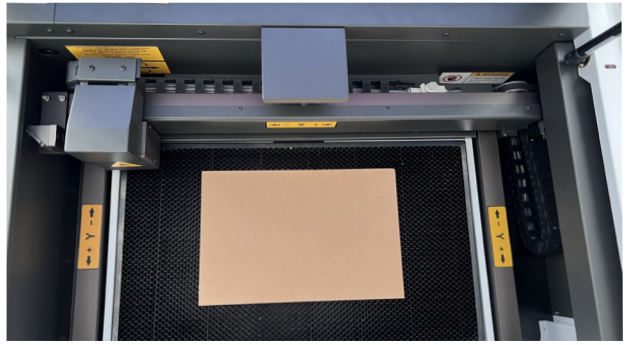
2.2.8 In the end, just click 【Exit】 Exit .



2.2.9 After completing the above operations, download and transfer the processed files to the device for testing. If the transfer is successful, it can be used normally.

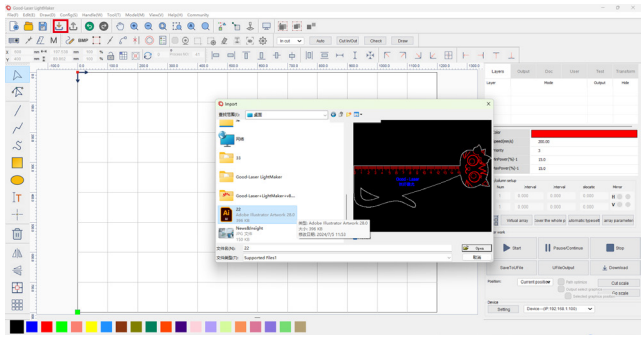
3. Laser processing

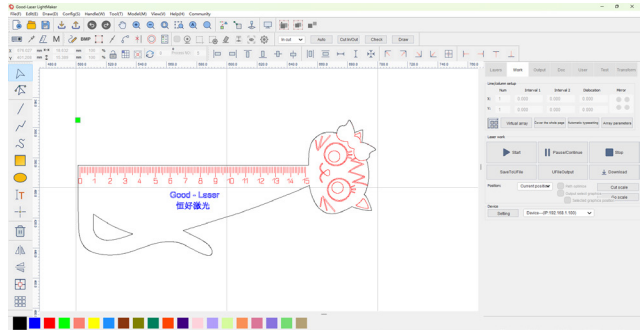
Place the material to be processed on the workbench area of the equipment and close the cover.



2. Open the LightMaker software on your computer and import the drawn design drawings.

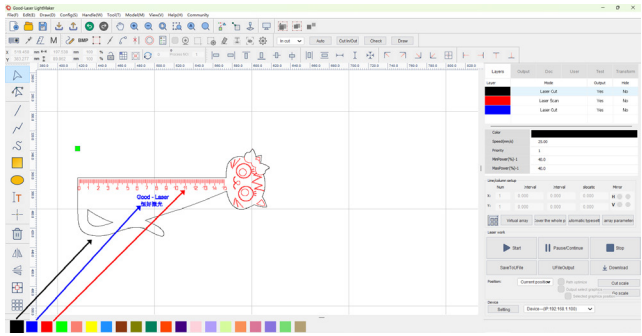
   Here are two ways to import files to be cut/engrave: click the icon【 】to import the filed directly. Or click click the function button one by one as File(F)---Import.





3. Set different color blocks for different processing techniques to distinguish the graphics. Click to select the corresponding graphics, move the mouse to the color block bar and select the corresponding setting and color.

   For example, you can set the graphics that need to be laser cut to black, the graphics that need to be laser cut (not cut through) to red, and the graphics that need to be laser scanned (engraved) to blue.



4. Double click the corresponding color layer on the top left of the page, and set the processing parameters of different layers in turn in the layer parameter dialog box that pops up.

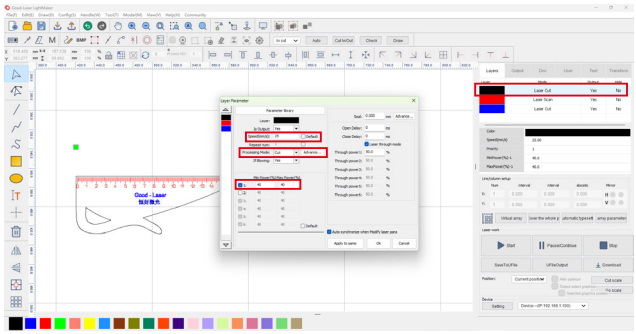
In this case, it is using 3mm basswood plywood. First, set the parameters of the black layer, set the speed as "20" --- the processing method as "Cut" --- the minimum power as "25" --- the maximum power as "30".

Set the parameters of the blue layer, set the speed to "300" - the processing method as "Cut" - the power to 20.

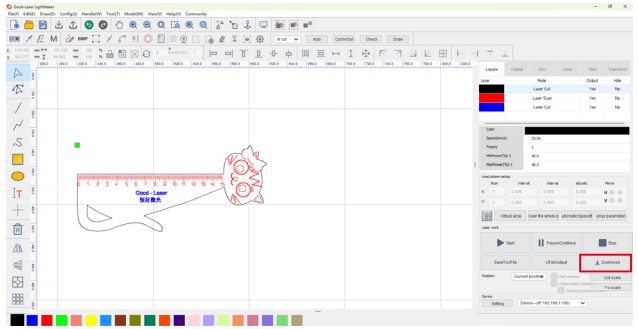
Set the parameters of the red layer, set the speed as "200" - the processing method as "laser cutting" - the minimum power as "12" - the maximum power as "15".

Since the laser focal length will affect the processing effect, the black layer needs to be processed last. If there are both cutting and engraving steps in the same file, it is usually necessary to put the cutting step to the last processing.

The layer order in the upper right corner is the final machine processing step order. Select a layer directly and pull it up and down to change the processing order of the different color layer.



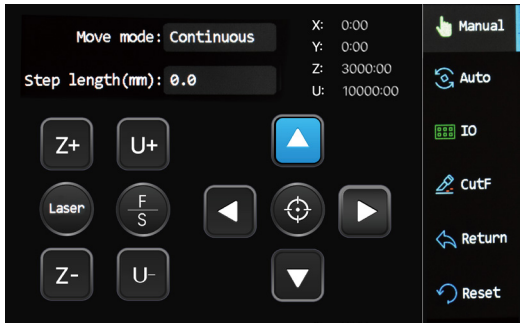
5. After setting the processing parameters, click【Download】 Download to transfer the file to the machine for processing.



When you hear a “Bi” sound from the machine panel, it means that the file has been successfully transferred to the machine.

Go to the machine panel for the other steps. click the 【Manual】 manual button in the upper right corner---You can click the up, down, left, and right buttons to move the laser head to the appropriate position above the material---Click the 【Position】 button to determine the starting point of the laser processing.

Then click the 【Auto】 Auto button to enter the operation interface---Click 【Focus】 Focus for automatic focus-–After automatic focus is completed, click 【Frame】 Frame to confirm the processing range-–After confirmation, click【Start】 Start to start processing.

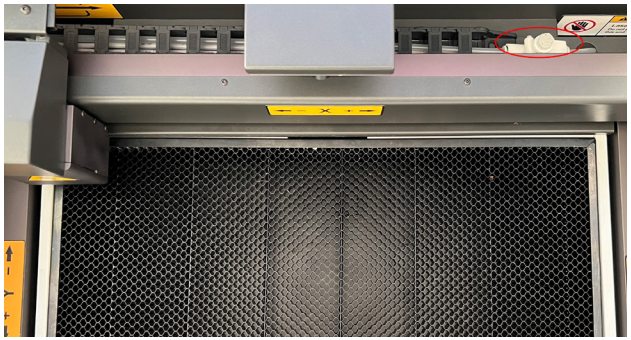


Please always remember to close the top lid and push the drawer in before: Click the start processing. Otherwise, the machine will not start working properly. Note: For more panel button functions, please refer to 《How to use the operate panel》 on the page 40.

6. After processing is completed, the processing platform can be pressed to pop up and the workpiece can be taken out.

4. Air blow valve adjustment

On the upper of the X-axis, there is a special gray valve for adjusting the air volume and blowing size, which is used to adjust the air output when processing different materials.



1. Adjustment method: Just pinch the top cover and lift it up, loosen the valve, and rotate the top cover clockwise to the left to reduce the air volume at the air outlet next to the laser head, and rotate it. Counterclockwise to the right to increase the air volume at the air outlet.

   When the air volume is adjusted to the appropriate size, press the small round top cover down to tighten the regulating valve.

Reduce the output air volume

Tips

1. If process wood materials, make sure to adjust the air output volume to the maximum, so as to avoid the blackening or yellowing of the cutting and engraving edges to the greatest extent.

2. When cutting acrylic or other plastic materials, reduce the air volume appropriately according to the thickness of the material to avoid jagged or uneven cutting edges.

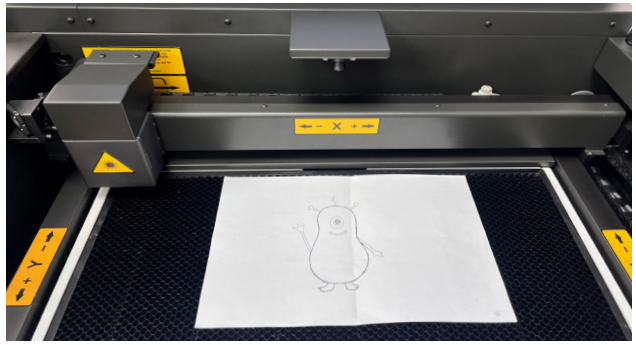
More features

Light 530 has a built-in CCD camera, which can realize contour extraction and multi-position positioning functions combine with LightMaker software.

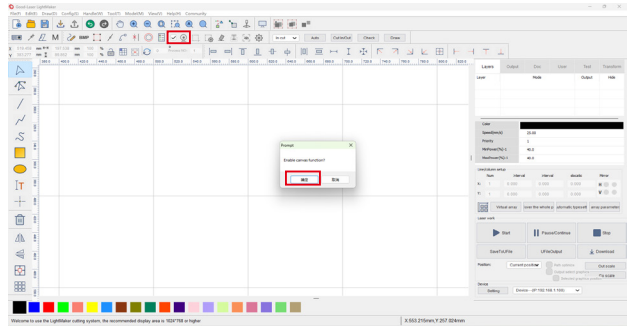
1. What you draw is what you get

The CCD camera's image contour extraction and Multi-Points fixed processing function.

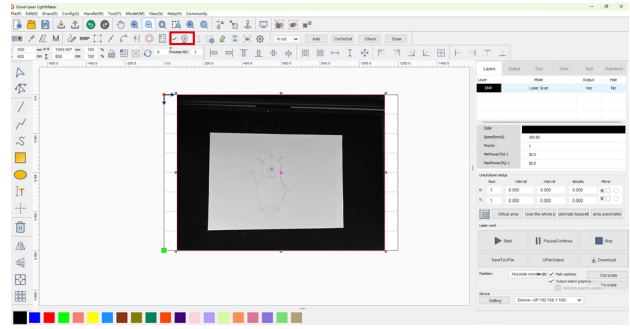
Use the USB extension cable included in the package to connect both ends of the machine CCD camera cable and the computer.Place the finished painting on the workbench in the center of the camera and connect the camera's USB cable to the computer.



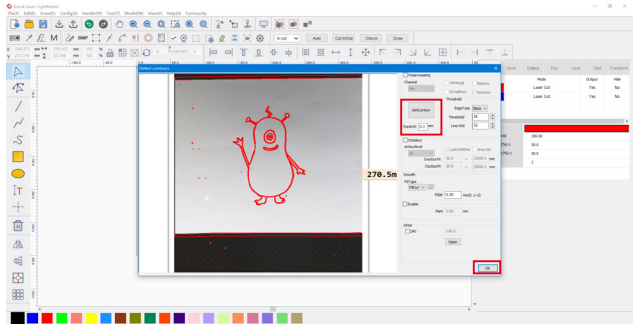
2. Open the LightMaker software on your computer, turn on the "CCD camera function by selecting the icon ", and click 【OK】 in the pop-up dialog box.



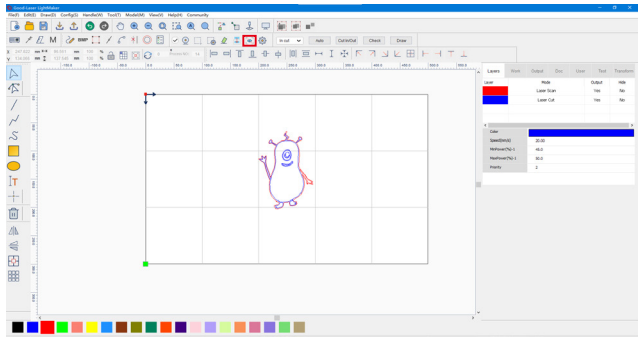
3. After the camera is turned on, the camera screen will appear. Click the camera icon to take a photo.



4. Click the 【Get Contour】 function --- adjust the value in the pop-up “Auto Edge Raise” dialog box to completely extract the image outline --- click 【Outline Extraction】 --- and after 【OK】 --- the outline will be extracted to the canvas.



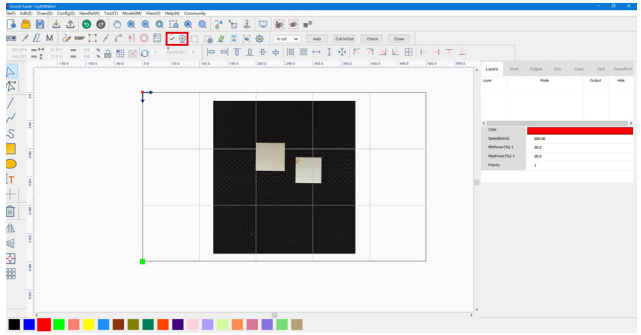
5. Click the 【Background switch】 function, delete the background of the photo, and you can get the extracted vector graphics.



6. After get the clean full contour lines, the rest of steps are the same as to start cutting or engraving process that consistent with the laser processing steps in 《Laser processing》 section on page 25.

3. Multi-Points fixed engraving

Place the material that needs to be processed on the workbench, and click the camera icon in the LightMaker software main page to take a photo.

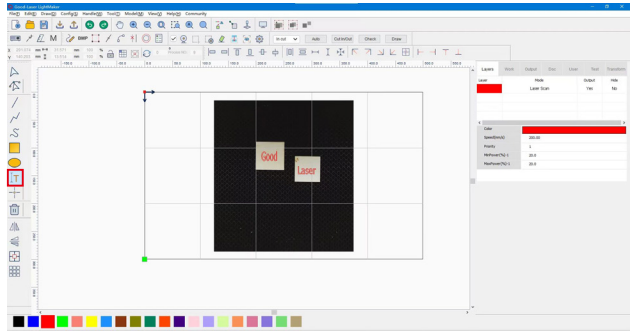


2. Use text tools or graphic tools to add text or graphics you would like to add to the appropriate location of the material;

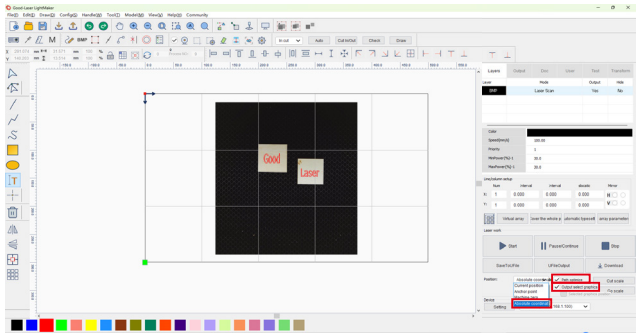
Note

【Text tool】

Graphic tools indicates to import graphics files directly or import the file you want to engrave,resize it according to the material size and drag and drop it over the material surface.



3. Set the processing method and processing parameters for each graphic, change the graphic positioning position in the lower right corner of the interface to "Absolute coordinates", select both "Output selected graphic" and "Selected graphic positioning", select the processing graphic, and download the file to the machine click 【Start】 on the machine operate panel to complete multi-position fixed processing.

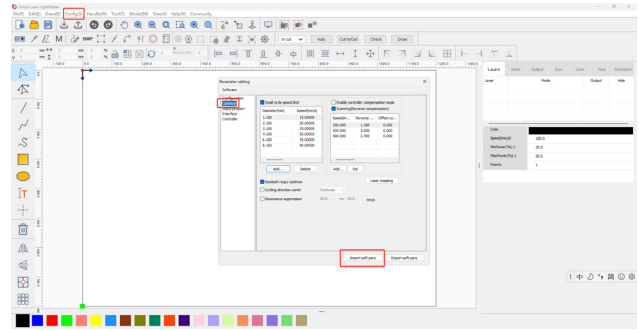


Engraving optimization parameter setting/import

If the engraving effect is scattered, as shown in the following figure.

This means you need to reset the engraving optimization parameters. Generally, when the machine is connected to a new computer, you also need to re-import the optimization parameters to ensure the correct engraving effect.

The steps to import engraving optimization parameters are in the LightMaker's main page to click Config(s) --- System Setting --- Optimize --- import soft para --- select the file in the USB drive named 《Scan optimization parameter》 --- Open then close the settings page.

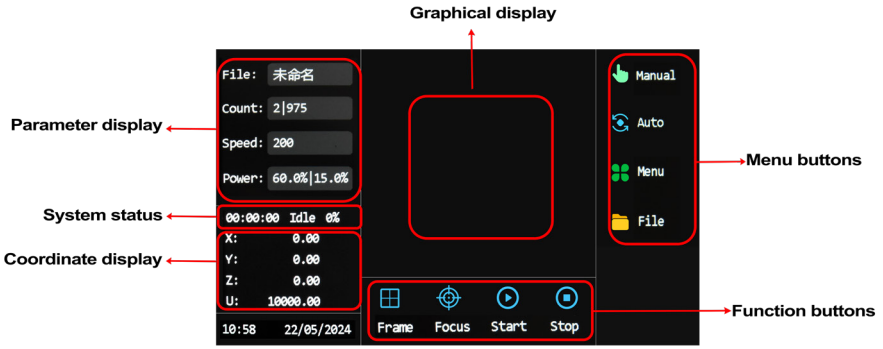


The correct engraving effect without glint is as follow.

How to use the operate panel

Main interface

After the machine is powered on, the system will automatically reset, the operation panel will open and display the main interface.



1. Graphic display area

This area is used for file preview display and drawing the processed file image during processing.

2. Parameter display area

This area is for display the current processing file name, piece value (number of current file pieces | total number of all files), speed value and power value.

3. System status area

The system status (idle, paused, completed, running, feeding), processing time and processing progress are displayed respectively.

4. Coordinate display area

Display the X, Y, Z, and U axis coordinate values respectively.

5. Menu buttons area

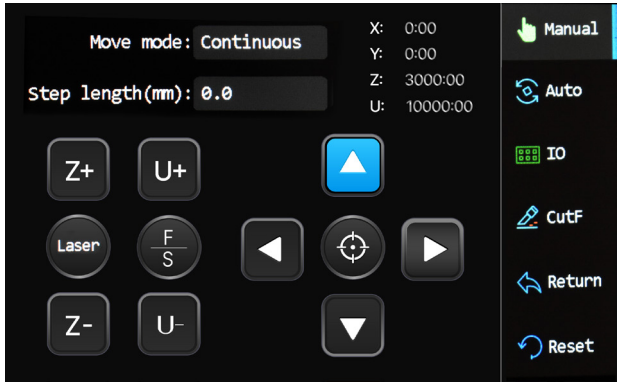
manual	Manual: Enter the manual function interface.
Auto	Auto: Enter the automatic function interface. The system is in this interface by default after power-on.
Menu	Menu: Enter the menu interface.
File	File: Enter the file management interface.

6. Function buttons area

Frame	Move frame: Perform a move frame operation on the current processing file to confirm the processing area range.
Focus	Focus: Auto focus.
Start	Start: Start processing.
Stop	Stop: Stop processing.

Manual interface

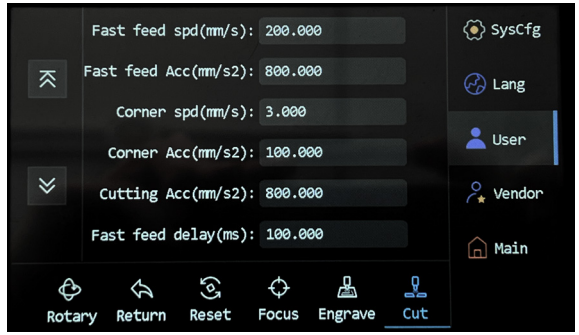
This interface is mainly used for manual debugging, including moving the laser head, spot shooting, positioning, IO diagnosis, cutting frame, returning to the original position and system reset. Press the "Auto" key to return to the main interface.



Laser	Laser: Press this button to start the laser beam, and release it to turn it off. Usually, the Laser button is only used when calibrating the laser lens.
Z+ Z-	Z+: Control the Z axis to rise Z -: Control the Z axis to descend.
F S	F/S: The axis movement speed can be switched. When F is blue, it is fast movement, and when it is switched to S, it is slow movement.
U+ U-	U+： Control the rotation axis to rotate forward U-: Control the rotation axis to rotate reverse.
▲ ▼ ◀ ▶	Direction buttons: Control the moving direction of the laser head.
⊕	Positioning: Set the starting working position of the laser head.
IO	IO: You can enter the IO diagnostic interface to perform fault diagnosis and debugging on device components.
Cutf	Cut fram: Enter the cut border setting interface, and there are three border modes to choose from: light on, light off, and four-corner dotting. After selecting a mode, press the "cut border" button to start, and press the "stop" button to stop.
Return	Return: After selecting the return position, press the "Return" key to return, and the relevant movement status will be displayed at the bottom of the interface. Press the "Stop" key to stop the movement.
Reset	Reset: Click the “Reset” button to reset the system.

Menu interface

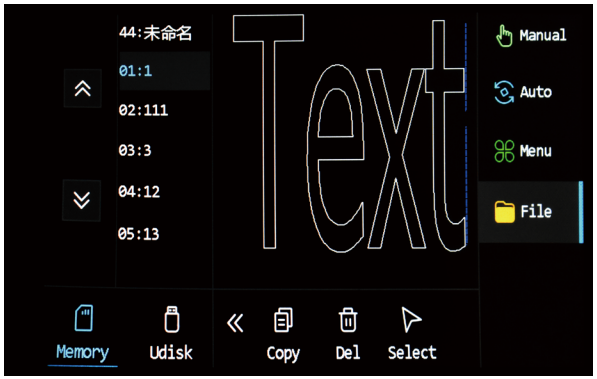
The menu functions include system settings, language settings, user parameters and manufacturer parameters submenus. The buttons at the bottom of the interface represent the function settings corresponding to each submenu.



Syscfg	System: Set the IP address of the device, view system information, etc.
Lang	Language: Set the language of the operation panel.
User	User: View and set cutting parameters, engraving parameters, focus parameters, reset parameters and return parameters.
Vendor	Manufacturer: View and set feed parameters, rotation parameters, Z-axis control, speed parameters, system configuration, machine parameters, axis parameters, and laser parameters.

File interface

The file function can preview and display memory files, and perform operations such as file selection.

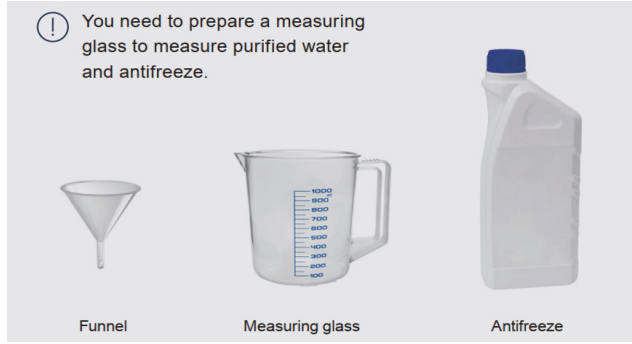


Memory	Memory: Switch to the file interface and read the file.
Udisk	USB drive： Switch to the file interface and read the file.
Copy	Copy: Copy the selected file to a USB drive.
De1	Delete: Delete the selected file.

Light 530 machine antifreeze adding guide

1. Fill the water tank with antifreeze

First, please prepare a measuring glass to measure purified water and antifreeze.



2. Determine the volumes of antifreeze and purified water to be used

Note:

Do not pour the antifreeze directly into the water tank. Determine the volume of antifreeze to be used according to the annual lowest temperature in your region first.

Ensure that you use purified water to prepare the antifreeze. Tap water contains impurities and bleach, which may cause too many bubbles, affecting the working of the laser tube and even damaging the lase tube.

You need to fill the water tank twice. Strictly follow the steps to fill the water tank, using the recommended volume of antifreeze and avoiding overflow.

The cooling water tank is placed on the topper left inside the machine, Use the hex wrench in the tool kit to unscrew the two screws marked in the picture below. And refer the following proportion information to add antifreeze.

If the annual lowest temperature in your region is ＞ 0℃ Please refer to the value for adding water and antifreeze.

Annual lowest temperature in your region(℃)	Concentration (%)	First filling	
		Antifreeze (ml)	Purified water (ml)
＞ 0℃	0	0	4000

If the annual lowest temperature in your region≤0℃, please refer to the ratio below to add antifreeze.

Annual lowest	Concentration	First filling		Second filling
emperature in your region(℃)	(%)	Antifreeze (ml)	Purified water (ml)	Purified water (ml)
-10≤T≤0	20	700	2100	1200
-20≤T≤10	35	1540	1260	1200
-30≤T≤20	45	1600	1200	1200
-40≤T≤30	50	1800	1000	1200
-50≤T≤40	60	2100	700	1200

Note: The two separate pours are for better allow the antifreeze to settle and fully blend with the water.

CO2 laser mirror and lens cleaning guide

Mirror/Lens Cleaning:

Take out the mirror/lens holder.

Moisten the lens/mirror cleaning paper/cotton swab with cleaning solution, and lightly pull the lens/mirror paper to wipe the mirror surface.

Wipe repeatedly until the mirror surface is clean.

Put the mirror holder back, please do not touch the mirror with hands, let alone blow it with your mouth.

Cleaning supplies

Cleaning liquid: the common cleaning liquid is ether: ethanol = 1:3, users can configure it by themselves.

Special cleaning fluid: camera lens cleaning fluid.

Camera lens cleaning fluid and cleaning paper: It must use camera-specific lens cleaning paper/cotton swabs, and other items cannot be used to clean the camera lens.

After-sales service

For more product information, please visit good-laser.com.

If you need technical support, plesse contact us via the following methods:

Service Hotline: 400-060-6086

Email: info@good-laser.com

Thank you for choosing Good-Laser Light 530 and wish you a pleasant creation and use experience.