



StellarMark 3DS

User Manual



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Table of Contents

CHAPTER 1 SAFETY	1
1.1 Principles of a Fiber Laser	2
1.2 Safety Ratings	2
1.3 The Safety Interlock System	3
1.4 Safety Labels	3
1.5 Safety Measures	7
1.6 Operating Environment	8
CHAPTER 2 UNPACKING & CONTENT	10
2.1 Unpacking and Unloading.....	11
2.2 Accessories Checklist.....	12
CHAPTER 3 MECHANICAL OVERVIEW	13
3.1 Laser Marker	14
3.2 Control Unit (only for 3DS-50JFL)	20
3.3 Footprint.....	21
CHAPTER 4 WORKING DISTANCE	23
4.1 Recommended Working Distance	24
4.2 Pyramid Focus Tool.....	25
4.3 Manual Focus Tool.....	29
CHAPTER 5 MACHINE SETUP	30
5.1 Cable connection.....	31
5.2 Powering Up the Machine	33
CHAPTER 6 SOFTWARE SETUP.....	36
6.1 Recommended Computer Configuration.....	37
6.2 Software Installation for Windows System.....	38
6.3 Software Installation for MAC System	46
6.4 Communication Troubleshooting.....	54
7 OPERATING STELLARMARK 3D	60
7.1 Simple 3D object Marking	61
7.2 Complicate 3D object Marking.....	70
CHAPTER 8 LENS ADJUSTMENT	80
8.1 Import Lens Correction File	81



8.2	Input Lens Parameter Into mm3D.....	85
CHAPTER 9	ERROR MESSAGE	88
CHAPTER 10	EXTERNAL CONTROL.....	90
10.1	I/O Pin Assignment.....	91
10.2	Laser Working Flow Chart	94
10.3	Laser Reaction Timing Diagram	95
CHAPTER 11	BASIC MAINTENANCE	97
11.1	Regular Spot Check.....	98
11.2	Cleaning the Dust Protection Window	99
CHAPTER 12	APPENDIX	101
12.1	3DS Series Specification.....	102

Chapter **1**

Safety

Principles of a Fiber Laser

Safety Ratings

The Safety Interlock System

Safety Labels

Safety Measures

Operating Environment

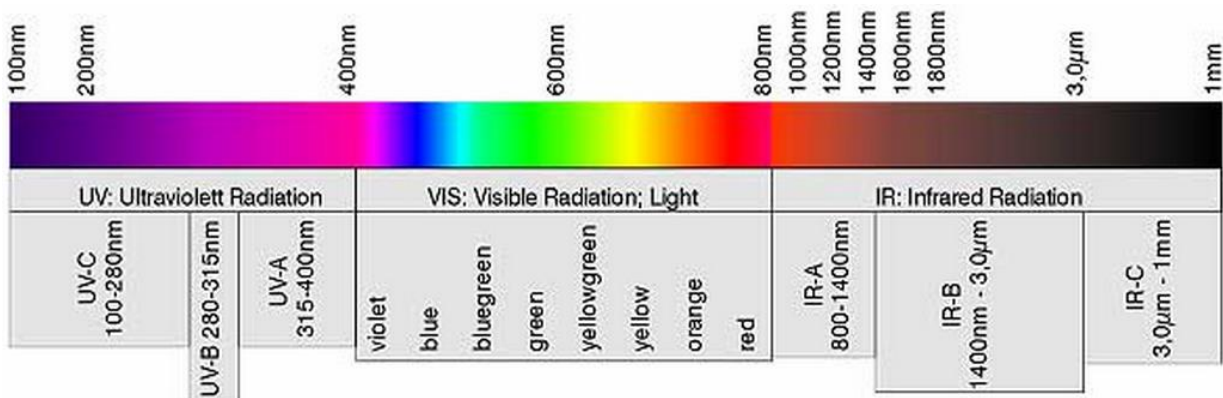
1.1 Principles of a Fiber Laser

LASER is the acronym for Light Amplification by Stimulated Emission of Radiation. GCC LaserPro StellarMark IF-series is equipped with the state-of-art fiber laser technology. A fiber laser is built with “all fiber” technology and uses a telecom grade diode to pump an optical fiber, and the fiber is doped with rare-earth elements as a gain medium to generate 1064nm laser light. Compared to the conventional DPSS technology, fiber laser is immune of misalignment and does not request any adjustment during operation.

1.2 Safety Ratings


StellarMark 3DS series laser marker emits intense and INVISIBLE laser radiation with a wavelength of 1064nm (1micron) for fiber laser in the infrared spectrum.

The 3DS series is designed with laser safety rating of CDRH Class 4 and has been equipped with a red guidance pointer. This red guidance pointer allows users to see where the laser beam is travelling and helping find out the precise focus point for laser to do quality job. When integrated together with StellarMark safety door (optional item) during operation, it gives Stellar Mark 3DS series a CDRH safety rating of 3R.



1.3 The Safety Interlock System

StellarMark 3DS series can optionally integrate with LFC II and LFC D workstation which equipped with a safety interlock system utilizing limit switch sensors. The limit switch sensor will shut the laser off when detecting front door open, and provides users of 3DS series laser marking system further safety protection. Do not attempt to remove or modify the limit switches or any other component of the safety interlock system. If any time, the safety shield door is open while the laser keeps firing, unplug the system IMMEDIATELY, and contact GCC local representative for technical support and maintenance instructions.

 **WARNING**

- DO NOT operate the laser system if any component of the safety system is malfunctioning.
- DO NOT attempt to remove or modify any component of the safety interlock system.

1.4 Safety Labels

According to CDRH standards, all fixed or removable covers that allow access to laser beam must have appropriate laser warning labels attached to them. These warning labels must be clearly visible to the operator prior to removing the cover. Additional labels must be applied to the interior of the machine and visible to operators when covers are removed.

A label clearly displaying the manufacturer's name, date of manufacture, description of the product, model number, serial number, and compliance statement must be attached to the outer surface of the machine.

In compliance with CDRH standards, the required warning labels are affixed at the time of manufacture to the StellarMark 3DS series, attached on appropriate locations. These labels are not to be modified in any way or removed for any

reason. Please familiarize yourself with the specific labels and their locations on the machine. Below is a list of all the safety labels and their locations on the machine.

Product Label

This label is located at the side panel of machine. All the product information such as Serial Number, Model Number, Laser Power and Power Consumption information can be found here. When inquiring any tech support, always provide the service representatives with the information on this label.

		Serial Number 150357
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	3DS 20JFL	
Wavelength	1064 nm	
Power	20W	
Input	AC100-240V, 50-60Hz, Max. 8A	
Manufactured	May 2012	
Class 4 Laser Product This product complies with EN60950-1:2002+A11:2004    Made in Taiwan 4F-1., No.236, Fude 2nd Rd., Xizhi Dist., New Taipei City 22151, Taiwan		

		Serial Number 150357
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	3DS 30JFL	
Wavelength	1064 nm	
Power	30W	
Input	AC100-240V, 50-60Hz, Max. 8A	
Manufactured	May 2012	
Class 4 Laser Product This product complies with EN60950-1:2002+A11:2004    Made in Taiwan 4F-1., No.236, Fude 2nd Rd., Xizhi Dist., New Taipei City 22151, Taiwan		


		Serial Number 150357
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	3DS 50JFL	
Wavelength	1064 nm	
Power	50W	
Input	AC100-240V, 50-60Hz, Max. 8A	
Manufactured	May 2012	
Class 4 Laser Product This product complies with EN60950-1:2002+A11:2004    Made in Taiwan 4F-1., No.236, Fude 2nd Rd., Xizhi Dist., New Taipei City 22151, Taiwan		

Safety Label

CDRH and CE regulations require that all laser manufacturers add warning label in specific locations throughout the equipment. The following warning labels are placed on the laser system for your safety. Do not remove these labels for any reason. If the labels become damaged or have been removed for any reason, do not operate the laser system and immediately contact GCC local representative or e-mail us for a replacement.

CDRH Label

This label indicates the class level of CDRH.

LASER RADIATION – AVOID DIRECT EYE EXPOSURE

λ	Max Power
630~680nm	5.0mW
790~820nm	1.0W
1064 nm	1.0W

CLASS IV LASER PRODUCT

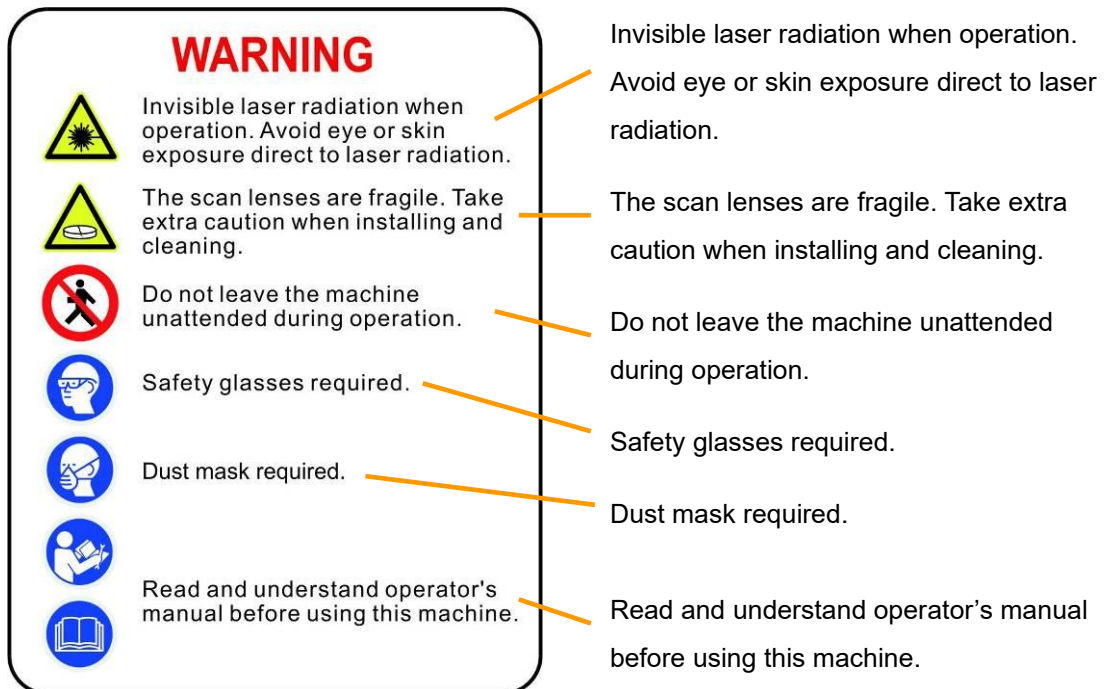
Caution Label








This label indicates the laser radiation when without doors protection. Safety class 4 are specified.



Warning Label

Warning Label is written with all the necessary information to be aware of in every operation.



	Invisible laser radiation when operation. Avoid eye or skin exposure direct to laser radiation.	Invisible laser radiation when operation. Avoid eye or skin exposure direct to laser radiation.
	The scan lenses are fragile. Take extra caution when installing and cleaning.	The scan lenses are fragile. Take extra caution when installing and cleaning.
	Do not leave the machine unattended during operation.	Do not leave the machine unattended during operation.
	Safety glasses required.	Safety glasses required.
	Dust mask required.	Dust mask required.
	Read and understand operator's manual before using this machine.	Read and understand operator's manual before using this machine.
		

Emergency Stop Label

This label indicates the emergency stop button. You can find this label on the upper right side of the laser marking system.



1.5 Safety Measures

- **LASER RADIATION WARNING:** Exposure to laser radiation may result in physical burns and severe eye damage. Proper use and regular maintenance of this machine are important to the safety of all people in the immediate area.
- Before the operation, carefully read and familiarize yourself with the warning labels located on both your laser system and in this manual.
- Never leave the machine unattended during the laser cutting and marking process. The laser may ignite combustible materials. A well-maintained fire extinguisher and operational smoke or fire detector should be kept in the vicinity of the machine.
- Resulting debris from laser cutting are very dangerous and may cause fire hazard
- Always wear safety goggles when the laser system is in operation. Reflective materials such as mirrors, enameled brass and anodized aluminum may partially-reflect some of the invisible laser radiation. Severe eye damage may occur if appropriate safety goggles are not worn.

NOTE

3DS series laser machine is shipped with a single pair of safety goggles. If additional safety goggles are required, please contact GCC directly or an authorized GCC distributor. If you wish to purchase one on your own, please make sure the safety goggles meet these requirements:

190 - 534 nm OD5+

910 - 1,070nm OD6+

Visible Light Transmission: 23.5%

- Connect the machine to a properly grounded power outlet. Ensure the voltage of the power source is identical to the voltage of the machine.
- Do not attempt to modify or disassemble the laser module.
- Do not attempt to remove or modify any component of the machine's laser interlock safety system.
- Ensure the immediate work area of the machine is well-ventilated. Odors, vapors, and dust are byproducts generated during the laser marking and cutting process. An exhaust system is recommended. Please contact GCC or your local GCC distributor for more information.
- Do not laser heat-sensitive surfaces or materials that may generate toxic fumes, such as PVC and Teflon.
- Regularly clean and maintain your machine according to our cleaning and maintenance instructions. Doing so will ensure a machine that will operate effectively and safely over a long period of time.

1.6 Operating Environment

Please follow the guidelines when considering a suitable location to set the LaserPro StellarMark 3DS series. Improper work environments may lead to operational malfunction and/or unsafe working conditions. The LaserPro StellarMark 3DS series should be placed and operated in a clean environment, avoid places where the machine is exposed to high

temperatures, dust, or high humidity

- Keep the machine where the room temperature is between **15 – 35 degrees Celsius** or **59 – 95 degrees Fahrenheit**.
- Avoid small, enclosed areas where a considerable amount of dust is present.
- Avoid areas where the humidity is above 70% or where the temperature is near the dew point.
- Setup the machine to be apart from the wall for at least 40cm (1.5 feet).
- Choose a flat surface that is not exposed to high levels of vibration.
- Be sure that your mounting platform has been securely fastened to the table, stand, or floor.
- Choose a location that is large enough to accommodate the machine, the computer, and a work/storage table.
- Have a fire extinguisher close to the working location at all times.
- Make sure your smoke/fire detecting system is functioning.

Chapter **2**

Unpacking & Content

Unpacking and Unloading

Accessories Checklist

2.1 Unpacking and Unloading

The Stellar Mark 3DS series is shipped in one crate that contains a laser marker, a Control Unit (only for 50W), software, and all of the necessary accessories in an accessory kit.



WARNING

To prevent damage to the machine or personal injury, please get assistance when loading and unloading the shipping crate.

NOTE

Please save the original shipping crate in case it is needed for future transportation or product service.

2.2 Accessories Checklist

Please check to make sure that all of the following items are included within the accessory box. If any of the following items are missing, immediately contact your local GCC representatives.

GCC LaserPro StellarMark 3DS Checklist

	Name	Unit
1	Hex head screws driver	1
2	StellarMark CD Set (User's Manual and Software)	1
3	Lens cleaner	1
4	Lens cleaning paper	1
5	Cotton Bud (100 units/ package)	1
6	Lens parameter list	1
7	GCC Promise Card Set	1
8	Focus Tool	1
9	1064nm Goggles YG3 900	1
10	AC Power Cable(Europe)	1
	AC Power Cable (US)	1
	AC Power cable (Australia)	1
11	USB Cable 1.8M	1
12	Stainless steel(9*5.5cm)	2
13	M6 screw plastic foot	4
14	Nut (M6xt5xS10).	4
15	LD P/S key	1
16	I/O Terminal Platform(5ESDVM-10P)	1
17	I/O terminal cable 25 pin	1
18	StellarMark Accessories checklist	1
19	M16 3pin Male to M16 3pin Female 15A Cable 1000mm	1
20	D-Sub 25P Male to D-Sub 25P Male 1500mm (SY003-822)	1

Chapter **3**

Mechanical Overview

Laser Marker

Control Unit

Footprint

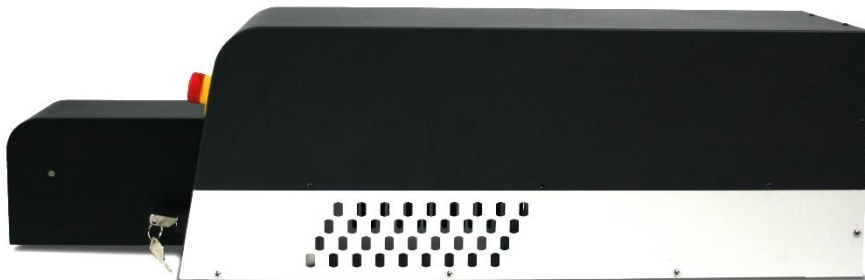
Before completing the installation, it is a good idea to become more familiar with the machine's features and components.

3.1 Laser Marker

Front View



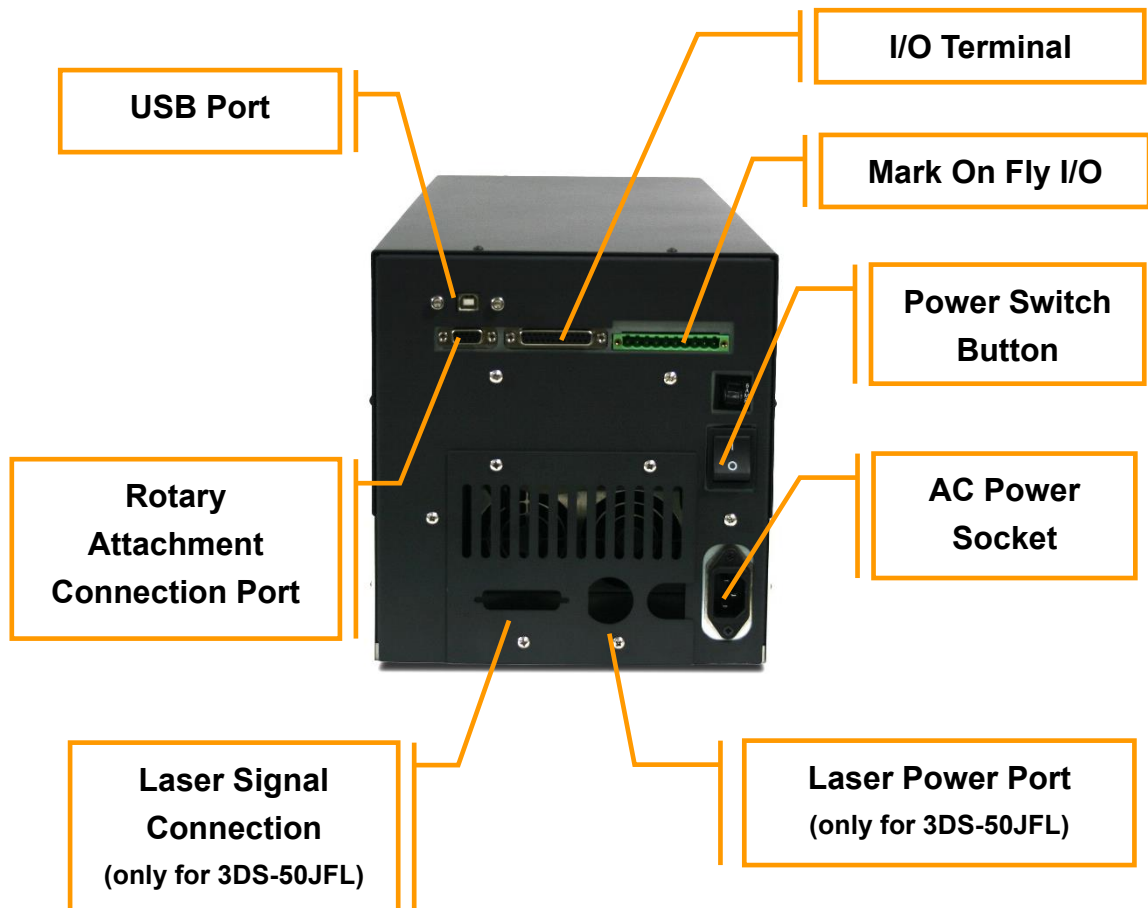
Right View



Left View



Rear View



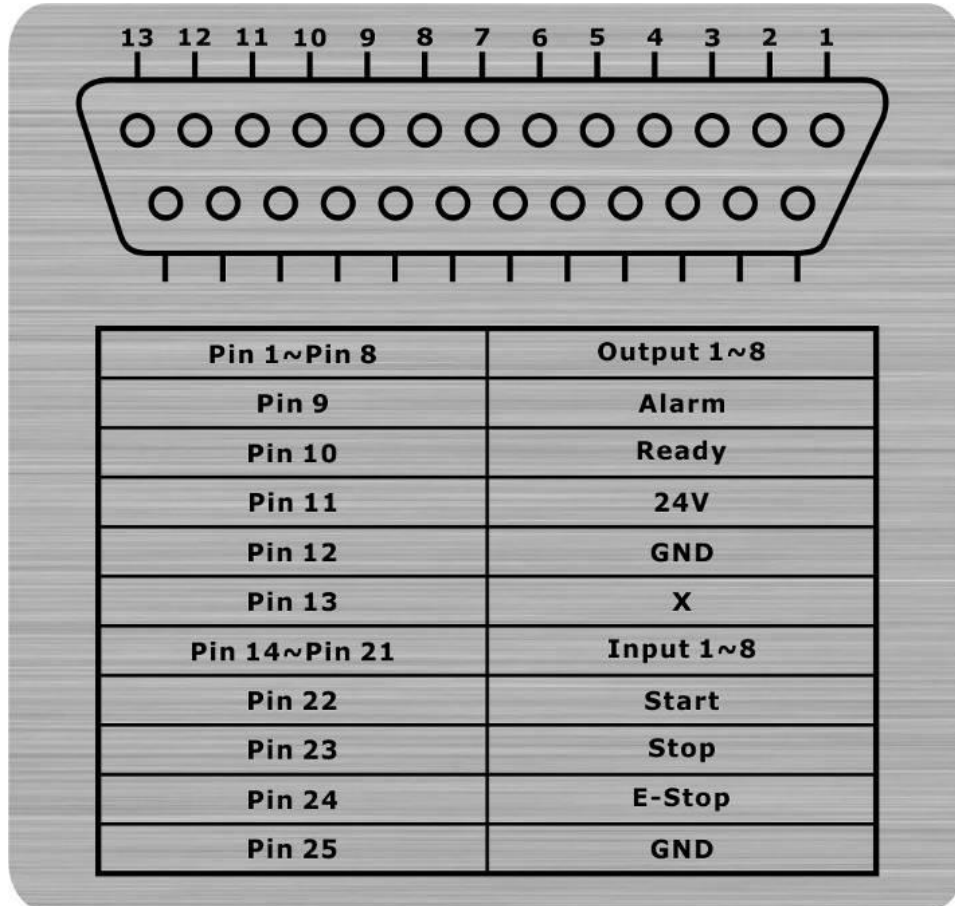
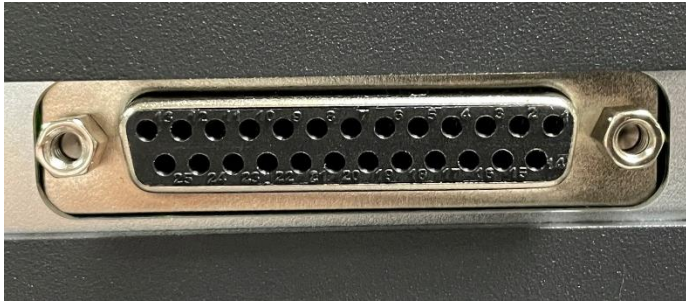
3.1.1 LED Panel



There are 3 LED lights on the panel and they will indicate out three working status of “Over Temp”, “Laser On” and “Power on” of the laser marker.

- Over Temp:
When the red LED light is on, the laser marker will stop firing.
Please turn off the master power of the laser marker and re-start it when the operating temperature is dropped below 35°C.
- Laser On:
When laser is firing, the red LED light is on.
- Power On:
When the laser is power on and the green LED light is on.

3.1.2 I/O Terminal Connector



The I/O pins are located at the back of laser marker and they are the signal transmitting bridges between StellarMark and automation devices such as the conveyer for automation controls.

8 Output signal pins and 8 Input signal pins are provided for any designated automation purposes.

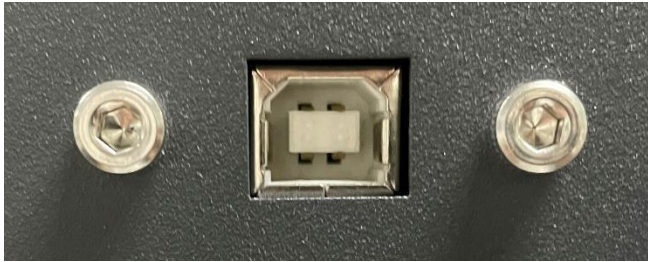
It will allow laser marker to receive signals **from** or **send out** the signal to the other automation devices.

3.1.3 Rotary Attachment Connector



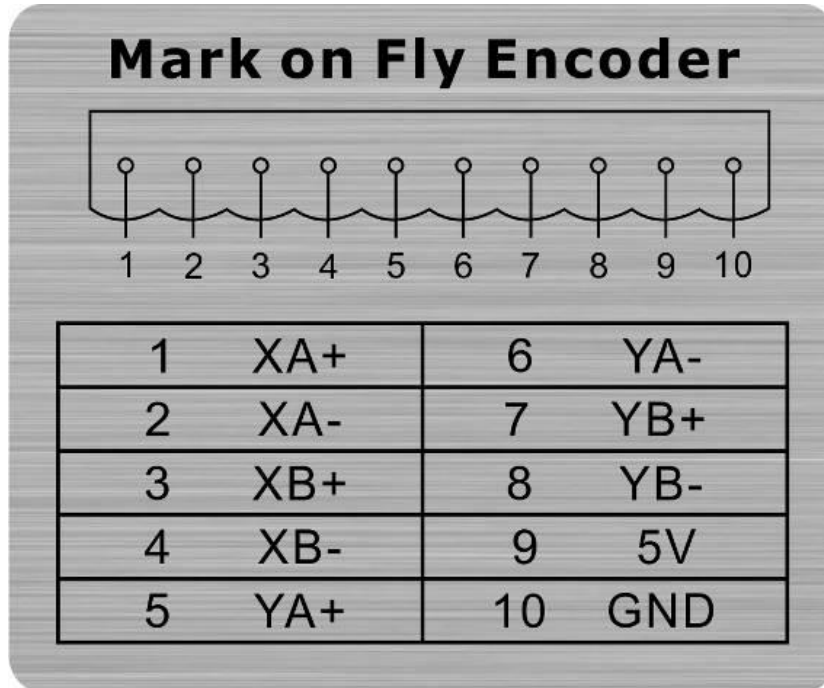
Rotary Attachment port connects StellarMark optional Rotary Attachment to 3DS series laser marker, it allows laser marker to process precise 360° marking on round, cylindrical, or torus-shaped objects.

3.1.4 USB Connector



USB port connects laser marker to a desktop PC or Notebook.

3.1.5 Mark On Fly Terminal Connector



Mark On Fly Terminal connects laser marker to an external encoder of a conveyor system. It allows 3DS series laser marker to do non-stop, “on-the-fly” marking for mass production line.

3.2 Control Unit (only for 3DS-50JFL)

Front View



Right View



Left View

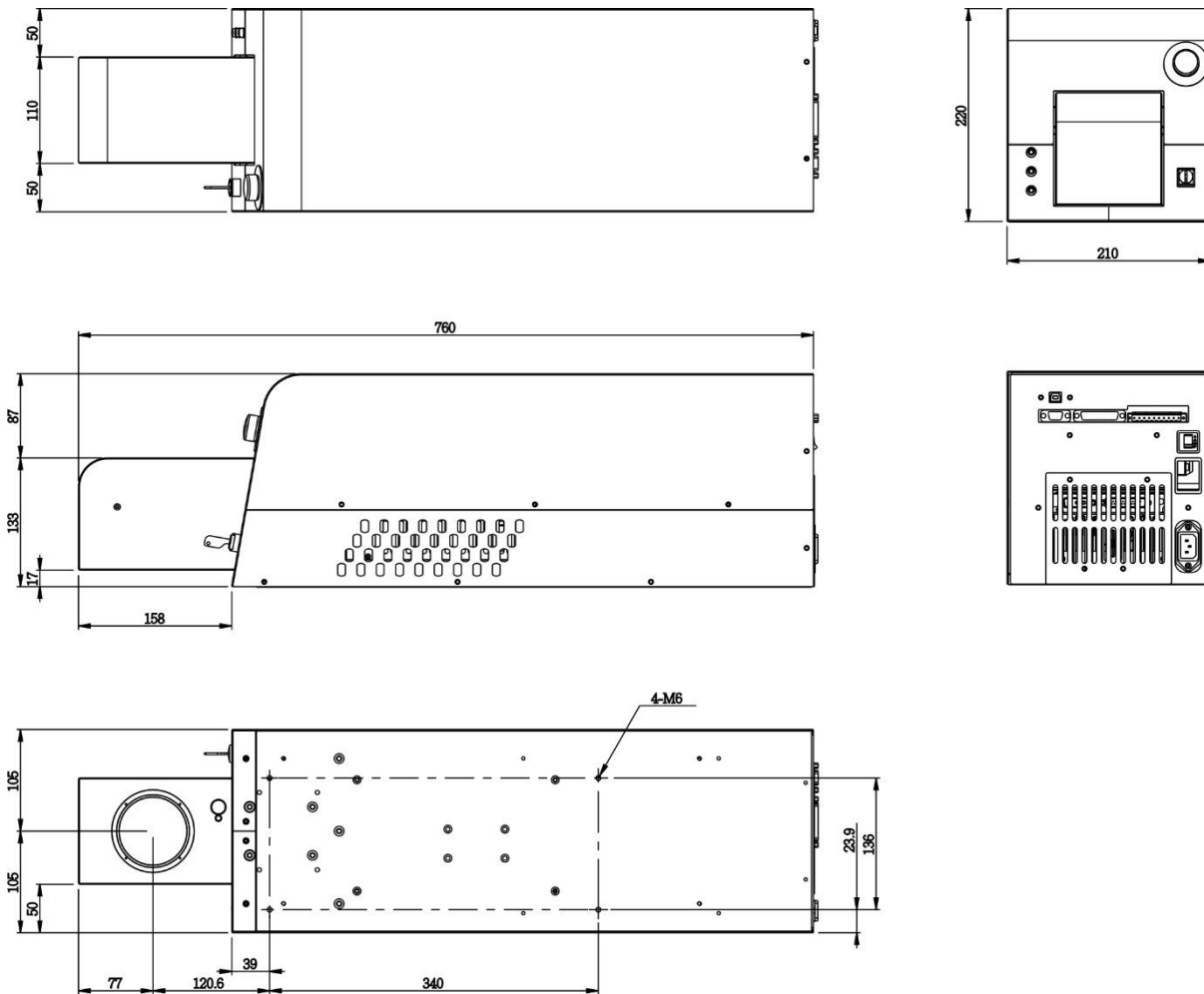


Rear View

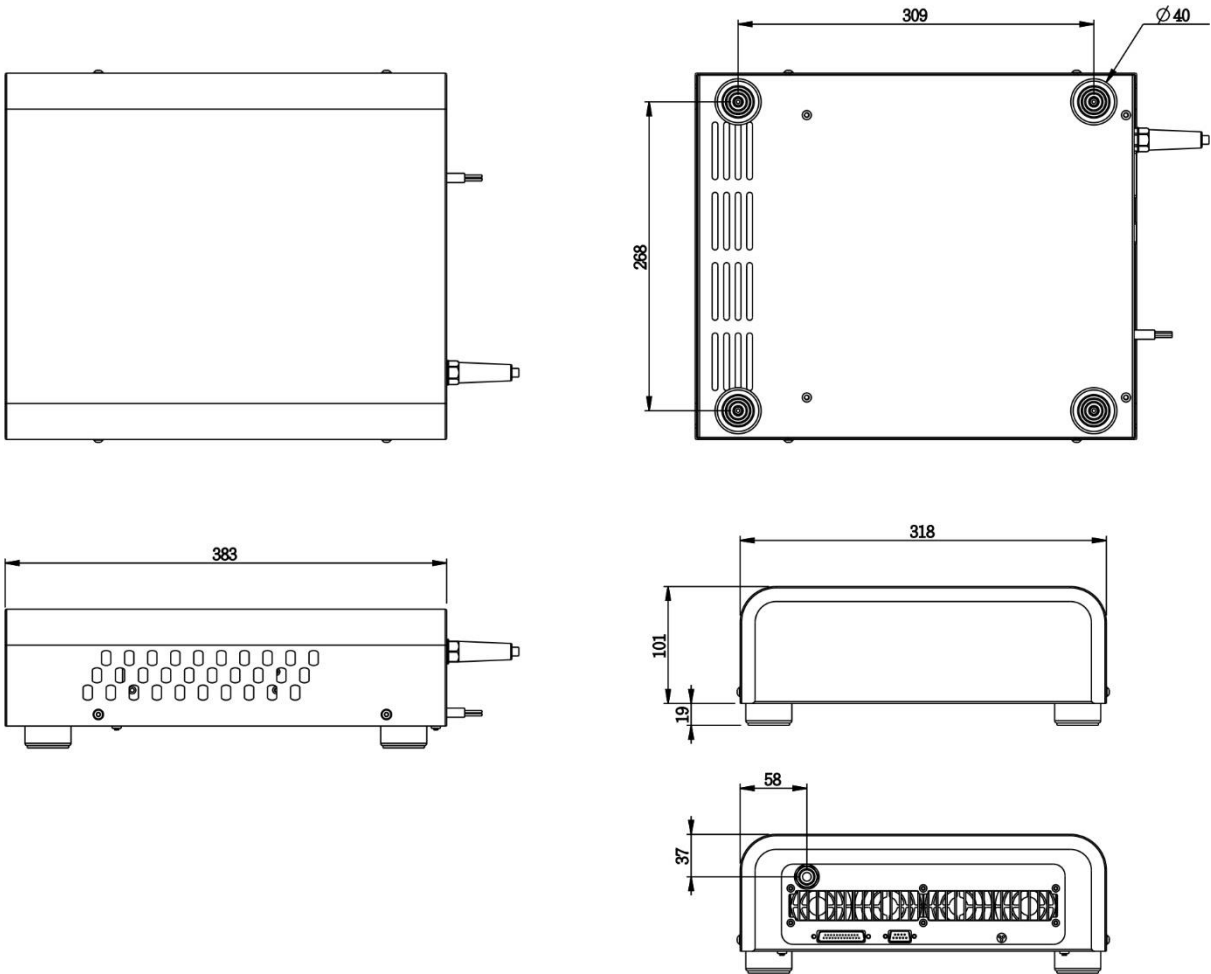


3.3 Footprint

3.3.1 Laser Marker Footprint



3.3.2 Control Unit Footprint (only for 3DS-50JFL)



Chapter **4**

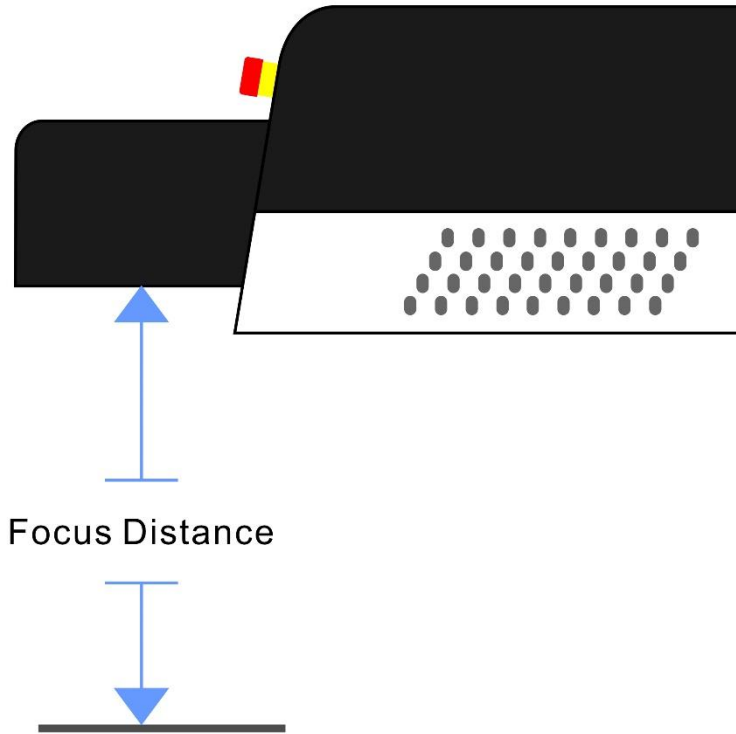
Working Distance

Recommended Working Distance

Pyramid Focus Tool

4.1 Recommended Working Distance

Due to the characteristics of the scan lens, a certain distance between the marking object and scan lens has to be set for an optimized output quality. The working distances for different scan lens are recommended as blow:



Working Area	300x300mm
Focus Tool Length	285 ± 2mm

NOTE

In order to achieve the best output quality, the working distance must set precisely as recommended.

If the working distance is set and out of the recommended range, the output work produced will be unsatisfactory.

4.2 Pyramid Focus Tool

The innovative and patented focus tool is an accessory unit for providing the best working distance on StellarMark 3DS series.

You will find the pyramid focus tool is located on bottom of the laser marker.



NOTE

The fixed length of Pyramid Ruler equals the recommended working distance, and you will no need to adjust the length.

Screw the Pyramid Ruler beneath the laser marker and let the to be marked material touches the bottom screw of Pyramid Ruler, the distance between the two is the best working distance.



NOTE

- With this tool, you can always have the best working distance for different materials by just place your desired marking material on the z axis table and move the z axis table up until the mark material touches the bottom screw of Pyramid Ruler.



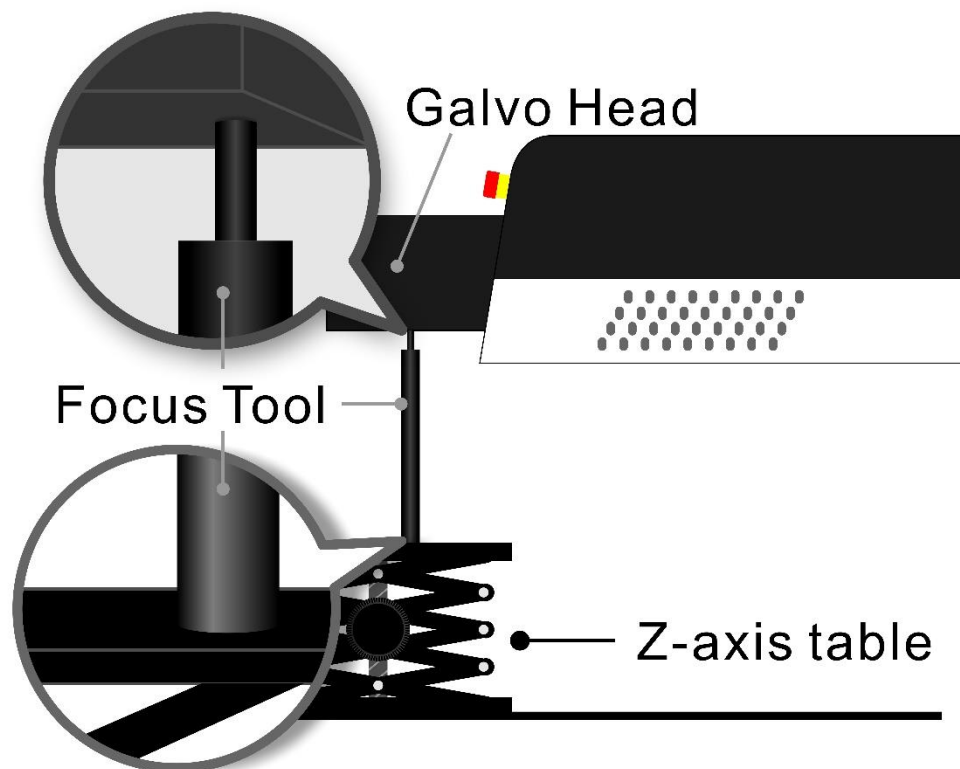
- With its magnetic design, the “Pyramid Ruler” can easily be placed underneath the head of laser marker.

4.2.1 Calibrate the Pyramid Focus Tool

The screw of Pyramid Focus Tools can be adjusted for different applications. If you want to set back the Pyramid Focus Tool to the default length, please perform the adjustment per following steps.

Step 1. Take out the manual focus tool from the accessories kit

Step 2. Place the focus tool on the Z-axis table or any table surface for marking objects, adjust the Z-axis to allow the top of the focus tool to align with the bottom of the galvo head to define the optimized focus distance.



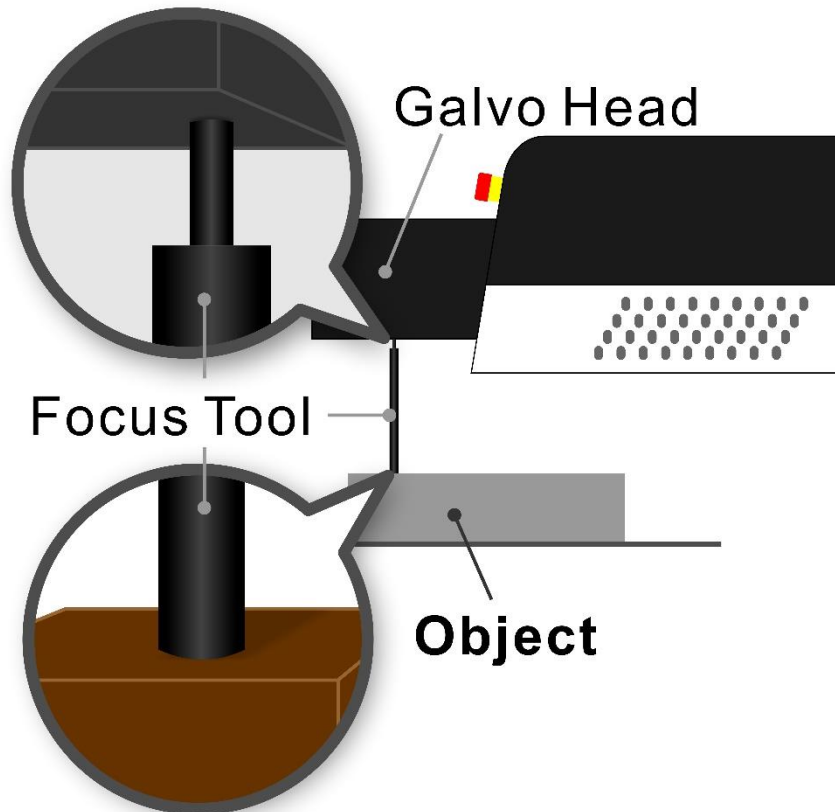
Step 3. Adjust the screw of the Pyramid Focus to fit the length with manual focus tool.



Step 4. Calibration is completed.

4.3 Manual Focus Tool

The focus tool offers you the most accurate focus distance. All you need is place the bottom of the focus tool at the position of the object to be marking and adjust the Z-axis to allow the top of the focus tool to align with the bottom of the galvo head to create the optimized focus distance.



WARNING

- The length of Focus Tool is calibrated with corresponding machine. Do not loosen the screws on Focus Tool to prevent incorrect focus distance.

Chapter **5**

Machine Setup

Cable Connection

Powering Up the Machine

5.1 Cable connection

Step 1. Connect the USB cable between a PC or Laptop and the laser marker.



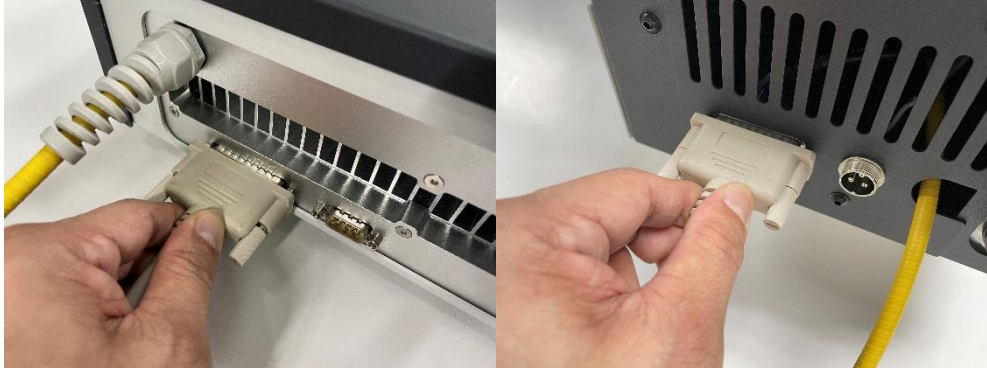
Step 2. Take out the “Mark on Fly” terminal connector from accessory kit and plug it if you want to activate the “mark on fly” function with an external device like conveyor.



Step 3. Plug the “rotary attachment” cable between Control Unit and the rotary attachment device if you have this optional item in hand.



Step 4. Connect the “Laser Signal Cable” between the control unit and machine. (This operation only for 3DS-50JFL)



Step 5. Plug the “Laser Power” cable in the laser power port on the back of the machine. (This operation only for 3DS-50JFL)



5.2 Powering Up the Machine

CAUTION

Make sure both StellarMark 3DS series and the computer is turned **OFF** before connecting either one to a power source.

- Step 1.** Connect the male end of the marker/control unit power cord to a properly grounded outlet.



- Step 2.** Connect the power cord to the power inlet located on the rear side of the laser marker/control unit.



NOTE

The Stellar Mark 3DS series is designed to work with 110~220 VAC, 50/60Hz, Max 8A.



WARNING

Connection to the AC power source must be the last step after connecting all the cables between Control Unit and Laser Marker. Do not pull in or out the cable while the power is being turned on.

Step 3. Turn on the master power of the laser marker.



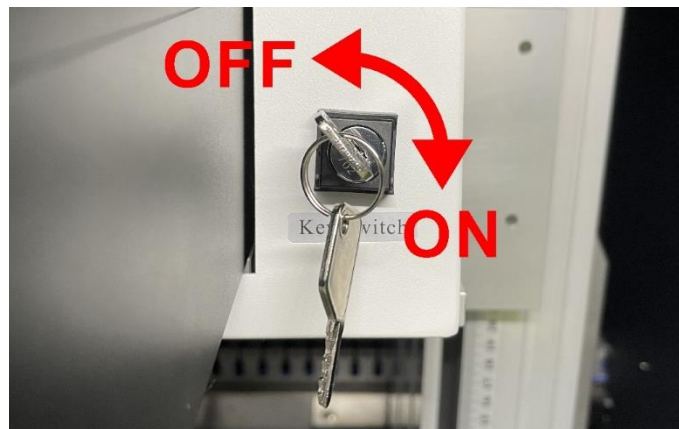
NOTE

Each time when turning off the power of laser marker, re-start MM3D marking software is required due to the connection between computer and laser marker/control box is disconnected when power off, therefore, the marking software is unable to control the laser marker firing.

Step 4. Make sure the green light of “Power On” in front of laser marker is on.



Step 5. Turn the key switch on so you will be able to fire the laser OFF (Left) / ON (right).



NOTE

- Please turn the key switch to the “Off” position if you would like to turn off the machine.

Step 6. Make sure the “Emergency Stop” button is not activated.



Chapter **6**

Software Setup

Recommended Computer Configuration

Software Installation for Windows System

Software Installation for MAC System

Communication Troubleshooting

Change the Series and Model Type

6.1 Recommended Computer Configuration

The Stellar Mark can accommodate Laptop and compatible PC operating systems. Both the machine and MM3D software were designed to work best using a Windows-based system with the following minimum requirements.

Computer Configuration

- CPU Intel Pentium, 1GHz or above
- DRAM 1GB RAM or above
- CDROM One CD-ROM disk drive
- HDD 500 MB of free hard drive space
- SVGA Super VGA display (1204 x 768 min. resolution)
- Interface PC or Laptop

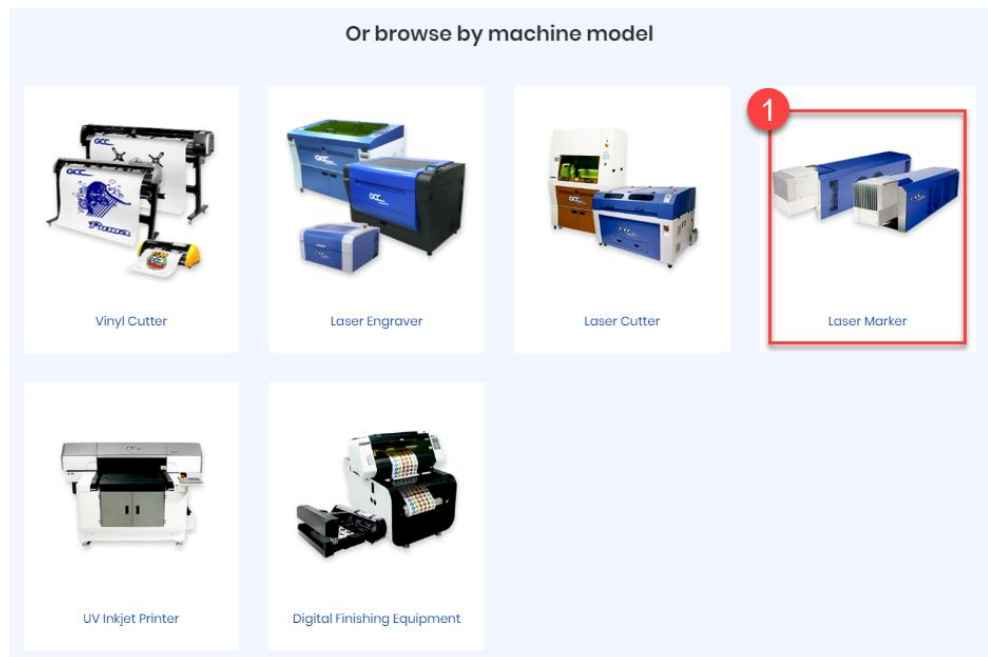
MM3D marking software

- **Software is designed for operating system**
 - Windows XP SP3
 - Windows 2000
 - VISTA 32 bit
 - Windows 7 32 bit / 64 bit
 - Windows 8 32bit / 64 bit

6.2 Software Installation for Windows System

Please perform the following steps:

- Step 1.** Go to the Download area on GCC website (<https://www.gccworld.com/download.php>) to download the MM3D software.



Laser Marker

Laser Marker



Laser Marker

StellarMark 3DS

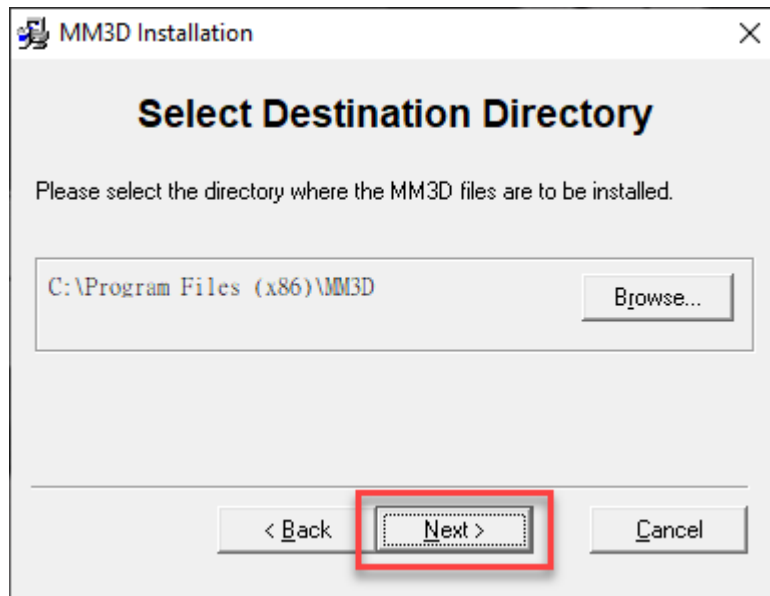
The marking solution for 3D objects



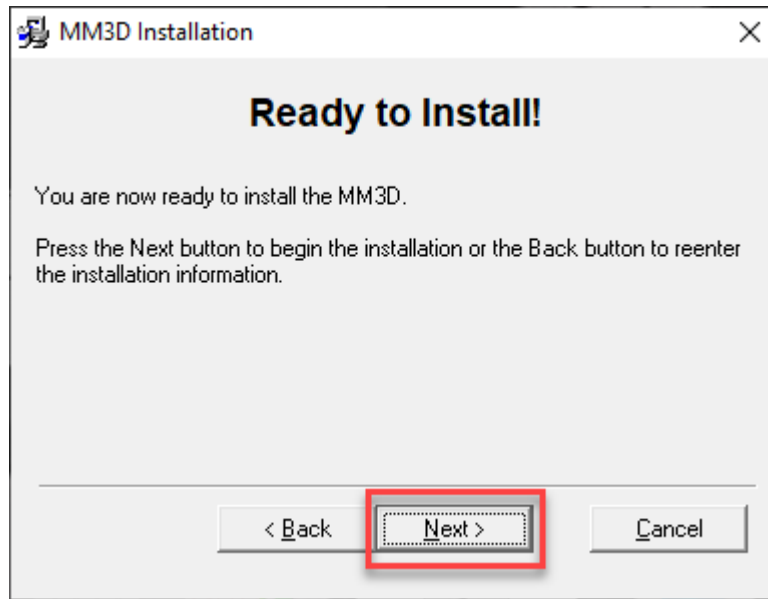
Software		
Title	Size	Download
MM3D for StellarMark 3DS series (V3.86)	207 MB	3 Download

Step 2. Unzip and double click the file to install the software in your computer.

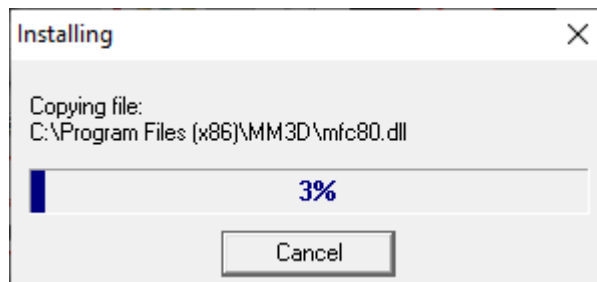
Step 3. Set the destination directory and click "Next>"



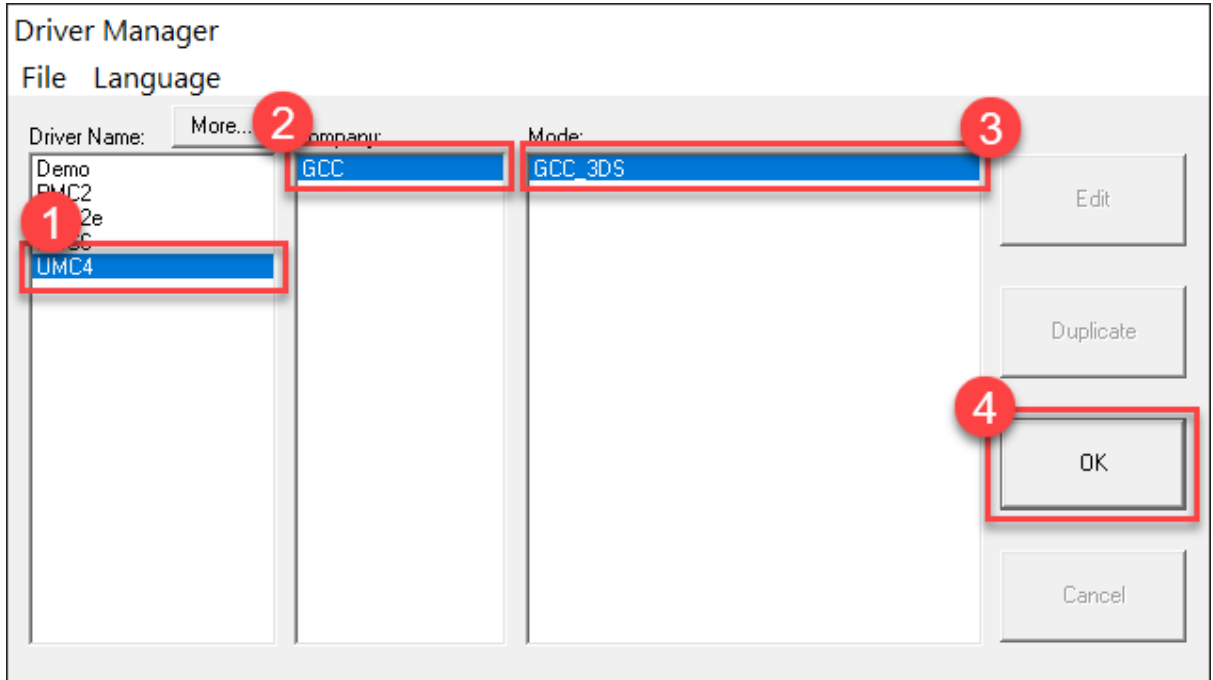
Step 4. Select "Next>"



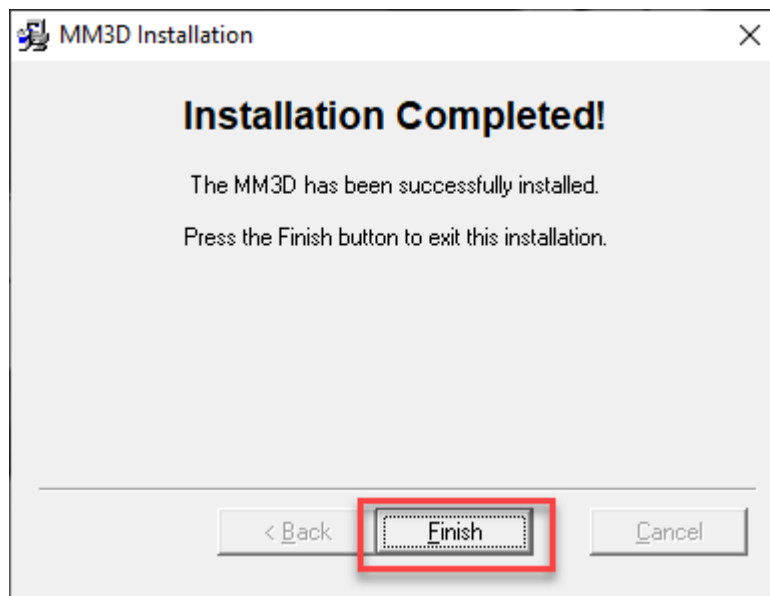
Step 5. Installing



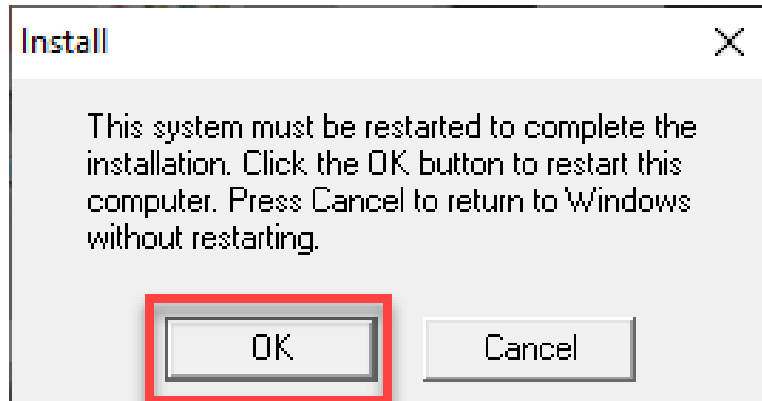
Step 6. At 95% completion of the installation, the Driver Manager window will show up. Please select “UMC4” > “GCC” > “GCC 3DS”, then click the “OK” button to continue.



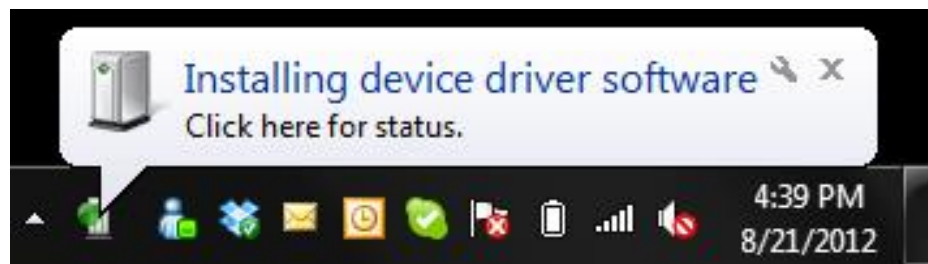
Step 7. After installing is complete, please click the “Finish” button to close the window.



Step 8. The system will show a message to remind you to reboot your computer, please click the “OK” button to complete the installation.



Step 9. Once the installation is completed, you will find “Laser marking controller” at the lower right-hand corner on your computer screen, this indicates the computer can communicate with StellarMark.



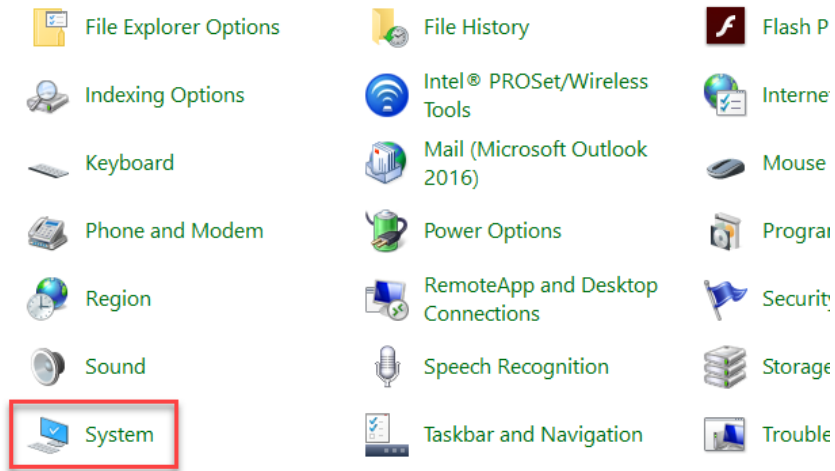
NOTE

If “Laser marking controller” is not showing at the lower right-hand corner of your computer screen, MM3D will not be able to be activated.

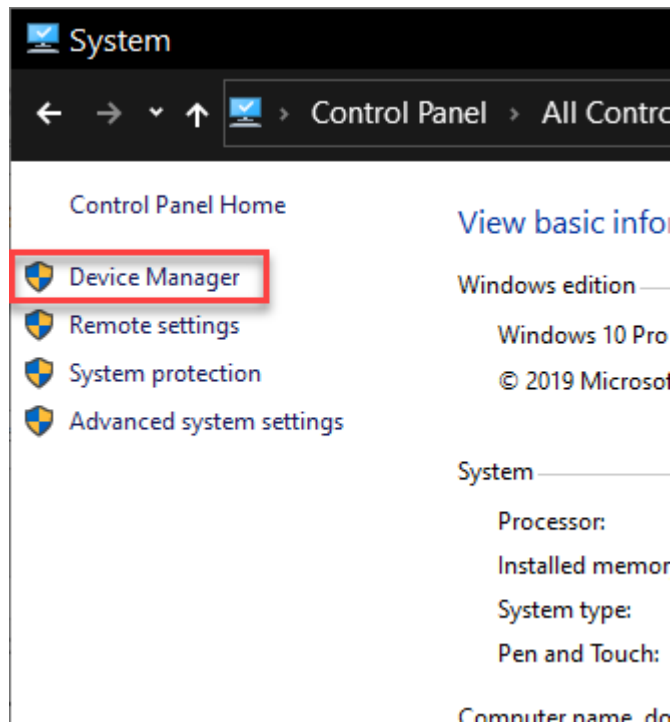
Please perform the following steps:



A. Please go to “Control panel” and click on “System”



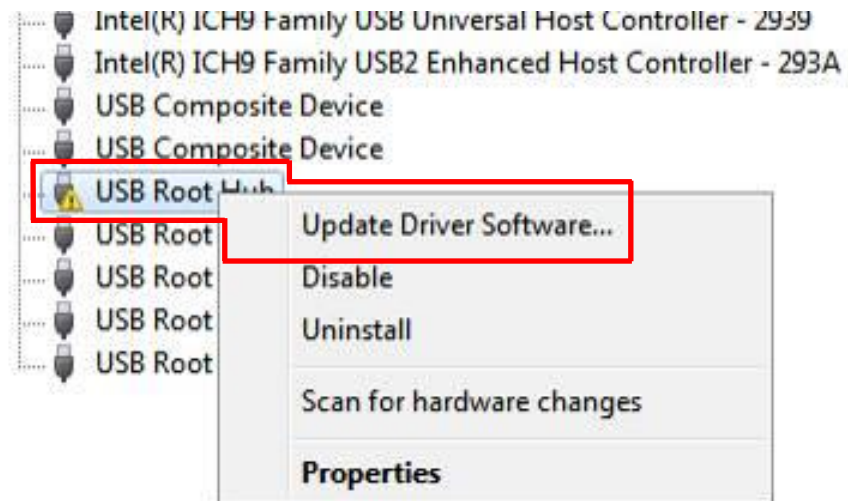
B. Click on “Device Manager” from the left-side menu of the system window.



- C. Please check if there is any USB device with the warning sign “!” from the below chart:



- D. Then click on “USB Driver’ and click on the right mouse button to update the driver.



E. Click on "Browse my computer for driver software"

How do you want to search for driver software?

→ **Search automatically for updated driver software**
Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.

→ **Browse my computer for driver software**
Locate and install driver software manually.

F. Key in the specific path "C:\Program Files (x86)\MM3D\Drivers\UMC4", and press "Next."

Browse for drivers on your computer

Search for drivers in this location:

C:\Program Files (x86)\MM3D\Drivers\UMC4

Browse...

Include subfolders

→ **Let me pick from a list of available drivers on my computer**
This list will show available drivers compatible with the device, and all drivers in the same category as the device.

Next

G. Press "Finish" and now you can activate the MM3D software

The best driver software for your device is already installed

Windows has determined the driver software for your device is up to date.

 USB Root Hub

6.3 Software Installation for MAC System

MAC users can use GCC StellarMark machines by purchasing the Parallels Desktop software which allows you to install Windows OS on MAC computers and run Windows-based software under MAC computer and output with MM3D.

Step 1. Purchase Parallels Desktops on its official website.



Parallels Desktop 8 for Mac
The #1 choice of customers worldwide to run Windows on Mac

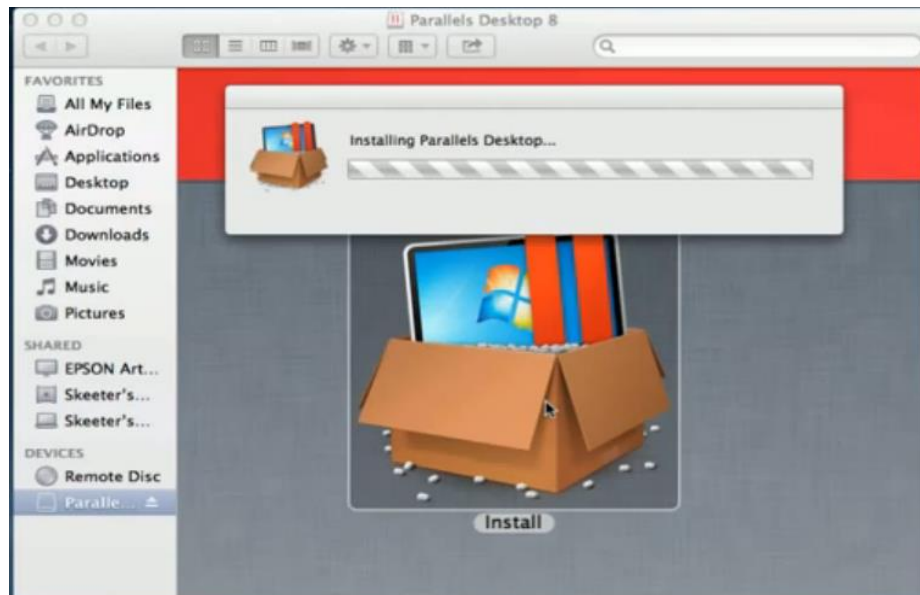
Parallels Desktop 8 for Mac lets you seamlessly run Windows and Mac applications side-by-side, without rebooting.

Enjoy the latest **Mountain Lion** and Lion features in Windows apps, and remotely access your Windows and Mac programs from your **iPad** or **iPhone** with the Parallels Mobile app, available for purchase in the App Store.

In addition to Windows 7, other OSES can also be run in **Parallels Desktop 8** for Mac, including **Windows 8**, Windows Vista, Windows XP, Windows 98, **Linux**, and Google **Chrome OS**.

Buy \$79.99 | Watch Video | Try Free
Upgrade now for \$49.99

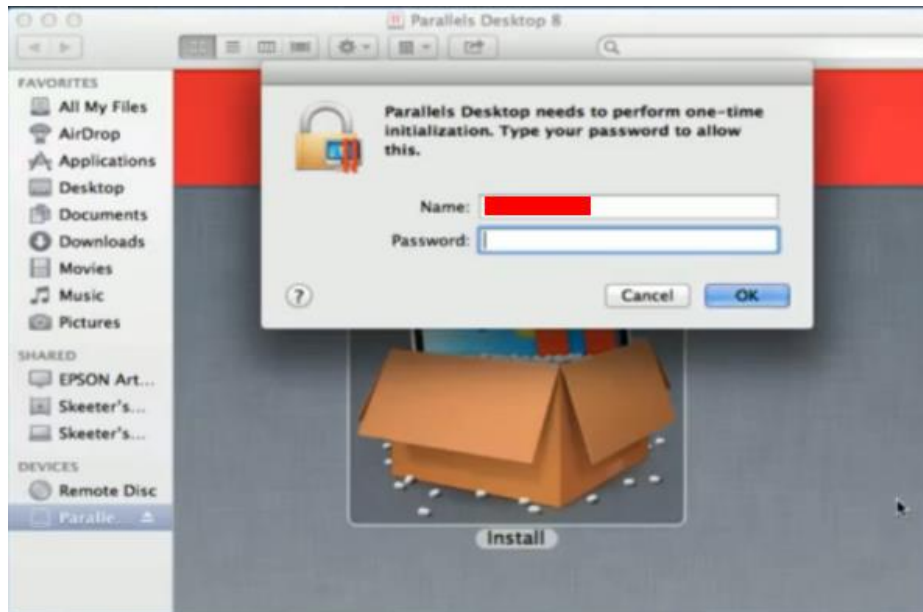
Step 2. Install Parallels Desktops under Mac OS environment.



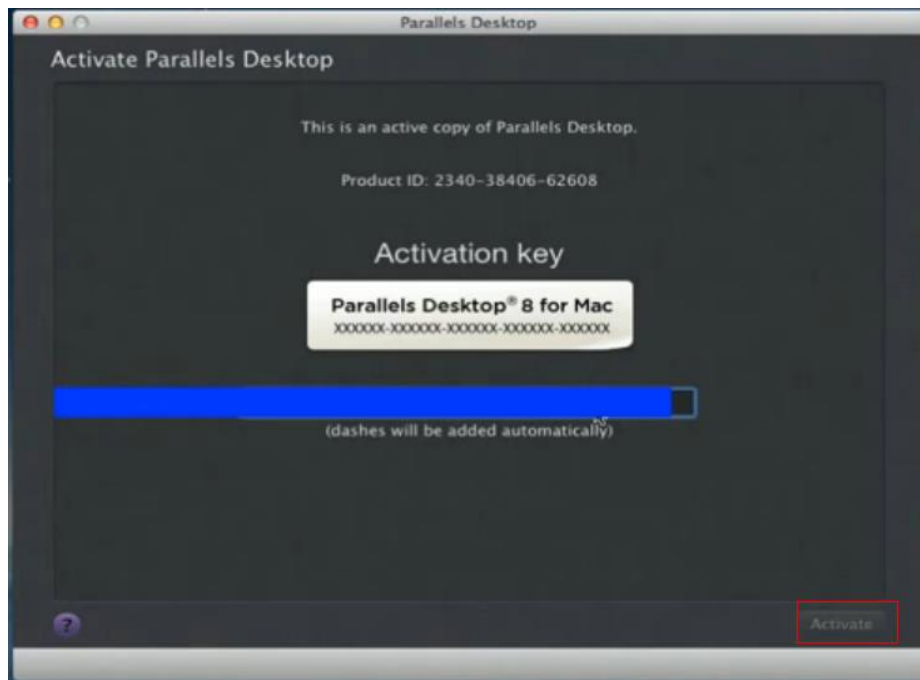
Step 3. Read Software License Agreement and press “Accept” to continue installation



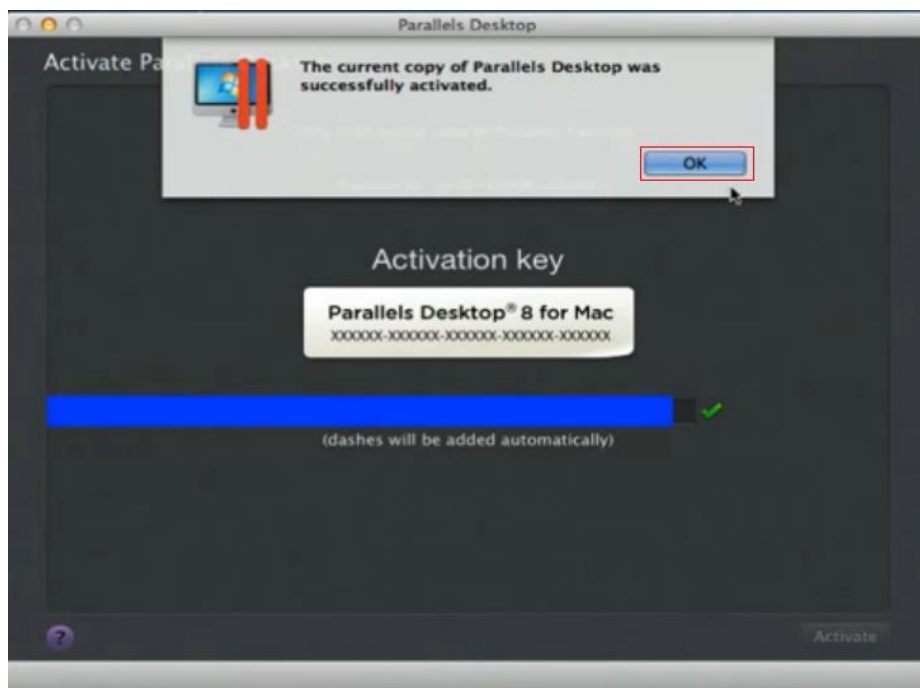
Step 4. Enter your Mac OS X User Name and Password then press “OK”



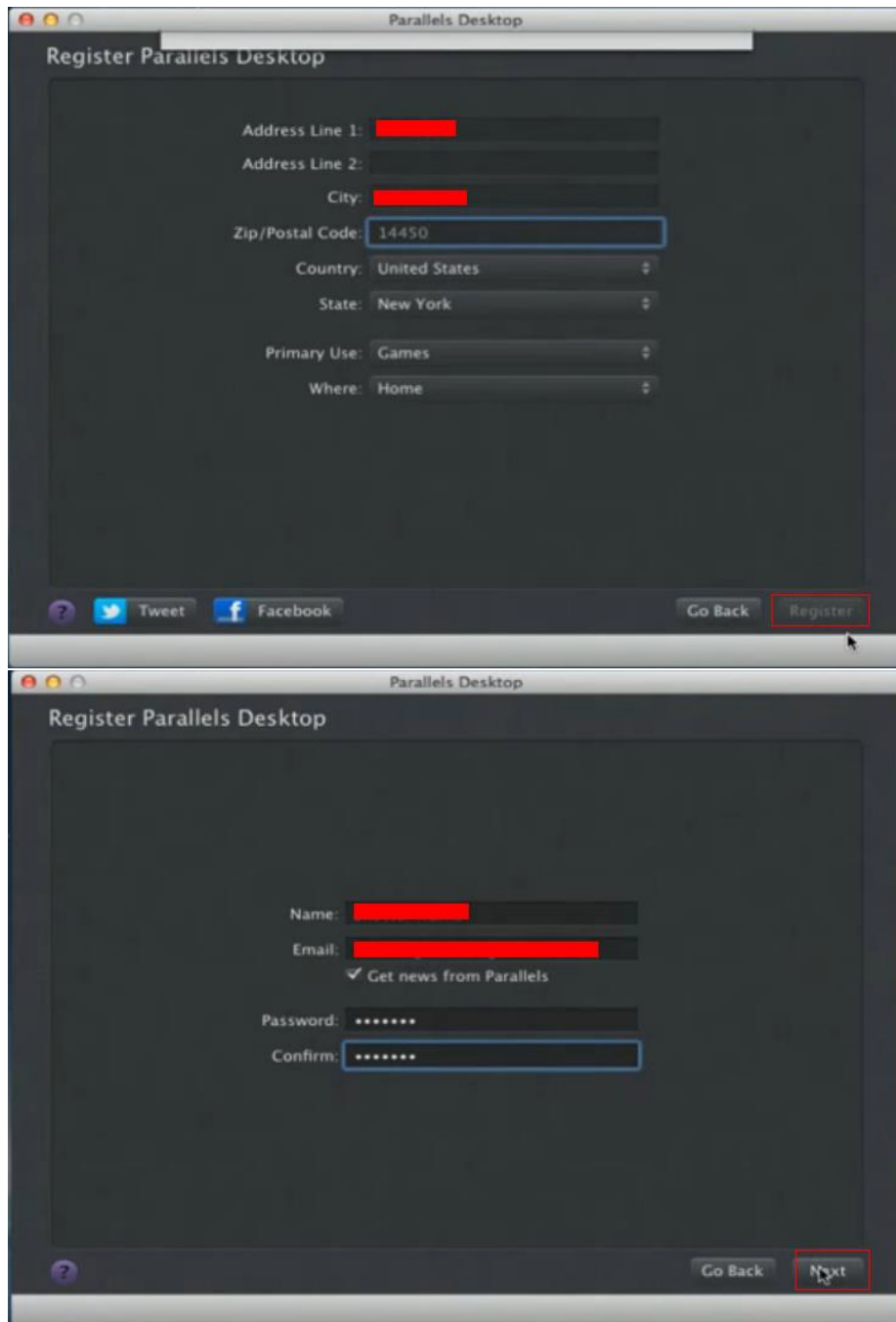
Step 5. Press “Active”



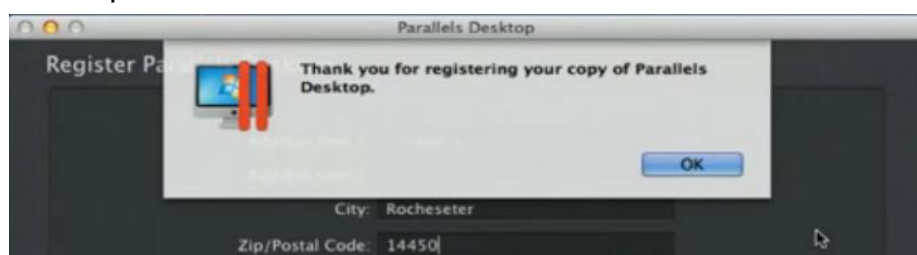
Step 6. Press “OK” when activation is complete.



Step 7. Register Parallels Desktop



Step 8. Press “Register” and “OK” to complete the installation of Parallels Desktop.



Step 9. Open **Parallels Desktop** (in the **Applications** folder) then choose **File** → **New**



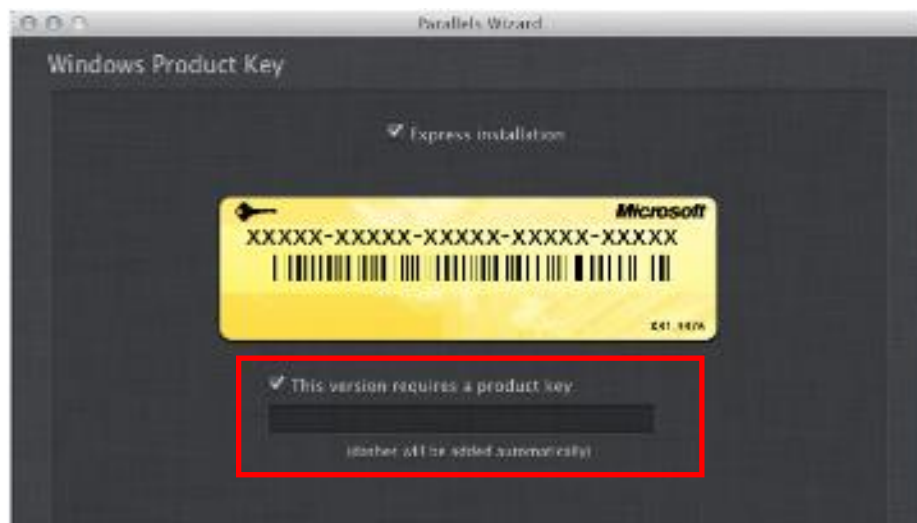
Step 10. Press “Install Windows from DVD or image file” then press “continue” to install windows OS



Step 11. Select CD-ROM drive with the Windows installation CD



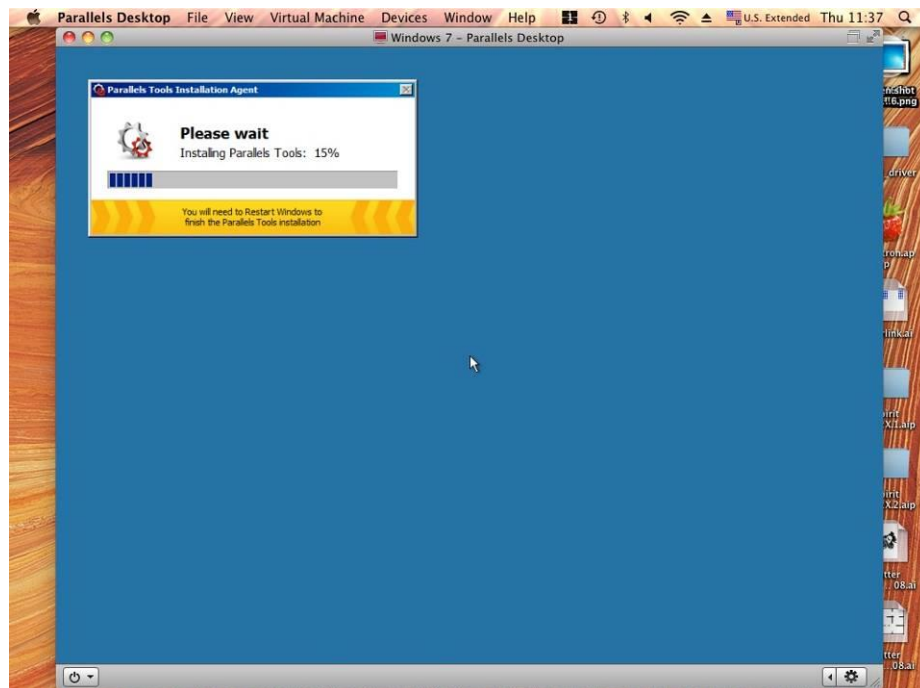
Step 12. Enter the Windows OS product key

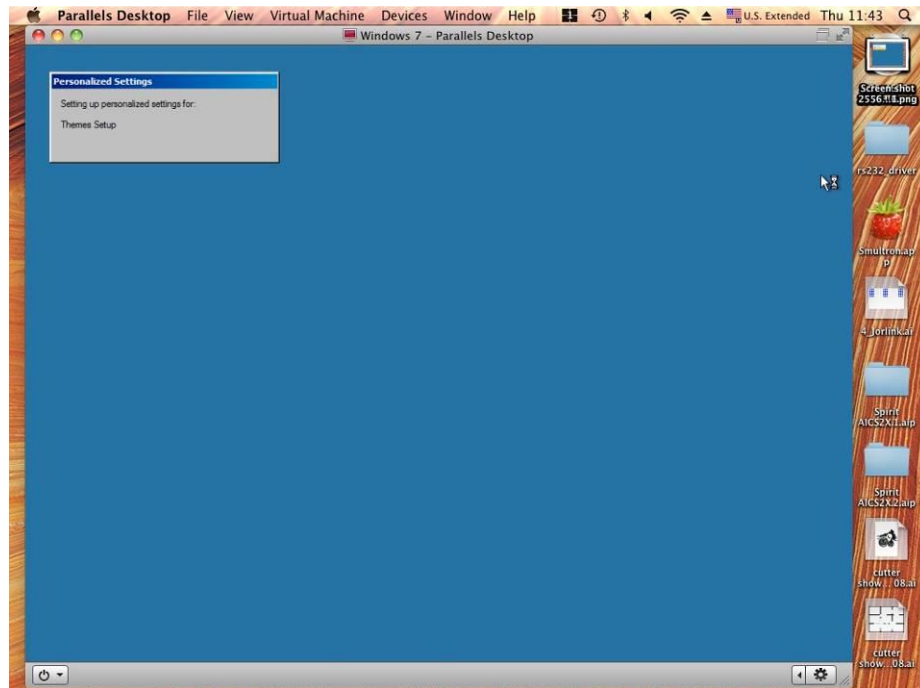


Step 13. Select how you would like to run your Windows program.



Step 14. After the prior setting is complete the windows OS installation procedure will start automatically.





Step 15. Windows OS installation is complete then you can refer to “6.2 Software Installation for windows system” to install MM3D.

NOTE

Once the MM3D software installation is completed, you can start to open a new file to edit or import an existing file to MM3D for laser processing. For MM3D software operation manual, you can refer to “MM3D user manual” in the StellarMark CD from accessory box.

6.4 Communication Troubleshooting

After installing, some computers will not install the controller driver automatically and showing an error message when you open the MM3D software program.

Please perform the following steps to solve problem.

- Error message 1 – Please insert KeyPro! (#1)



Fix 1:

Make sure the power of marker is ON.

Fix 2:

Reconnect the USB cable between a PC or Laptop and the marker, and then reopen the MM3D software program.

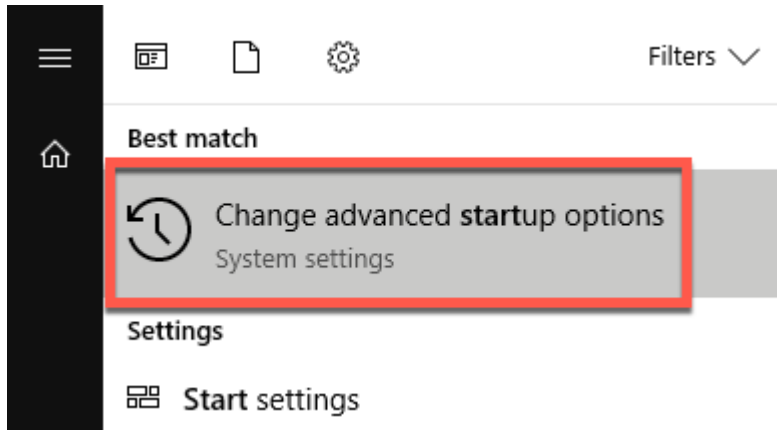
Fix 3:

Some users of windows 10 has found the “!” USB device from list of the device manager, but cannot update the driver. We recommended you disable the driver signature enforcement on safe mode, please perform the following steps

Step 1. Select the “Start” button.

Step 2. Type “startup”.

Step 3. Select “Change advanced startup options”.



Step 4. Select “Restart now” under the “Advanced startup” area.

Go back to an earlier build

This option is no longer available because your PC was upgraded more than 10 days ago.

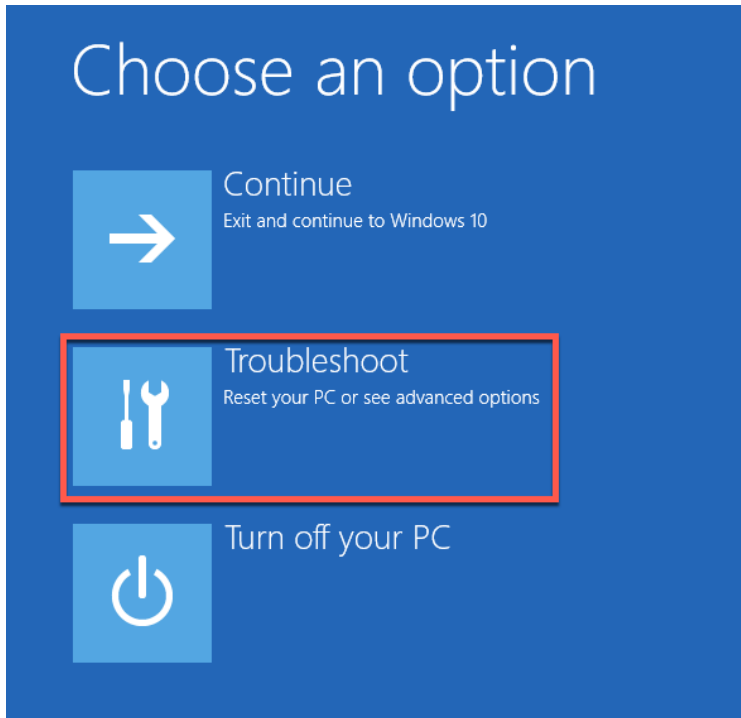
Get started

Advanced startup

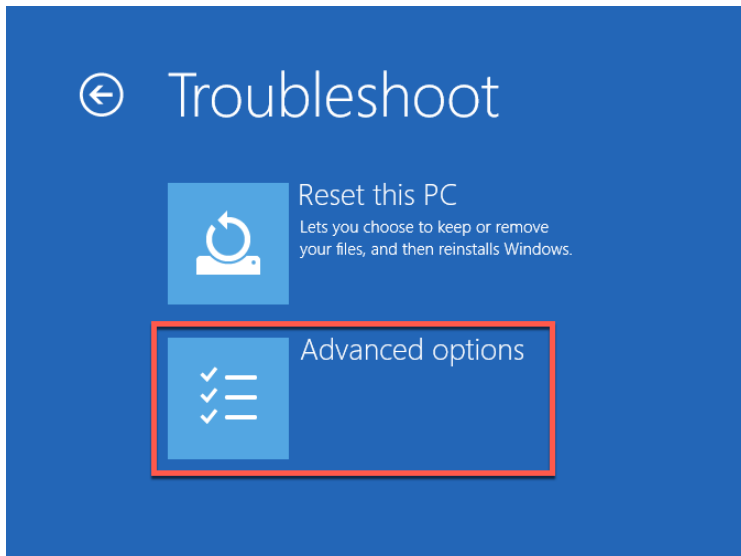
Start up from a device or disc (such as a USB drive or DVD), change Windows startup settings, or restore Windows from a system image. This will restart your PC.

Restart now

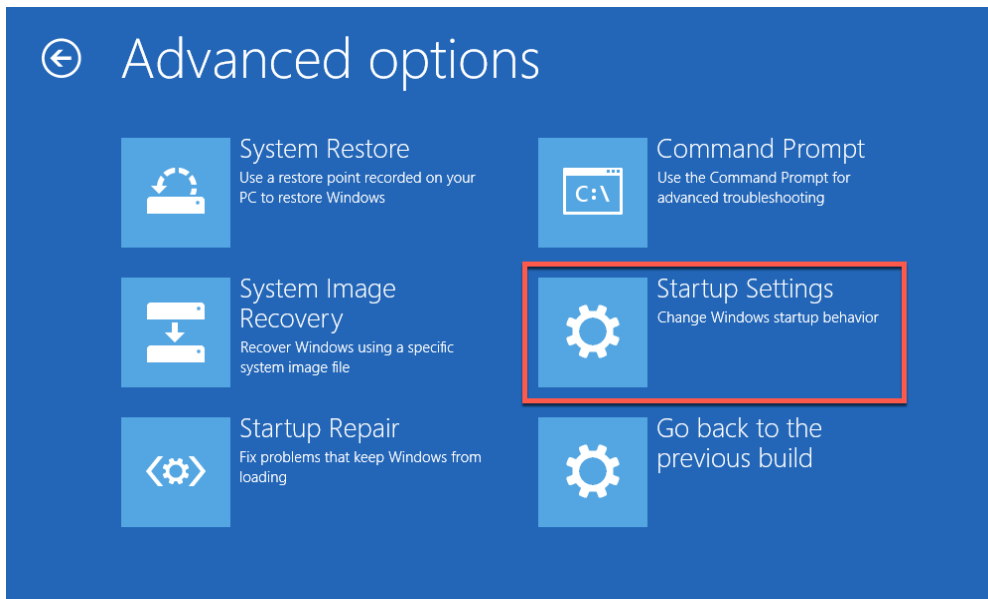
Step 5. Select “**Troubleshoot**”.



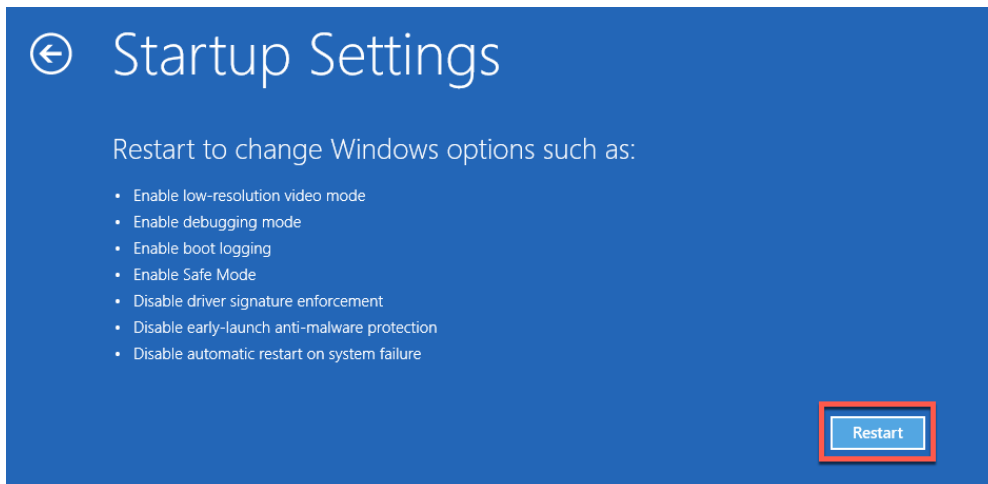
Step 6. Select “**Advanced Options**”



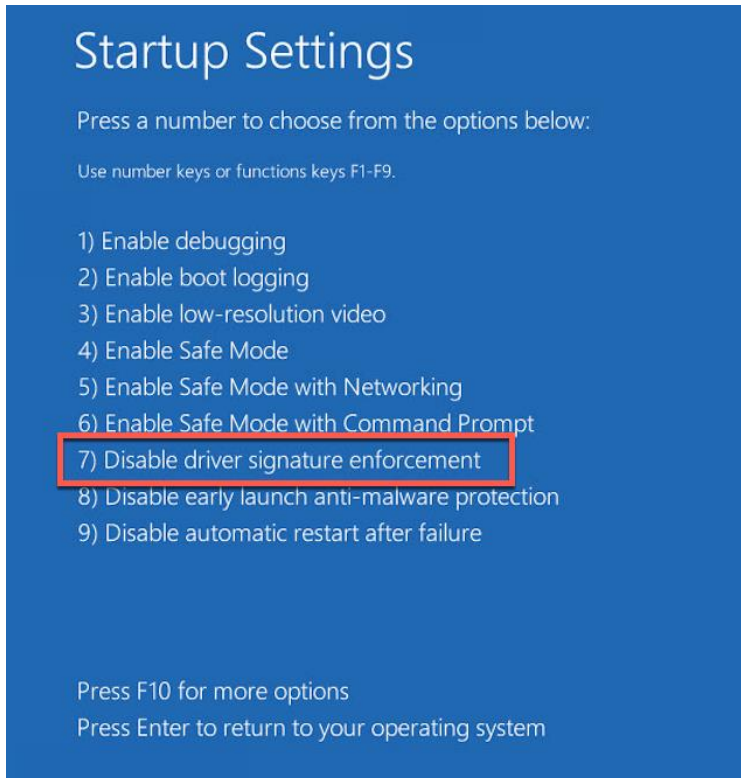
Step 7. Select “Startup Settings”.



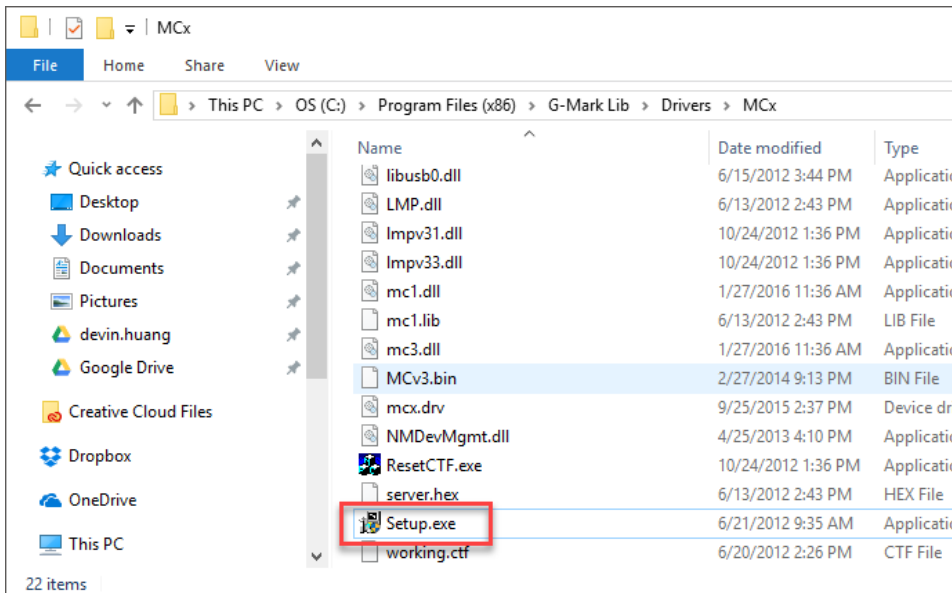
Step 8. Select “Restart”.



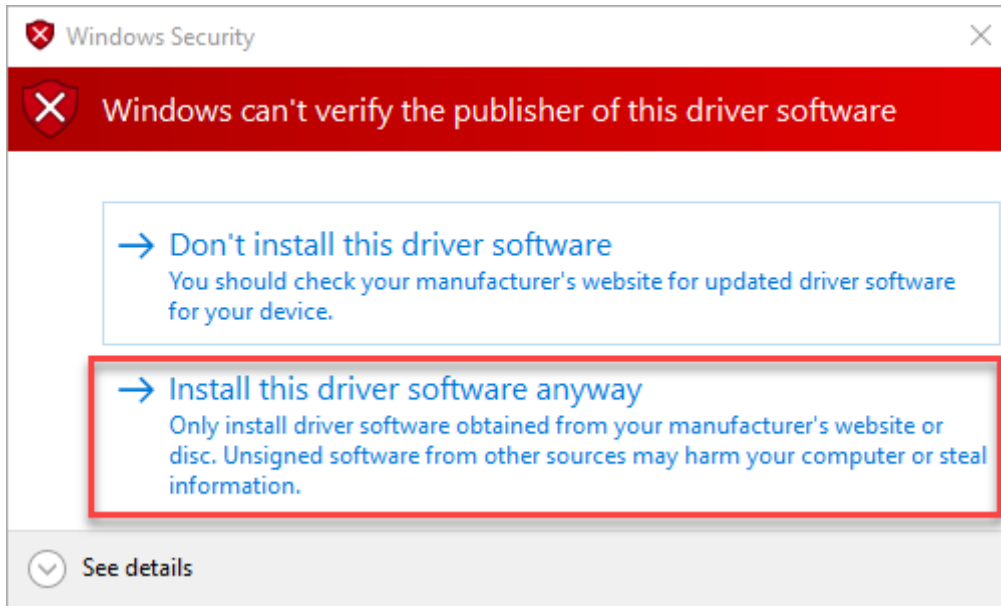
Step 9. A menu will appear where you can press “F7” on your keyboard to choose “**Disable driver signing enforcement**”.



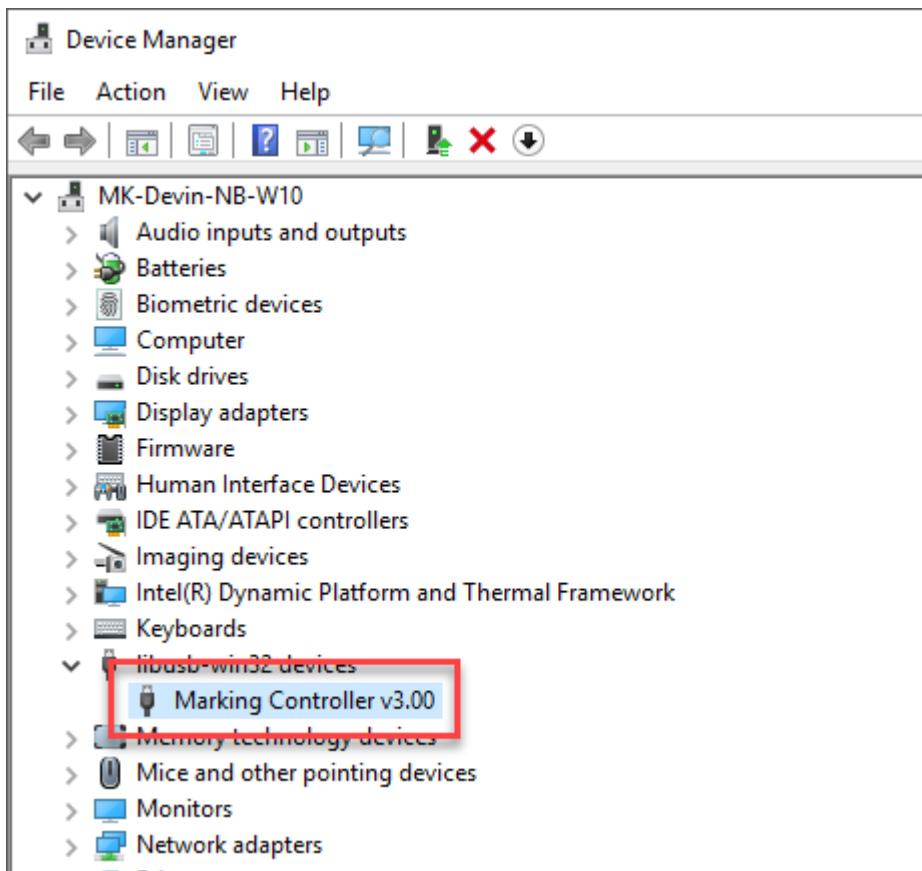
Step 10. After rebooting, go to “C:\Program Files (x86)\MM3D\Drivers\UMC4” and click on “Setup.exe” to install.



Step 11.“Windows Security” will pop up, and then click on “Install this driver software anyway”



Step 12.After installing, go to device manager and make sure the controller driver has been installed.



7

Operating StellarMark 3DS

Simple 3D Object Marking

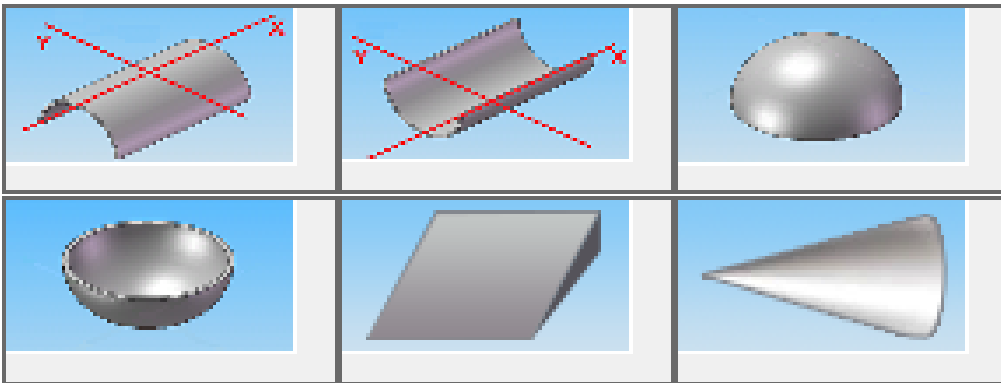
Input Lens Parameter Into MM3D

We will introduce how to mark a 3D object on MM3D in this chapter. Please refer to the following contents for more details.

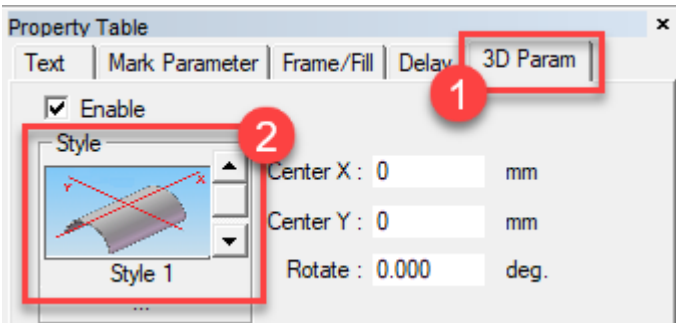
7.1 Simple 3D object Marking

The MM3D marking software has built-in some styles of 3D objects for the user. We recommended that you check these styles on MM3D first, which can save on time to create the 3D mold by 3D software.


The following pictures are all styles for your reference.



Please go to the “Property table → 3D tab” on MM3D marking software to check all styles.





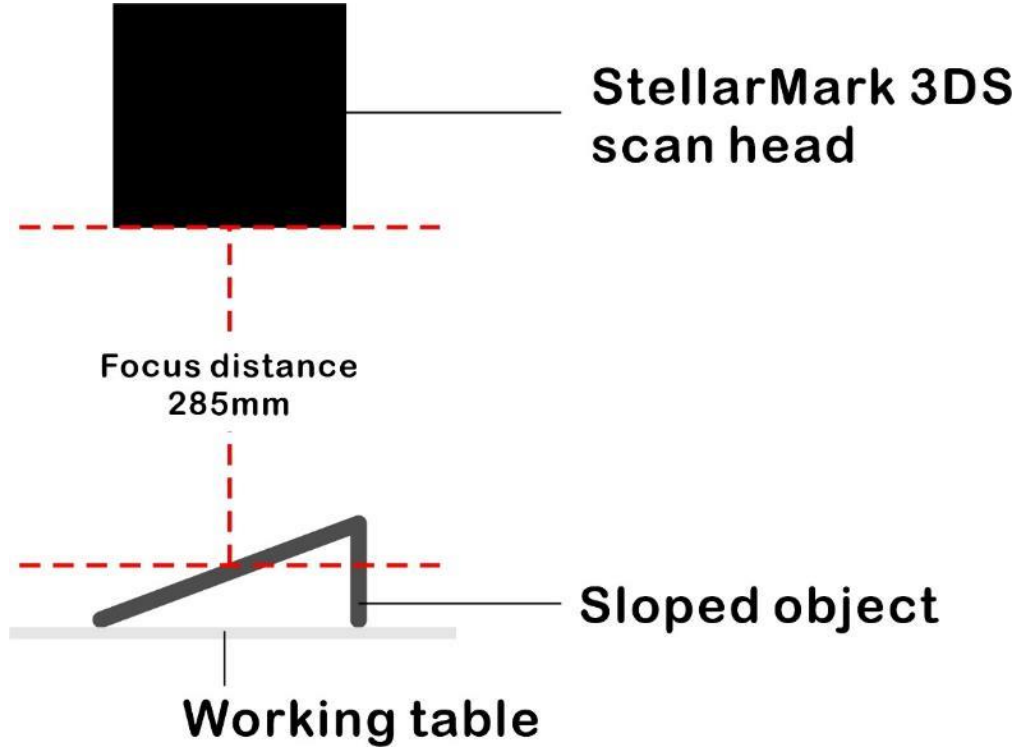
The following example takes shape of slop  to demonstrate how to set up the MM3D marking software.



Step 1. Place the object on the working table.



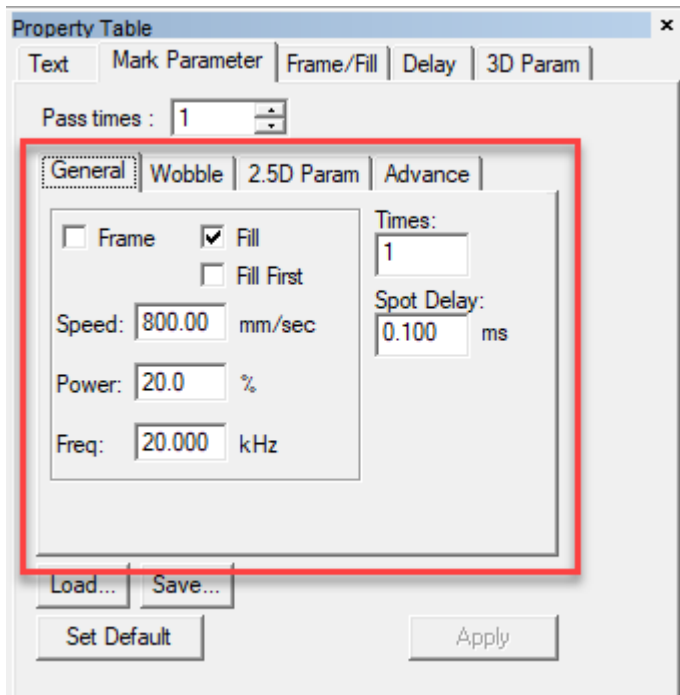
Step 2. Set the focus to 285mm by the focus tool. Please noted that the correct focus distance is from the bottom of the scan head to the center of the object. Please refer to the following picture to know how to set a correct focus distance.



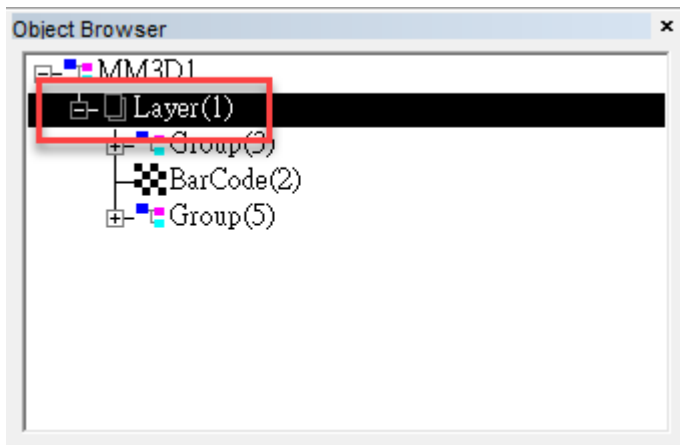
Step 3. Type the text or import artwork to MM3D.



Step 4. Set the marking parameter on the property table (the property table is located on the left side of MM3D)

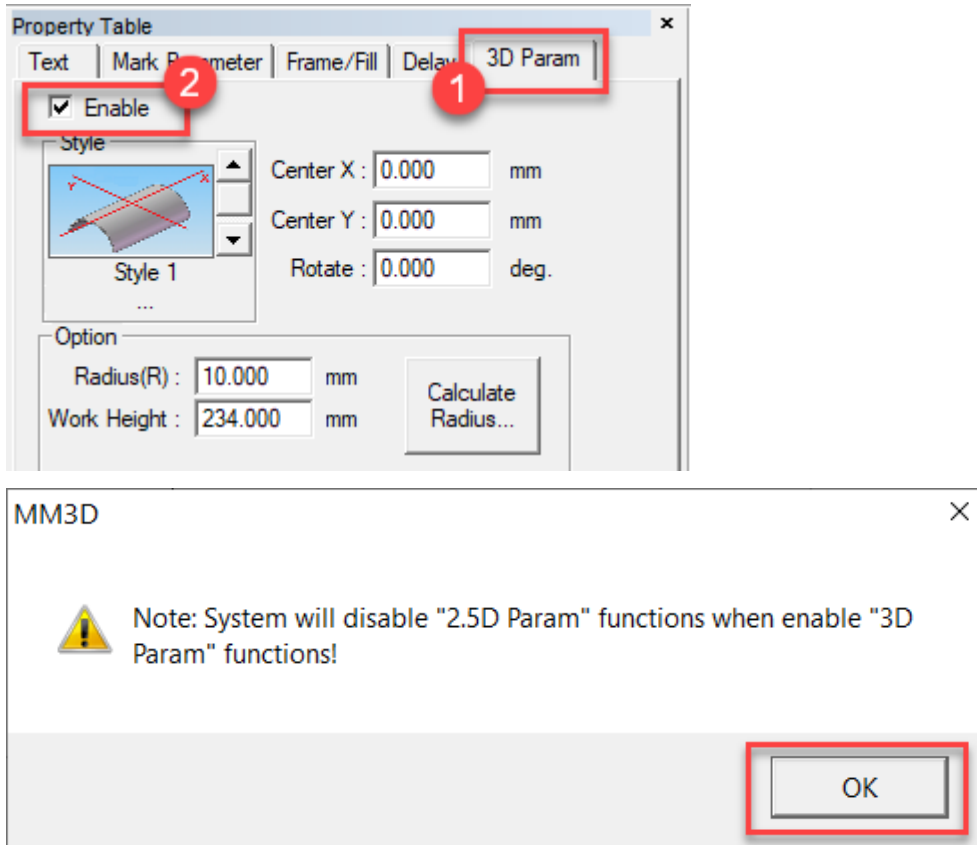


Step 5. After setting the marking parameter, please click the “Layer (1)” on the object browser of MM3D (the object browser is located on the left side of MM3D) to ensure all artworks could be put on the surface of the 3D object.

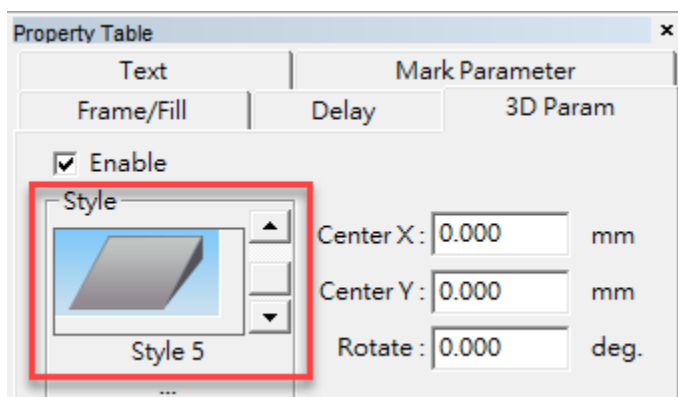


Step 6. Go to the “Property table” → “3D Param” tab, and check the checkbox of “Enable” to enable the 3D function.

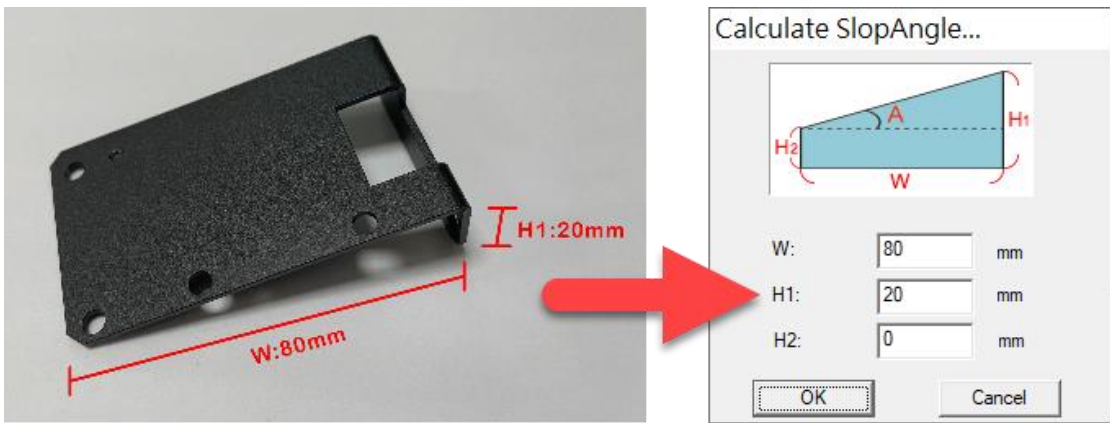
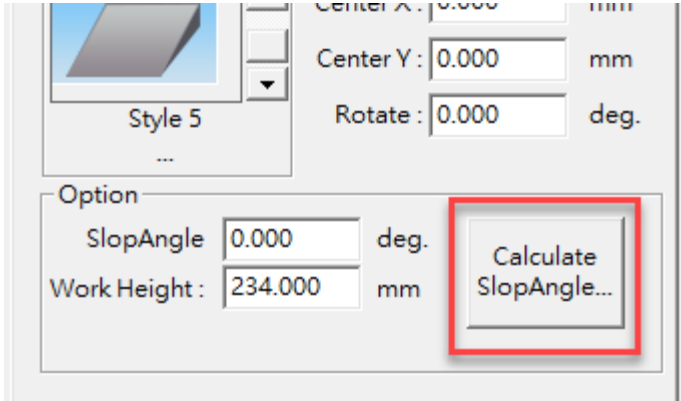
The system will show a note to remind you that the 2.5D Param function will be disabled when you use the 3D Param function. Please click OK to continue.



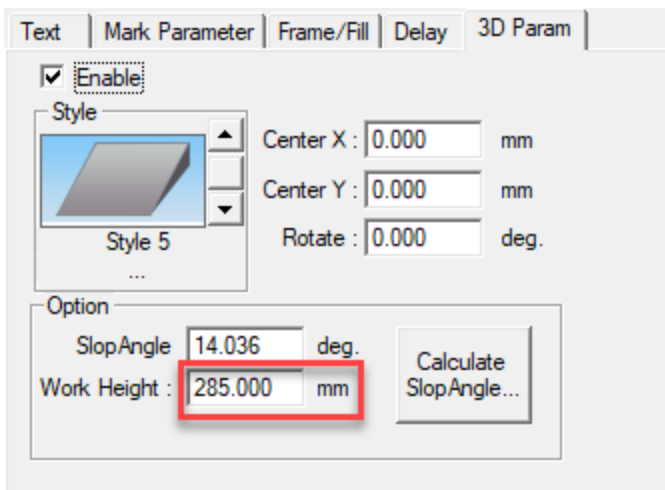
Step 7. Select the slop style through the up and down arrows.



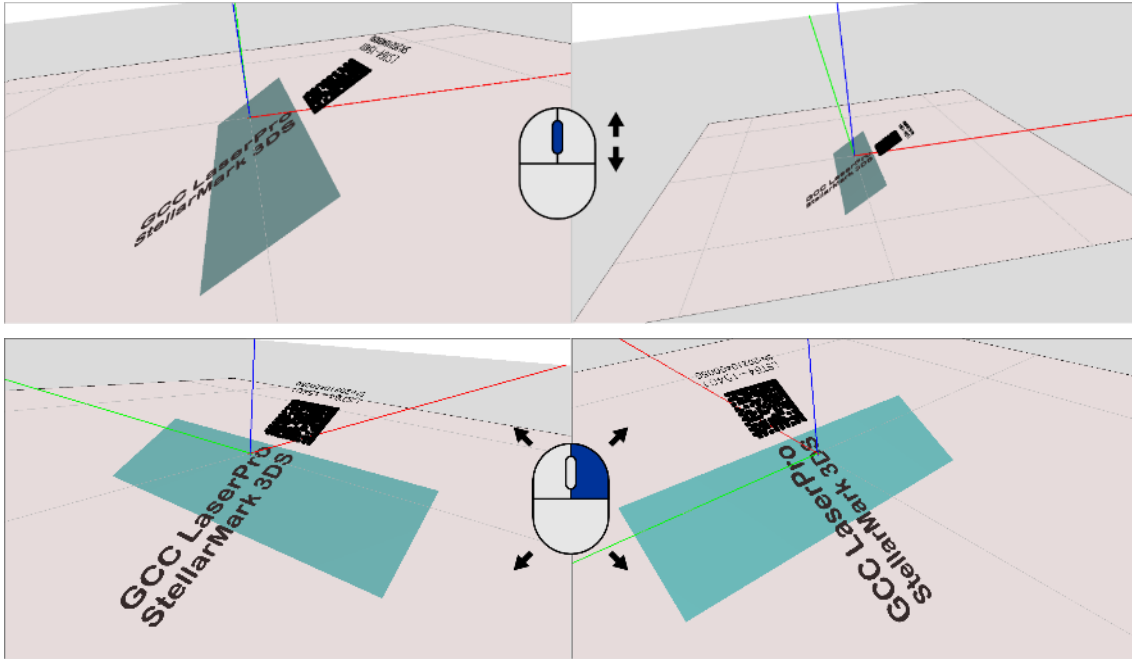
Step 8. Click the “Calculate Slop Angle...” button, the “Calculate Slop Angle” windows will pop up. Please key in the value according to the size of the object and the system will generate the 3D mold automatically. After keying in the value, please press the “OK” button to close the window.



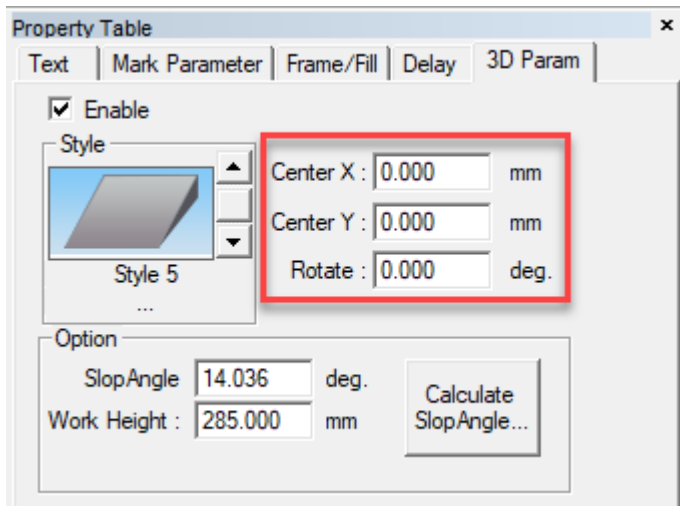
Step 9. Enter 285mm for work height to set the correct focus range. Please make sure you have imported the lens correction file into MM3D marking software before you key in the value. Please refer to chapter 8.1 – Import Lens Correction File to import the lens correction file.

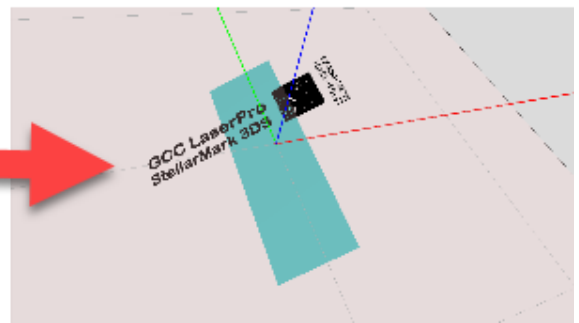
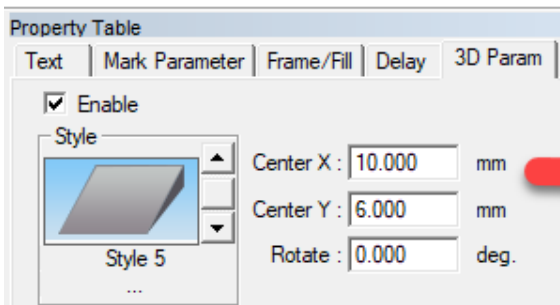
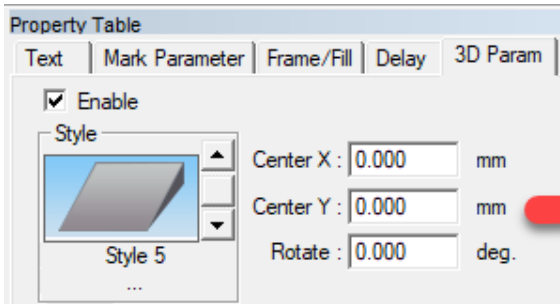



Step 12. Use the scroll wheel of the mouse to zoom in/out the 3D object, and right-click the button of the mouse to rotate the view of the 3D object.




Step 13. Please go to the “3D Param” tab and key in a number in the “Center X”, “Center Y”, and “Rotate” if you want to fine-tune the position of the artwork.





Step 14. After finishing all settings, please click the “Preview  ” button to do the dry run and make sure the marking position is correct.

Step 15. Click the “Mark  ” button to run the job when you confirm all settings.

Step 16. Marking is completed



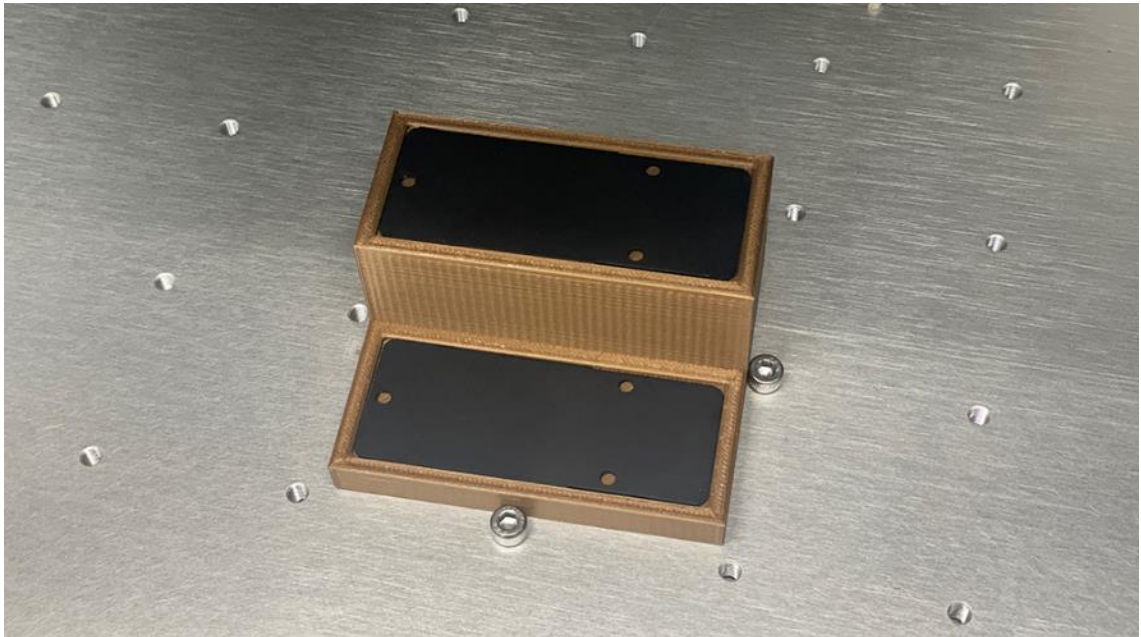
7.2 Complicate 3D object Marking

The MM3D marking software also supports the user to import an STL file (3D mold). Please create an STL file through the 3D drawing application if your 3D style is not shown on the list of MM3D, and import it to the MM3D so that the StellarMark 3DS can identify the shape of the surface and do the marking accordingly.

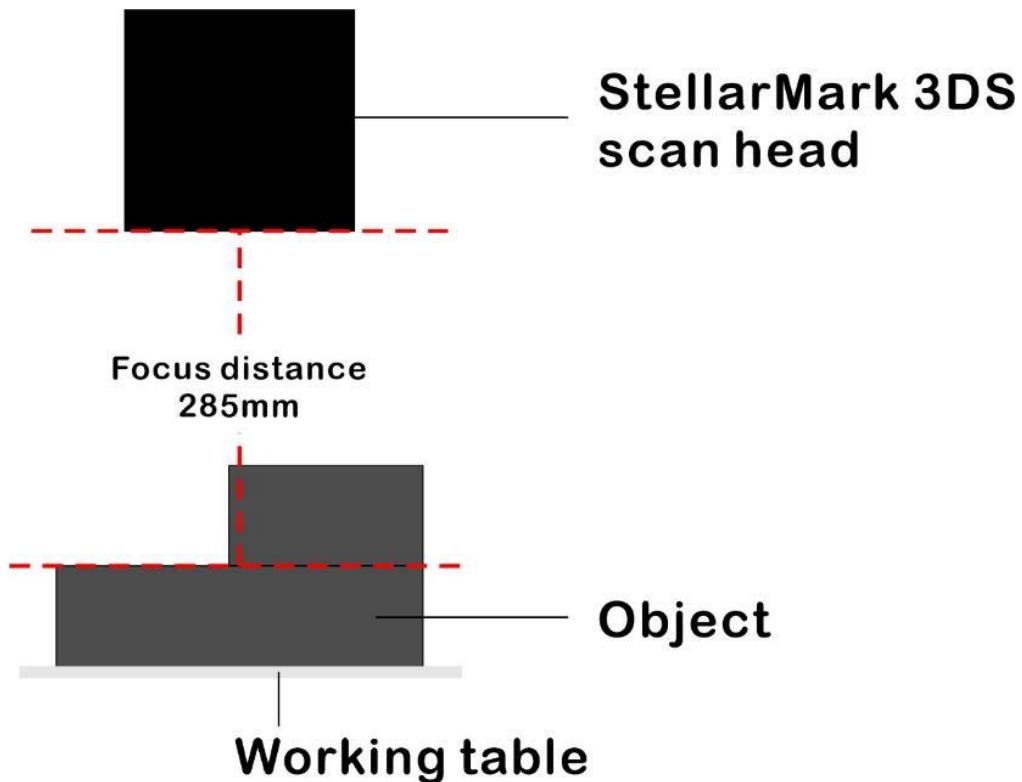
The following example takes shape of a stair to demonstrate how to set up the MM3D marking software.



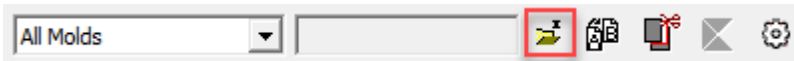
Step 1. Place the object on the working table.



Step 2. Set the focus to 285mm by the focus tool. Please noted that the correct focus distance is from the bottom of the scan head to the center of the object. Please refer to the following picture to know how to set a correct focus distance.

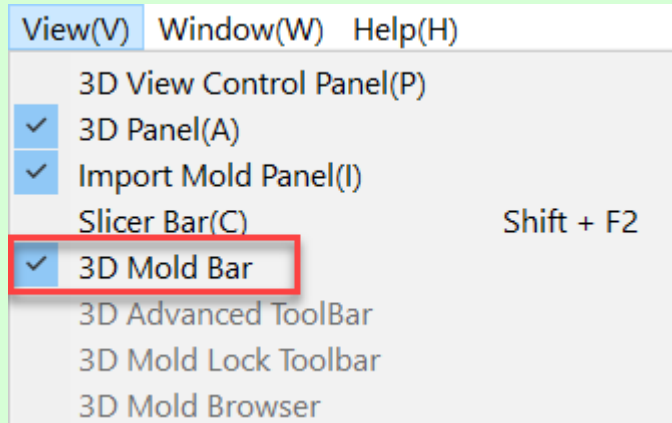


Step 3. Click the “Add mold” button on the menu bar of the MM3D.

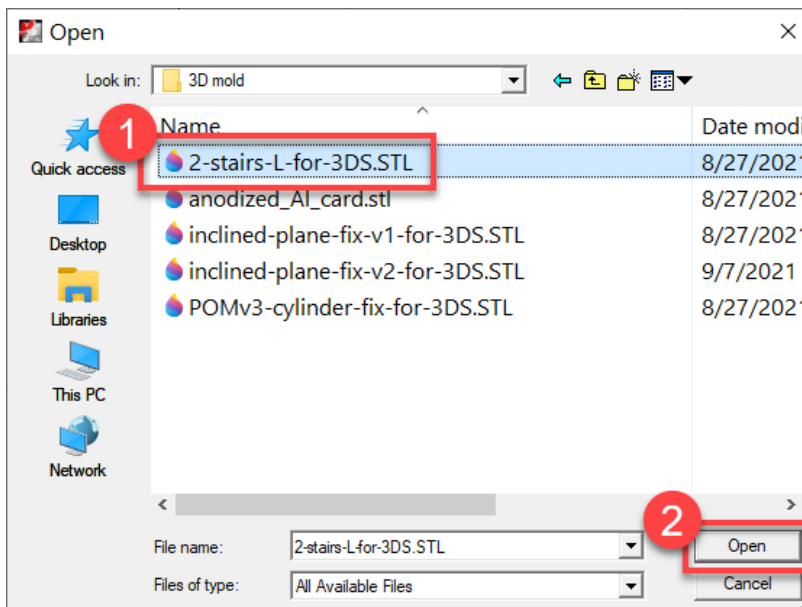


NOTE

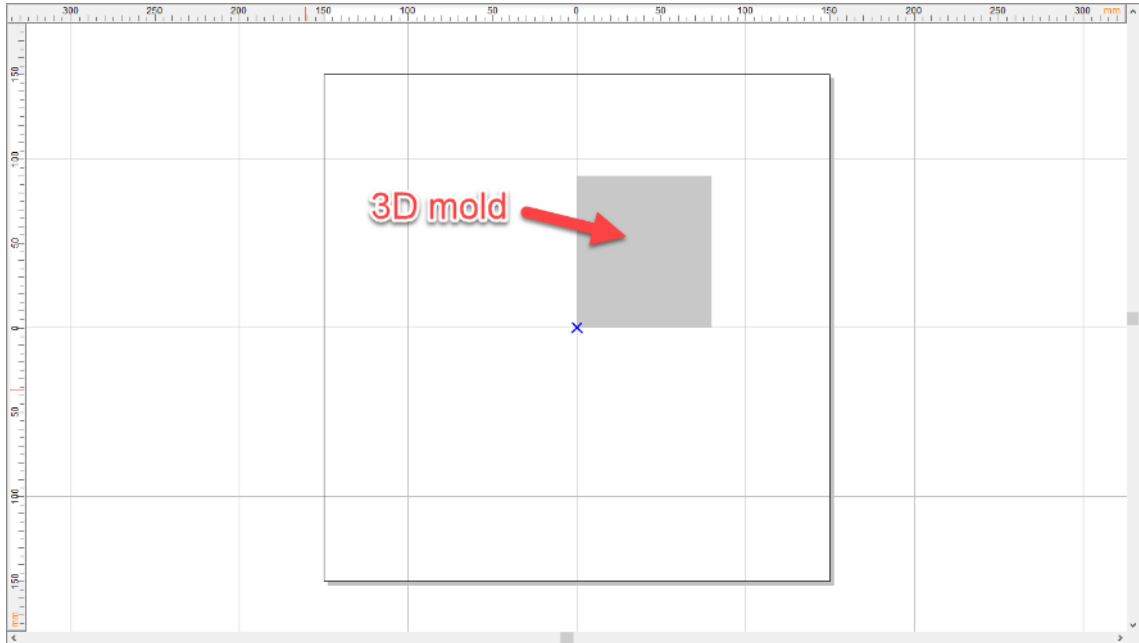
If you cannot see the button on the toolbar in the MM3D, please go to “View” on the menu bar and make sure the “3D Mold Bar” has been checked.





Step 4. Select your 3D mold file and click the “Open” button to import the file to MM3D.

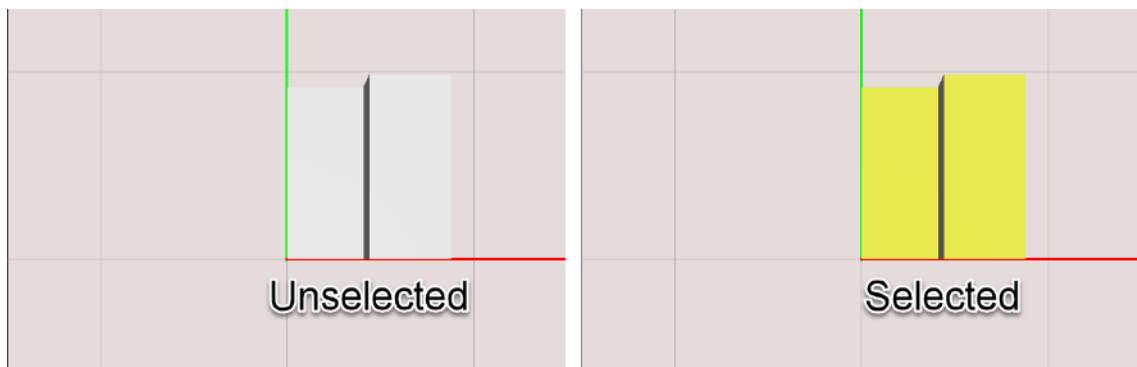


Step 5. The 3D mold will be put on the working area of the MM3D marking software.

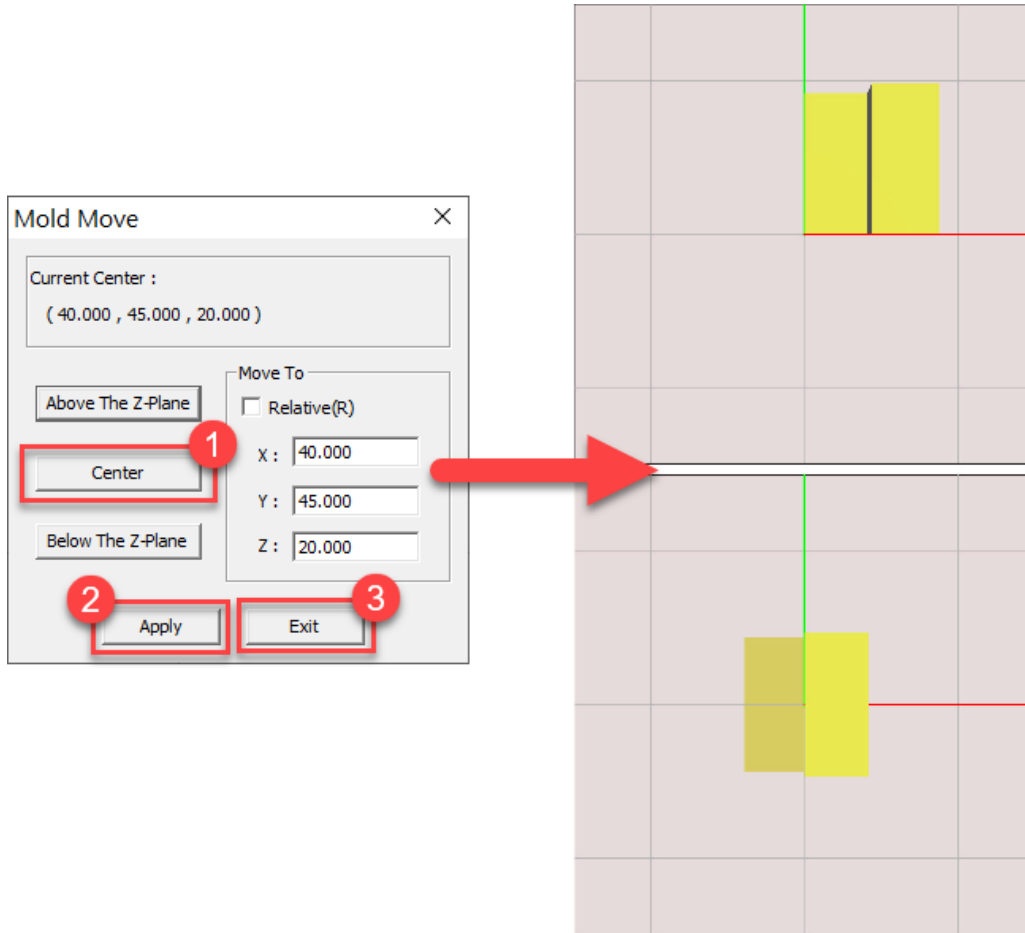


Step 6. Now you can click the “Show 3D ” button to switch the view of 2D or 3D on MM3D marking software.

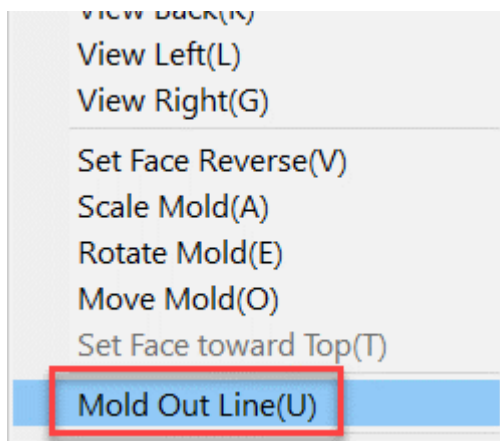
Step 7. Select the 3D mold (the 3D mold will show color yellow) and click the “Move Mold ” button on the toolbar of the MM3D to set the position of the 3D mold.




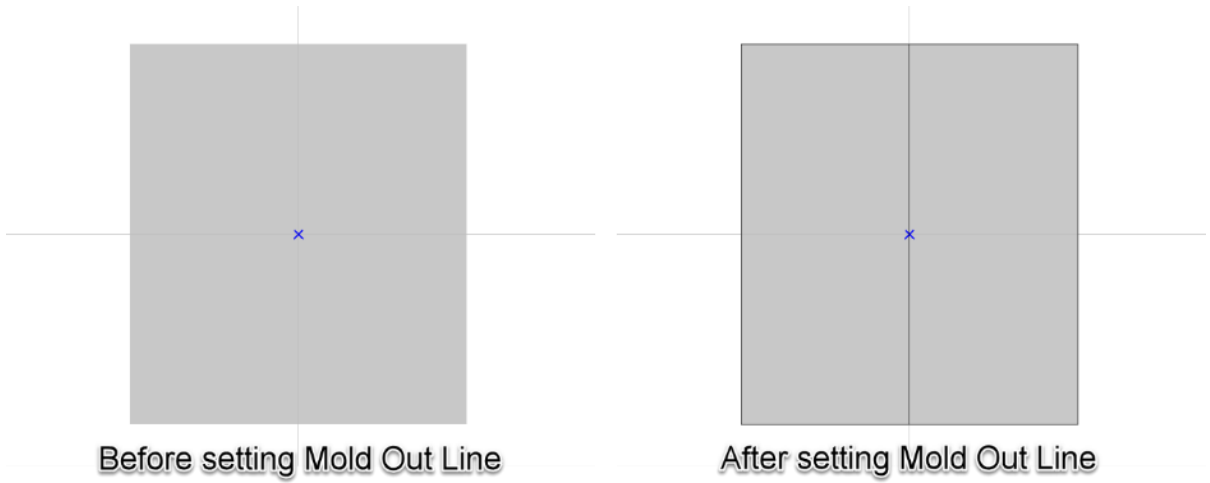
Step 8. The Move Mold window will pop up. Please click the “Center” button to set the 3D mold in the center of the work area, which can help you to do the positioning with ease.



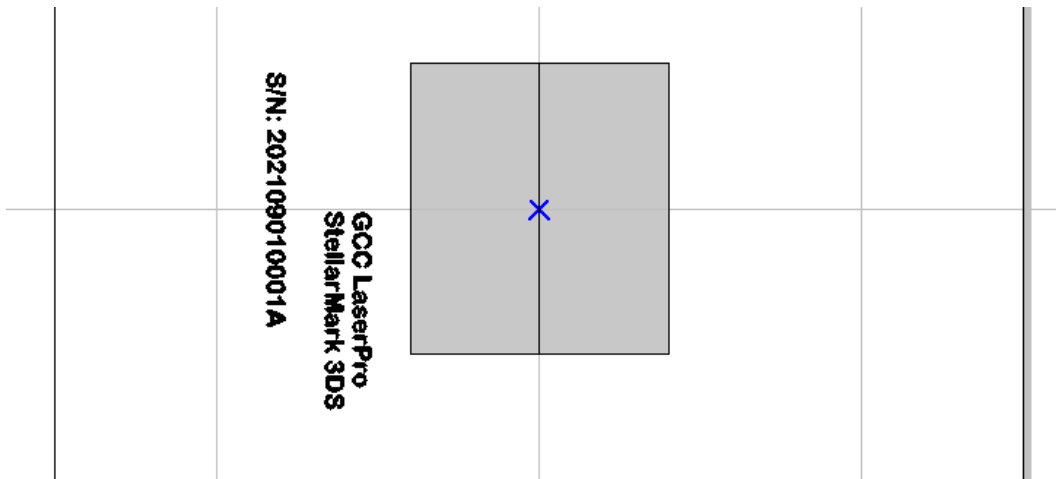
Step 9. Press the right button on the mouse to open the context menu, then select the “Mold Out Line” function to show an outline of 3D mold in 2D view, which can help you to place the artwork in the right position.



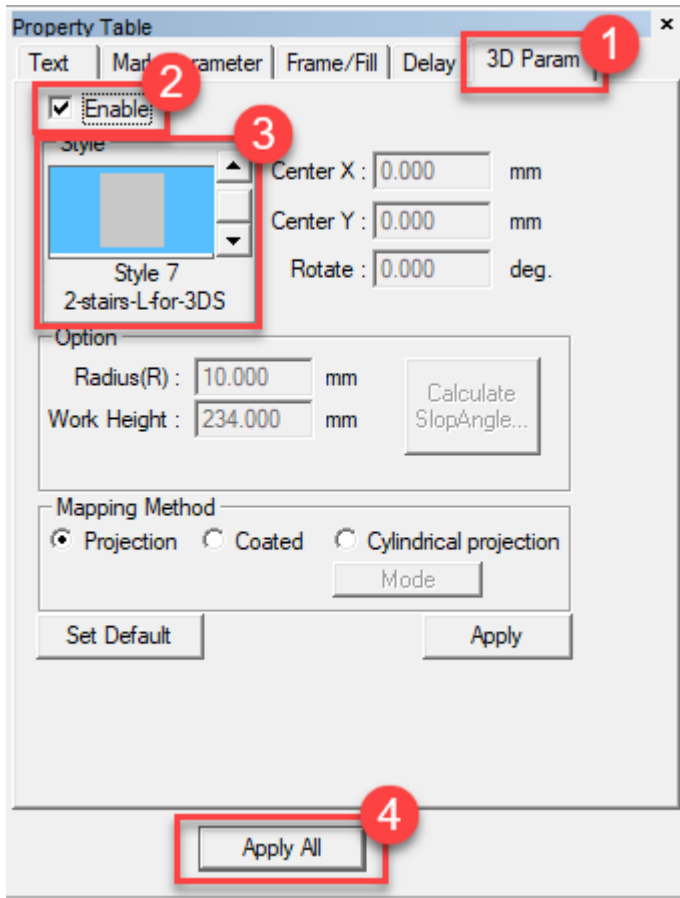
Step 10. Click the “Show 3D ” button on MM3D to switch the view to 2D mode, then you will see the mold has a frame



Step 11. Type the text or import artwork to MM3D.



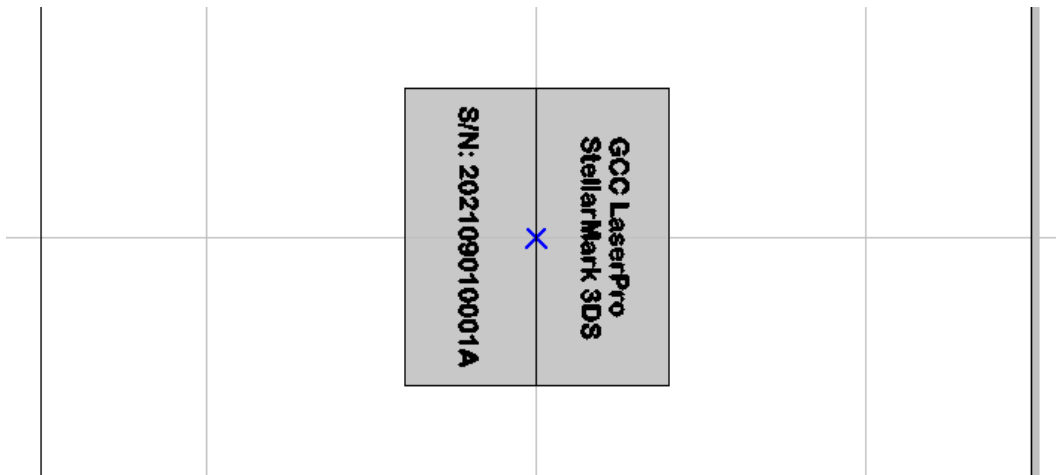
Step 12. Select all objects and enable the 3D function on the “Property table” → “3D Param” tab. Please select the last style through the up and down arrows and click the “apply all” to finish the settings.




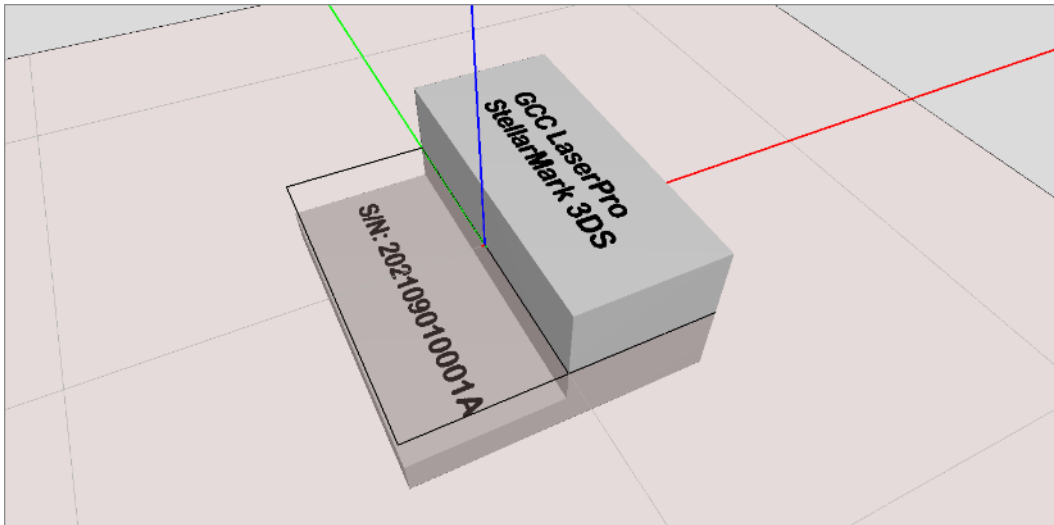
NOTE

Style 7 will appear in the style list automatically if you have imported a 3D mold on MM3D marking software.

Step 13. Place/move the object/artwork to the right position at your request.

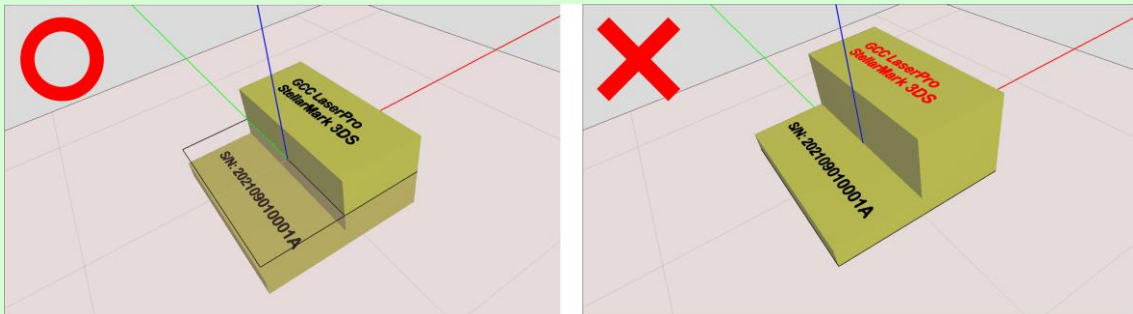


Step 14. Click the “Show 3D ” button to check all objects in the right position.

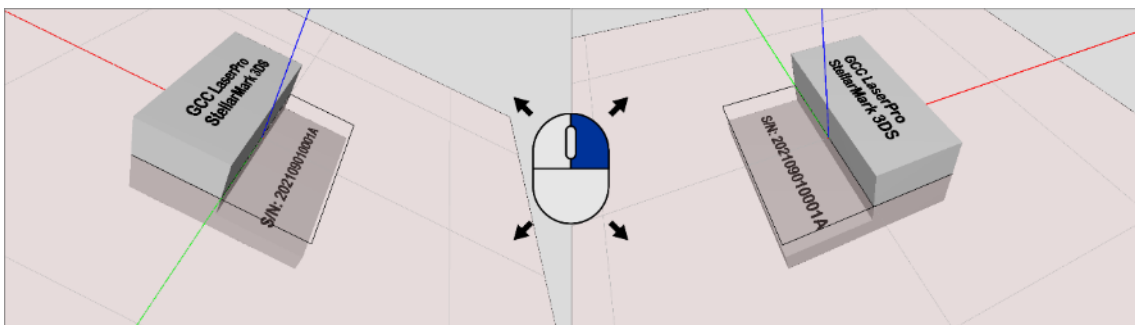


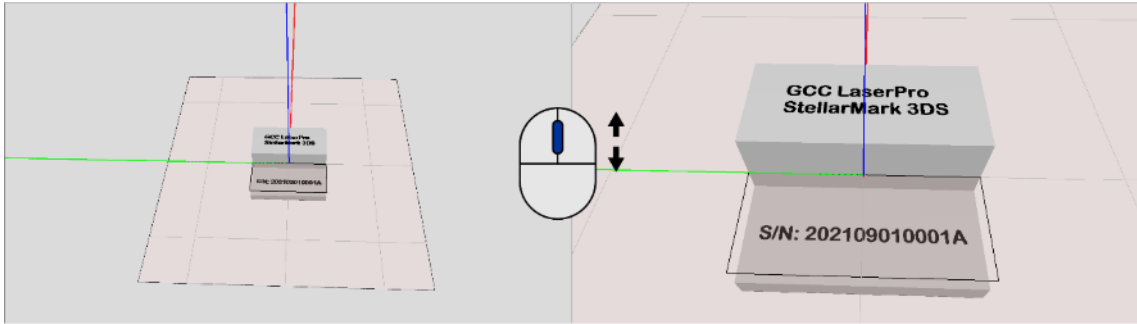
NOTE


If you see some parts of the artwork are shown red in 3D view, which means those red parts are out of focus range so the laser cannot mark it. Please try to adjust the size/position of the artwork.




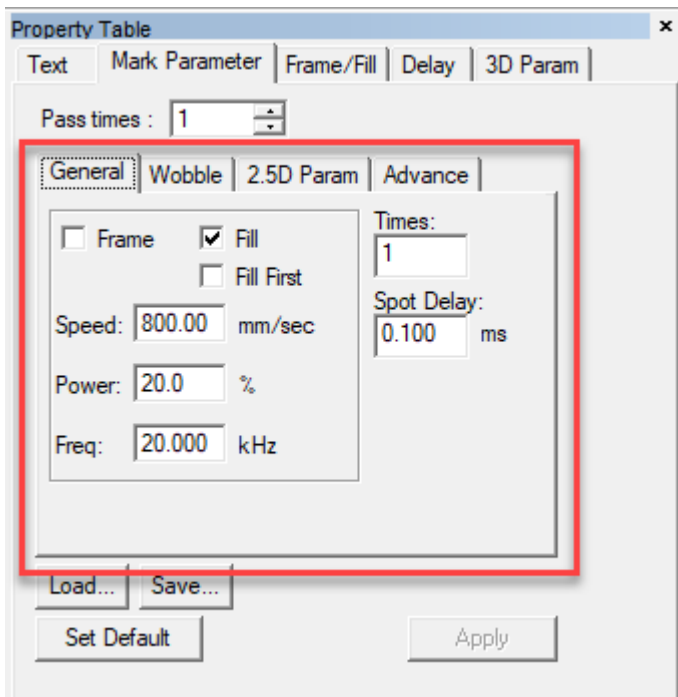
Step 15. Use the scroll wheel of the mouse to zoom in/out the 3D object, and right-click the button of the mouse to rotate the view of the 3D object.





Step 16. After finishing all settings, please click the “Preview ” button to do the dry run and make sure the marking position is correct.

Step 17. Please set a correct marking parameter and click the “Mark ” button on the menu bar to run the job.



Step 18. Marking is completed.



Chapter 8

Lens Adjustment

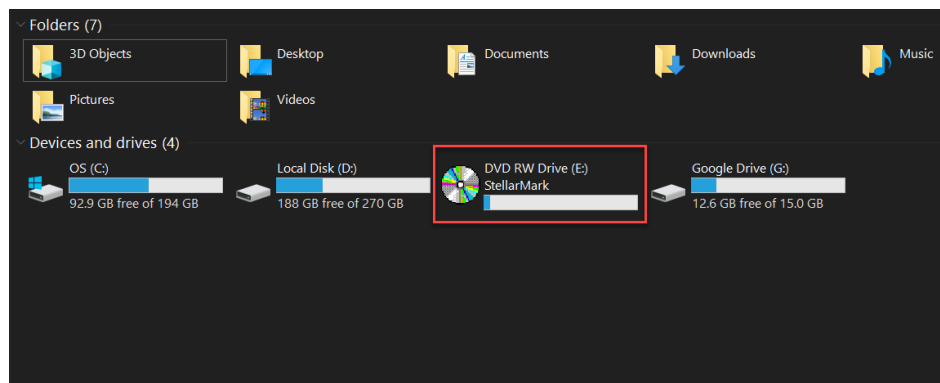
Import Lens Correction File

Input Lens Parameter Into MM3D

8.1 Import Lens Correction File

Each StellarMark marking system is calibrated with different scan lens size in factory to ensure precise marking quality. Please perform the following steps to import the factory default scan lens parameters.

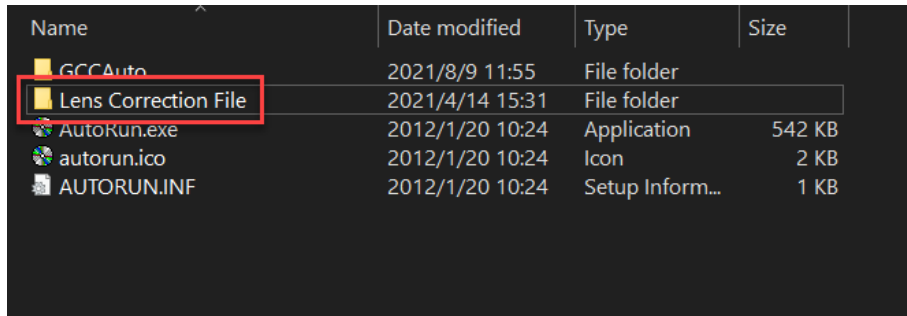
- Step 1.** Take out the StellarMark CD from the accessories kit and insert it into the CD-ROM drive. The CD menu will pop up automatically. If the CD menu does not pop up automatically, please double click “This PC” on the windows desktop, then double click the disk from devices and drivers to open the disk.



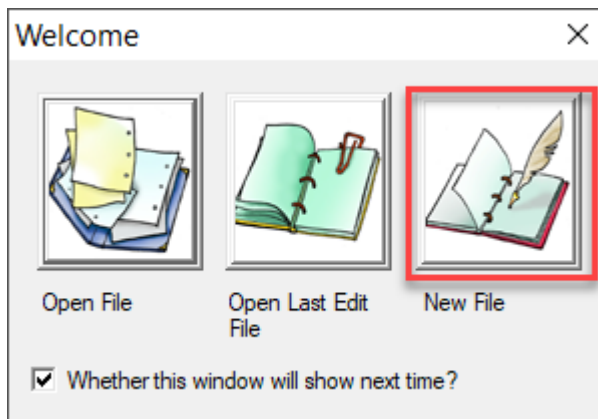
- Step 2.** Click on “Browse CD Content” from the menu of the StellarMark installation CD.



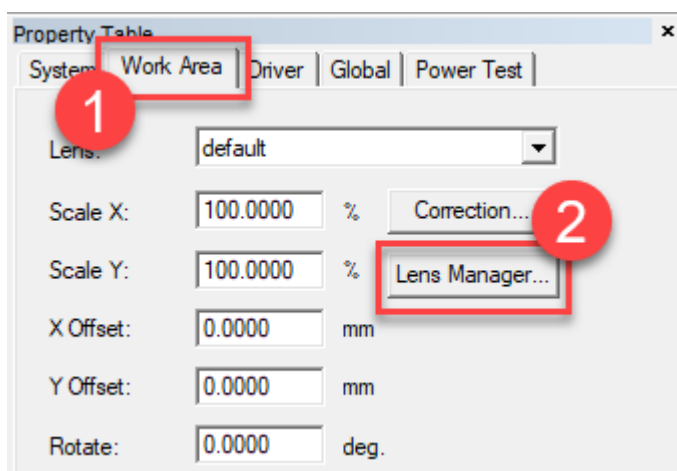
Step 3. Find the “Lens Correction File” folder and copy the folder to your computer.



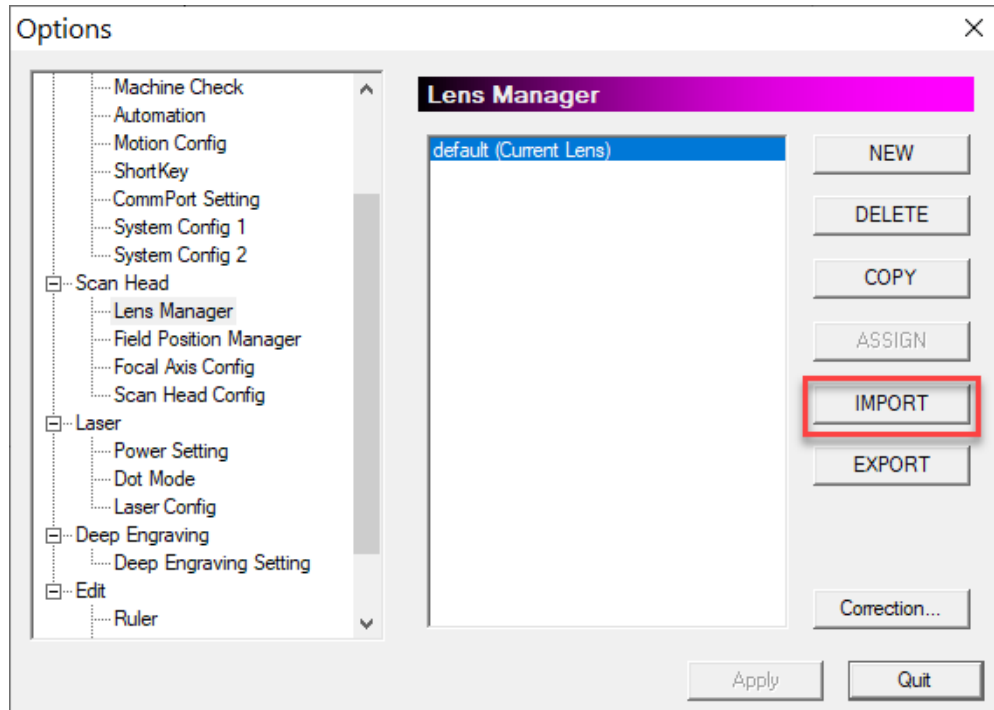
Step 4. Open MM3D marking software and click on the “New File” button.



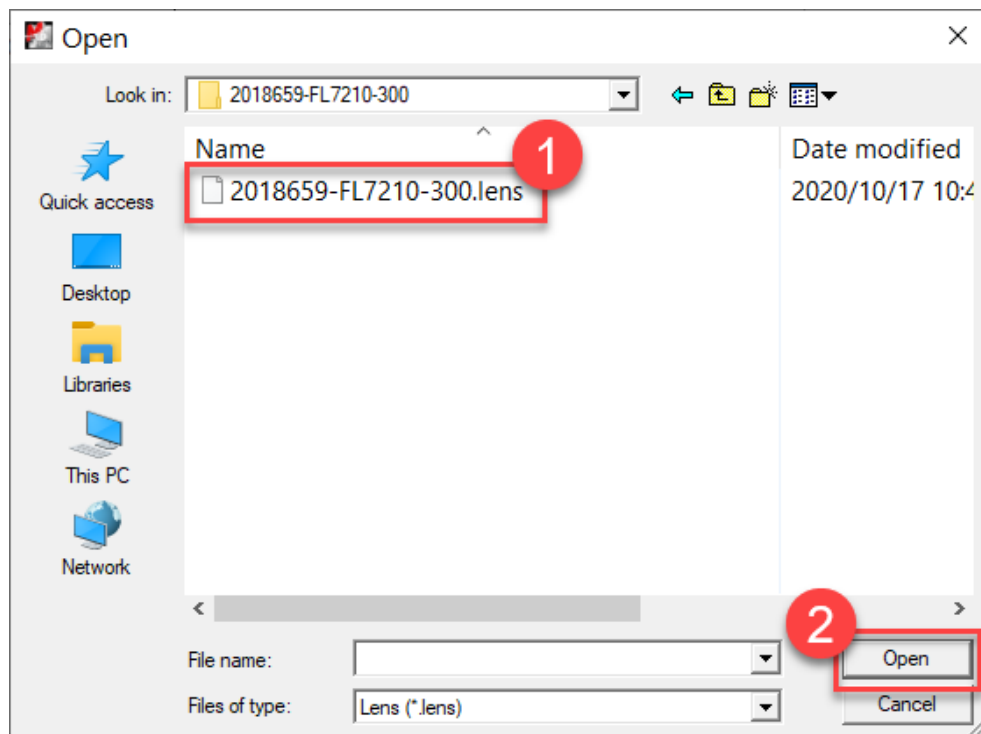
Step 5. Click on the “Work Area” tab in the left-side of MM3D marking software, then click on the “Lens Manager...” button.



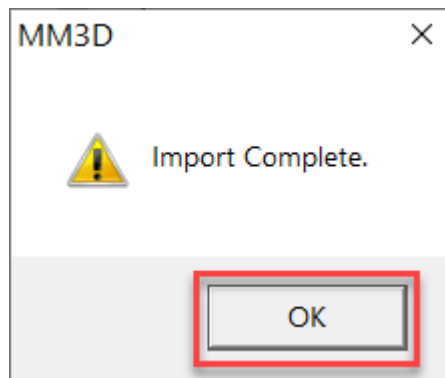
Step 6. The Lens Manager window will pop up automatically. Click on the “IMPORT” button to import the lens parameter.



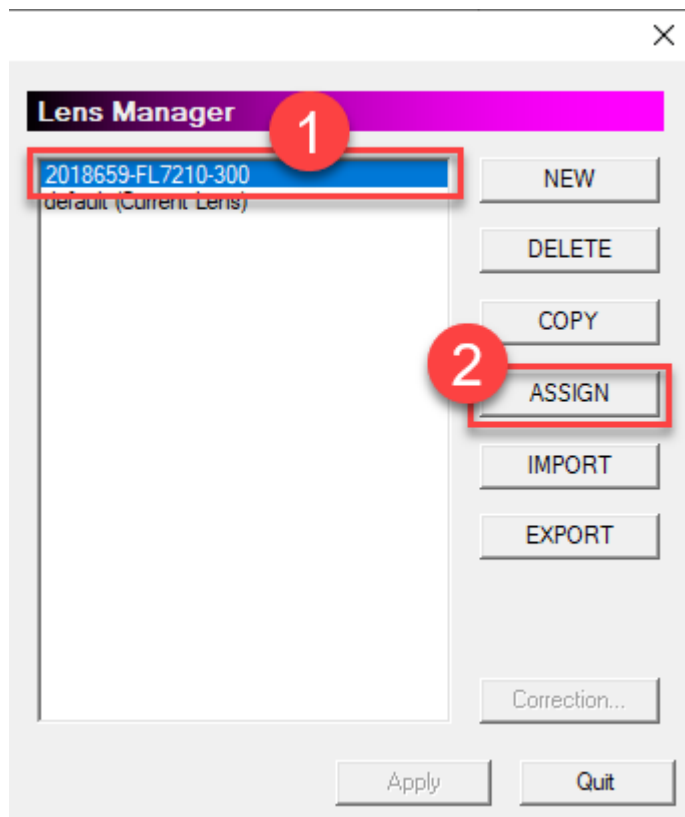
Step 7. Open the Lend Parameter folder on your computer that you copied from the StellarMark installation CD.



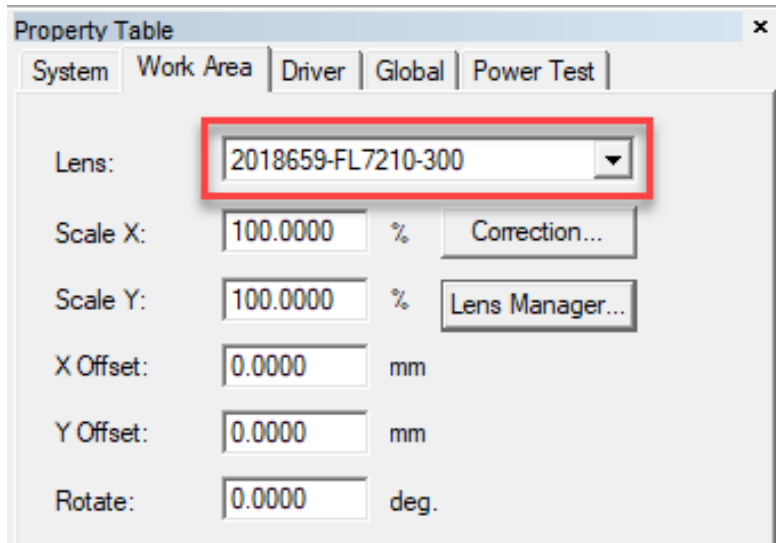
Step 8. Click on the “OK” button to complete the import.



Step 9. Click the Lens Parameter in the lens manager window and click on the “ASSIGN” button to set the parameter as default.



Step 10. Go to the “Property Table” → “Work Area” to make sure the lens parameter has been set.



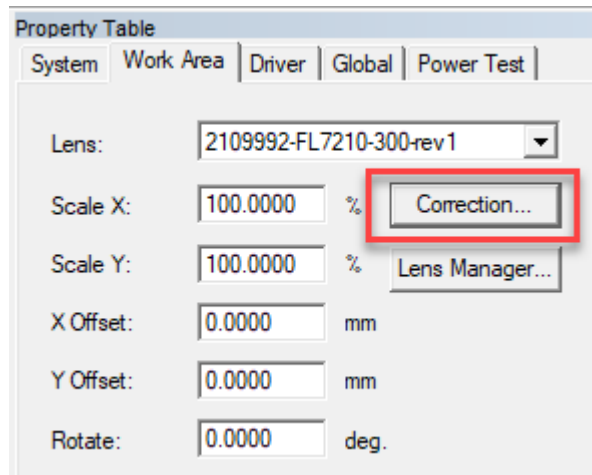
8.2 Input Lens Parameter Into mm3D

To get the best correction result, please perform the following steps to input the lens parameter into MM3D.

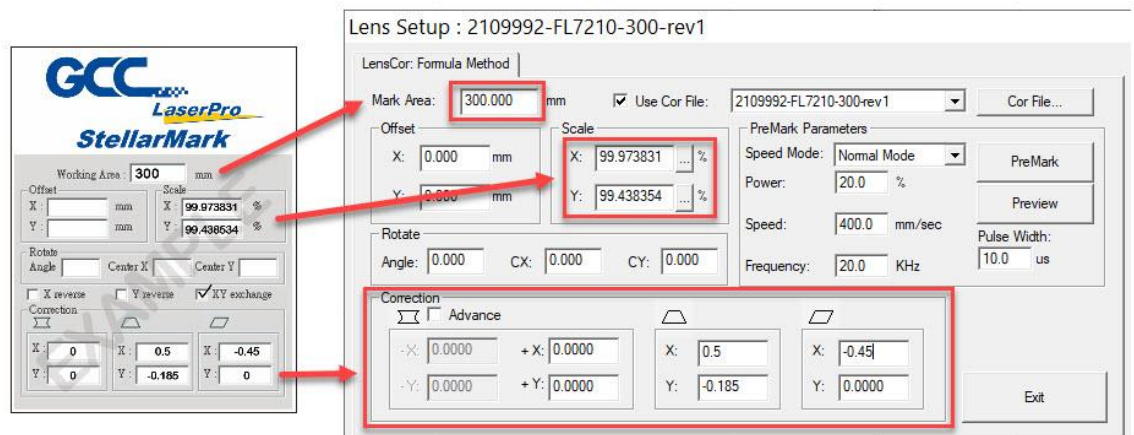
Step 1. Take out the lens parameter card from the accessory kit.



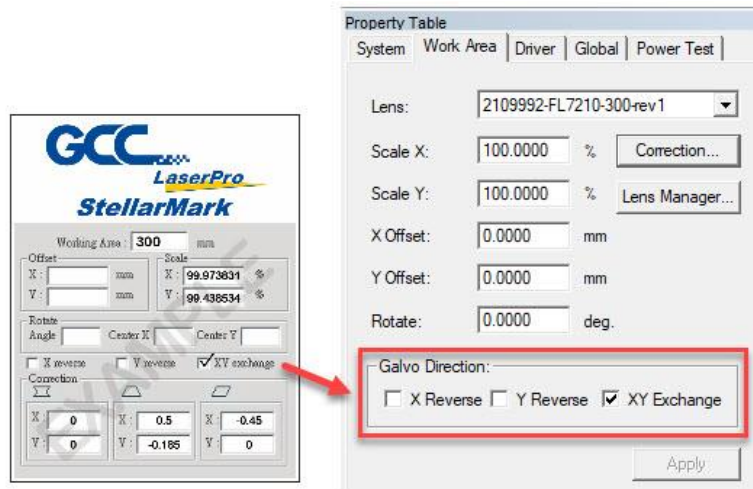
Step 2. Click on the “Work Area” tab in the left-side of MM3D marking software, then click on the “Correction” button.



Step 3. Input the data to the field accordingly then click on “Exit” to close the lens setup window.



Step 4. Back to the “Work Area” tab and check the “Galvo Direction” according to the lens parameter card.



Step 5. Click on “Apply button to save the setting”

Chapter **9**

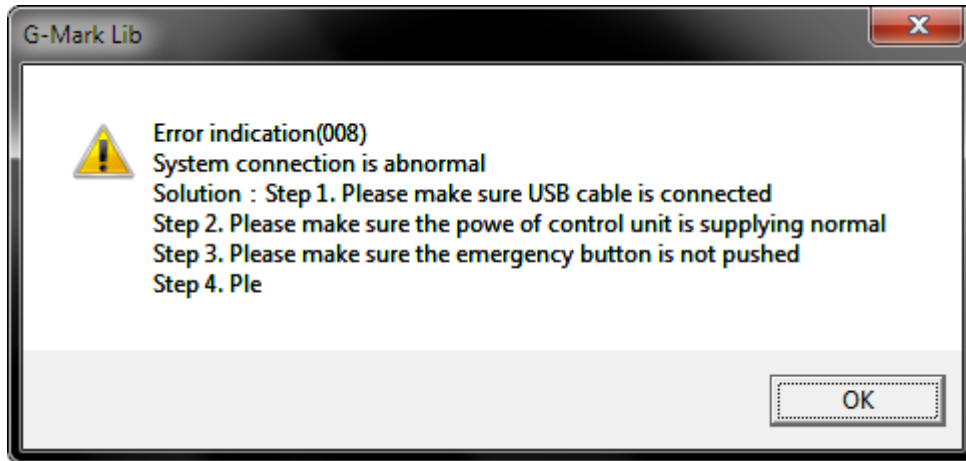
Error Message

The error indications shown on MM3D marking software represent the occurrence of errors which have arisen while the system is working abnormal.

When the error occurs, an “Error message” window will pop out on MM3D software and the laser will be unable to fire until the problems are solved.

Follow the trouble shooting instructions on the error message window to fix the problem, if cannot fix the issues, please contact GCC local representative for help.

Once the problem is solved, “OK” button must be pressed to close the message window.



The Error Message Includes:

Error Indications
X Scan head is abnormal
Y Scan head is abnormal
Base plate temperature fault
Seed laser temperature fault
Power Supply Fault
Beam collimator fault

Chapter **10**

External Control

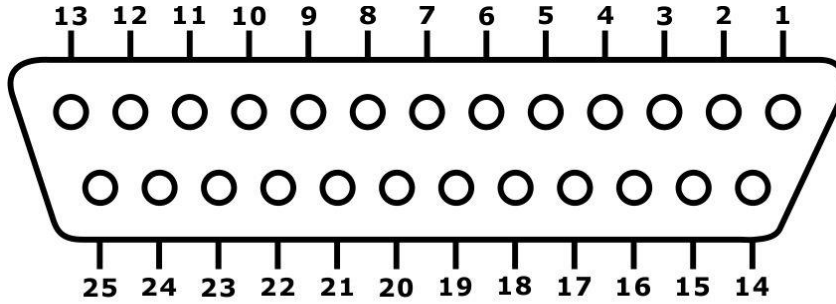
I/O Pin Assignment

Laser Working Flow Chart

Laser Reaction Timing Diagram

10.1 I/O Pin Assignment

The I/O terminal located on the rear side of Control Unit allows 3DS series laser marker to communicate with external devices, such as conveyor, XY moving table, rotary index table, and more.



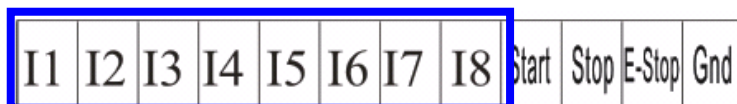
Pin 1~Pin 8	Output 1~8
Pin 9	Alarm
Pin 10	Ready
Pin 11	24V
Pin 12	GND
Pin 13	X
Pin 14~Pin 21	Input 1~8
Pin 22	Start
Pin 23	Stop
Pin 24	E-Stop
Pin 25	GND

I/O	TYPE	DESCRIPTION
O1~O8	OUTPUT	There are 8 output signals (Stellar Mark → External device) available to communicate with external devices.
Alarm (Out)	OUTPUT	<ul style="list-style-type: none"> ➤ When Alarm is inactivated, the laser marker will send signal out. ➤ When Alarm is activated, the laser marker will send out a signal out. ➤ When marking software is opened, the Alarm will be activated and laser marker will send a signal out in the beginning of work. Until the “Execute” button is pressed and the “Marking” window jumps out on marking software, then alarm will change to “inactivated” (laser marker will send a signal out).

Ready (Out)	OUTPUT	<ul style="list-style-type: none"> ➤ When MM3D software is opened, it will send out a signal out. ➤ When the “Marking” window jumps out and laser Marker is ready to fire; it will send a signal out. ➤ When laser marker is firing, it will send a signal out.
I1~I8	INPUT	There are 8 input signals (External device → Stellar Mark) available to communicate with external devices
STOP	INPUT	When Stop- pin and Ground pin are at short status, laser marker will stop working.
START	INPUT	When Start- pin and Ground pin are at short status, laser marker will trigger the fire.
E-Stop	INPUT	This is terminal used to connect external emergency stop.
GND	POWER	Ground
24V	POWER (Output)	A 24V is available

- The Input and Output pins on the Control Unit are corresponding with the I and O signals on the MM3D marking software property table as below:

(1) Input pins



The pin 9 to pin 16 input status are not available to communicate with laser

(2) Output pins

O1	O2	O3	O4	O5	O6	O7	O8	Alarm	ready	24V	Gnd
----	----	----	----	----	----	----	----	-------	-------	-----	-----

Property Table

Layer	Input	Output					
Output Status							
<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>	3	<input checked="" type="checkbox"/>	4
<input checked="" type="checkbox"/>	5	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	7	<input checked="" type="checkbox"/>	8
<input type="checkbox"/>	9	<input type="checkbox"/>	10	<input type="checkbox"/>	11	<input type="checkbox"/>	12
<input type="checkbox"/>	13	<input type="checkbox"/>	14	<input type="checkbox"/>	15	<input type="checkbox"/>	16

Not Available

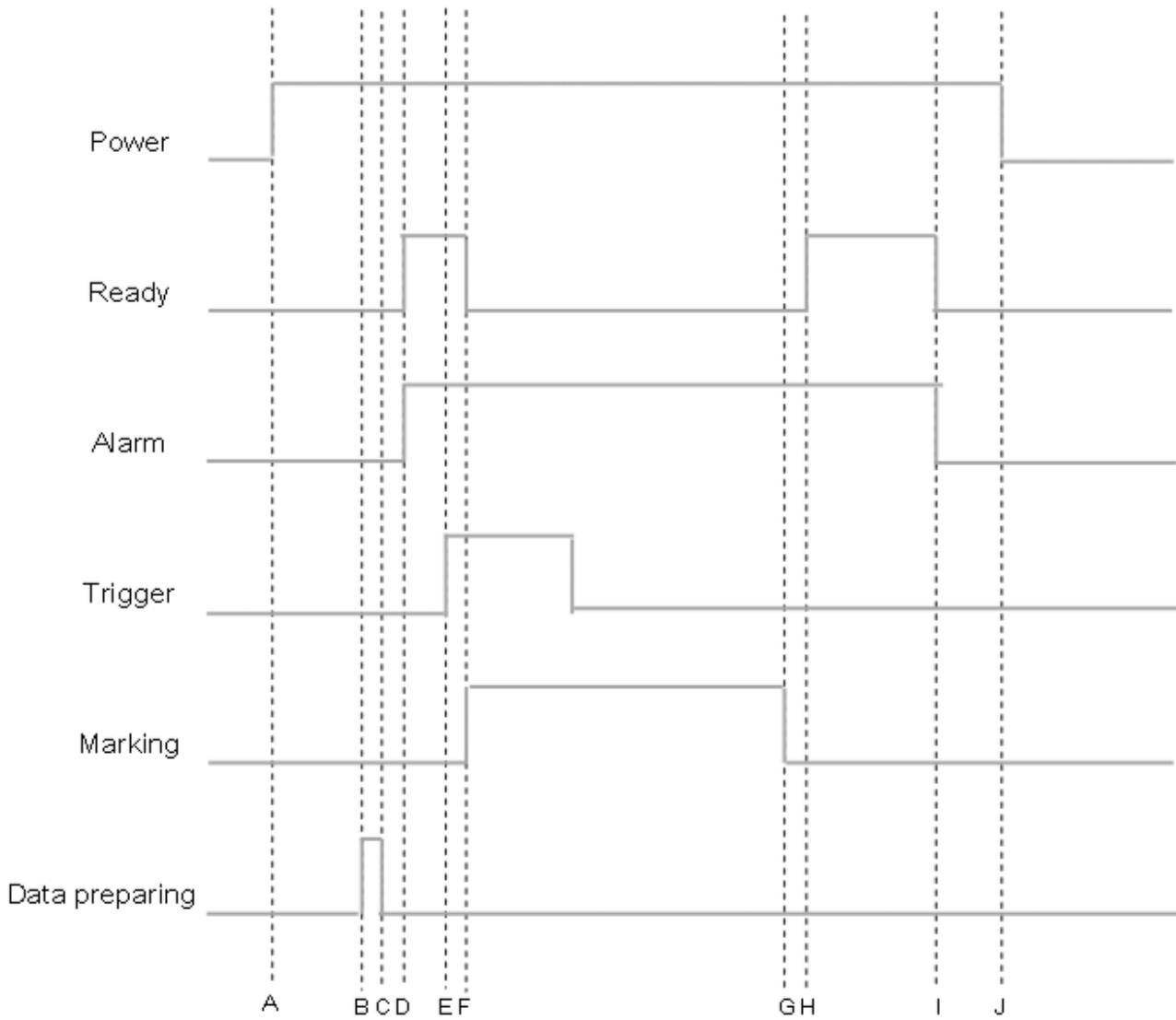
The pin 9 to pin 16 output status are not available to communicate with laser marker.

NOTE

Signal high and low definitions in MM3D software

<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input checked="" type="checkbox"/>	4
↓		↓				↓	
High		Low				Ignore	

10.2 Laser Working Flow Chart



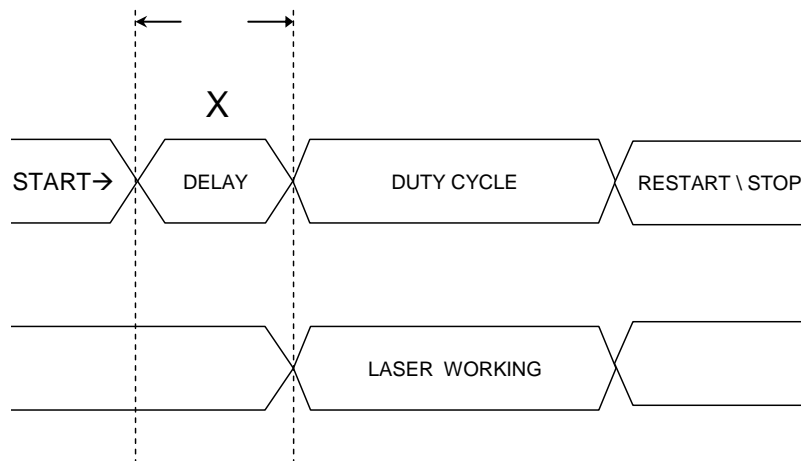
Definitions:

A	Power on
B	Time consuming between the “reading file” to the next step of “Ready to fire” will be depend on the size of working object.
C~D	After the file reading is completed, it will take less than $< 1 \mu$ sec for the external device to receive a “Ready” signal from the laser marker
E	It will take between 0.1m sec ~ 50m sec for laser to trigger the fire after receive the command of “Start”
F	Ready signal is OFF when laser is firing
G	Job is completed
G~H	it will take about less than $< 1 \mu$ sec for the external device to receive a “Ready” signal from the laser marker
I	MM3D marking software is closed
J	Power off

10.3 Laser Reaction Timing Diagram

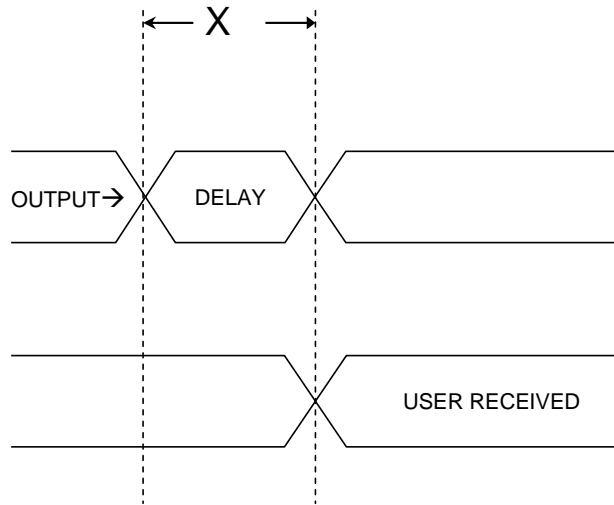
◆ Start → Fire delaying time

It will take about 0.1m sec $< X < 50$ m sec to fire after receive the command of “Start”



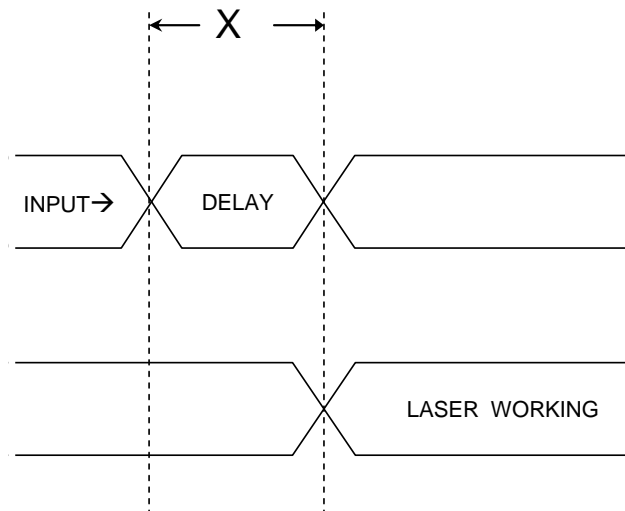
$$0.1 \text{ m sec} < X < 50 \text{ m sec}$$

- ◆ Laser signal Output → External device delaying time
It will take about $X < 1 \mu \text{ sec}$ for the external device to receive an output signal from the laser marker



$$X < 1 \mu \text{ sec}$$

- ◆ Laser signal Output → External device delaying time
It will take about $10 \mu \text{ sec} < X < 20 \mu \text{ sec}$ for the laser marker to receive an input signal from the external device



$$10 \mu \text{ sec} < X < 20 \mu \text{ sec}$$

Chapter 11

Basic Maintenance

Regular Spot Check

Cleaning the Dust Protection Window

Keeping your StellarMark 3DS series clean and well maintained will ensure quality output, consistent reliability, and extended product life. Smoke, dust, or residue build-up inside the laser system or the mechanical components can cause a reduction in the laser power, reduced product life cycle, and other potential problems which can be prevented in advance.

This section will cover how to perform regular maintenance for the dust protection window of the 3DS series.

The frequency of the cleaning schedule will depend on the number of variables such as the types of material you work with, the work environment, the frequency of usage, the quality of the exhaust system, etc.



WARNING

- Always turn off and unplug the laser marker before cleaning!
- Electrical shock may occur if you do not turn off and unplug the marking system before cleaning.
- Damage may occur to the system if you do not turn off and unplug the 3DS series before cleaning.

11.1 Regular Spot Check

Before each usage, inspect the machine, the power and connector cables, and the working environment. Look for frays in cables, proper connections, and any abnormalities that could have an effect on marking performance and/or user safety. Be sure that the 3DS series is properly secured and mounted.

If a problem ever arises with the MM3D software or the StellarMark laser marker, be sure to notify GCC local representative as soon as possible.

11.2 Cleaning the Dust Protection Window

Dust Protection Window is a standard equipment for 3DS series. It can protect beam path with it to minimize maintenance.

Please perform the following steps:

Step 1. Apply some lens cleaner on cotton swab



Step 2. Remove the residue mark.



Use acetone if the lens cleaner will not remove the mark. Be careful not to scratch the window. After the mark is removed, follow the steps used to clean residue marks in order to finish the cleaning.



WARNING

Acetone is an **EXTREMELY FLAMMABLE LIQUID AND VAPOUR**. The vapour is heavier than air and may spread long distances making distant ignition and flashback possible.

NOTE

The oils from your hand will distort the laser beam passing through the dust protection window. Use finger cs or rubber gloves when cleaning is recommended..

Chapter 12

Appendix

3DS Series Specification

12.1 3DS Series Specification

StellarMark 3D-series		3DS-20JFL	3DS-30JFL	3DS-50JFL
Laser Source	Wavelength	1,064 nm		
	Type	Fiber Laser		
	Output Power	20W	30W	50W
	Cooling	Air-cooled, no water chiller required		
Working Area		300 x 300 mm		
Spot Size		0.067 mm		
Max. Linear Marking Speed		6,000 mm/s		
Max. Marking Speed		12,000 mm/s		
Focal Distance		285 mm		
Focus range in z direction		100 mm		
Electrical Requirements	Power Supply	AC Auto Switching 115V / 230V, 50-60 Hz/ single phase		
	Power Consumption	740W		
Dimensions	Laser Marker	L 760 x W 210 x H 220 mm		L 760 x W 210 x H 220 mm
	Laser Housing Unit	N/A		L 383 x W 318 x H 120 mm
Laser Marker Weight		20 Kg		16.0 Kg
Laser Housing Unit Weight		All in one designed	All in one designed	12.7 Kg
Operating system		Microsoft Windows 7(32/64 Bit) / 8(32/64 Bit) / 10(32/64 Bit) (Desktop or Laptop PCs)		
Environment	Temperature	15°C ~ 35°C		
	Humidity	10 ~ 80% Non condensing		
Safety		Class 4 (EN60825-1 Class 1 available with safety shield and LFCII and LFC D) 2006/42/EC Machinery Directive) 2014/35/EU Low Voltage Directive 2014/30/EU Electromagnetic Compatibility Directive		

StellarMark 3DS	
Model No.	3DS-20JFL/3DS-30JFL/3DS-50JFL
Working Area	300x300 mm
Spot Size*	0.067 mm
Working Distance	285 ± 2 mm
Repeatability**	0.04 mm

The above specifications are subject to change without further notices. See dealer or visit <http://www.GCCworld.com> for more details.

All above spot sizes will be material dependent.

*According to theoretical calculation.

**The test is 8-hour continuous firing with a power level of 30% using a 50JFL