

# StellarMark IFII-Series User Manual



**Version: 05**

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# Chapter **1**

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## **Safety**

Principles of a Fiber Laser

Safety Ratings

The Safety Interlock System

Safety Labels

Safety Measures Operating Environment

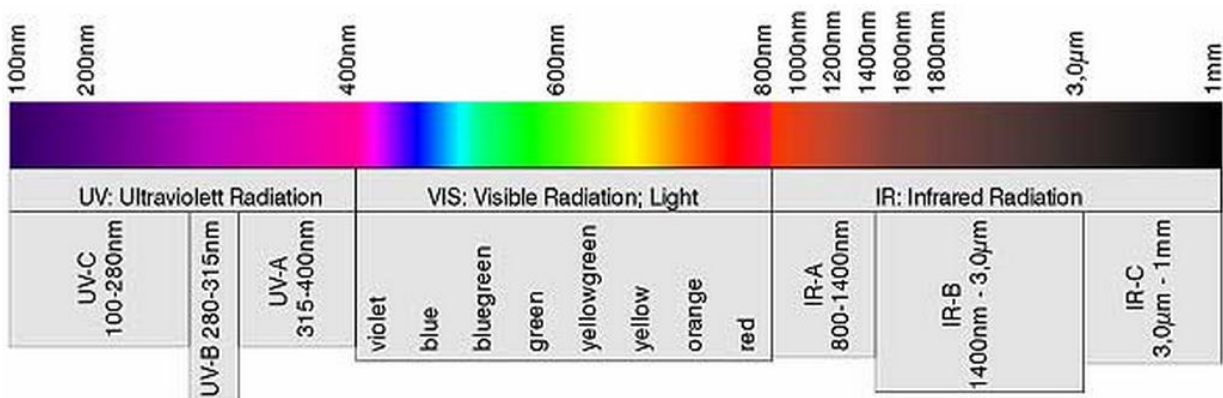
## 1.1 Principles of a Fiber Laser

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

The IFII- 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 IFII-series a CDRH safety rating of 3R.



## 1.3 The Safety Interlock System

StellarMark IFII- series can optionally integrate with StellarMark safety shield 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 IFII- 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 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 IFII-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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 20JFL 110	
Wavelength	1064 nm	
Power	20W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 20JFL 070	
Wavelength	1064 nm	
Power	20W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 20JFL 180	
Wavelength	1064 nm	
Power	20W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 20SHS 070	
Wavelength	1064 nm	
Power	20W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 20SHS 110	
Wavelength	1064 nm	
Power	20W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 20SHS 180	
Wavelength	1064 nm	
Power	20W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 30JFL 070	
Wavelength	1064 nm	
Power	30W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 30JFL 180	
Wavelength	1064 nm	
Power	30W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 50JFL 070	
Wavelength	1064 nm	
Power	50W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 50JFL 110	
Wavelength	1064 nm	
Power	50W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 50JFL 180	
Wavelength	1064 nm	
Power	50W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 60JFL 070	
Wavelength	1064 nm	
Power	60W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 60JFL 110	
Wavelength	1064 nm	
Power	60W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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 <b>150357</b>
Manufacturer	Great Computer Corporation	
Product	Laser Marking System	
Model	StellarMark	
Model Number	IFIIS 60JFL 180	
Wavelength	1064 nm	
Power	60W	
Manufactured	January 2015	
Input	AC100-240V, 50-60Hz, Max. 15A	
<b>Class 4 Laser Product</b> 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.









### 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.

<b>WARNING</b>		
	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 is important to the safety of all people in the immediate area.
- Prior to 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

IFII-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 IFII-series. Improper work environments may lead to operational malfunction and/or unsafe working conditions. The LaserPro StellarMark IFII-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**

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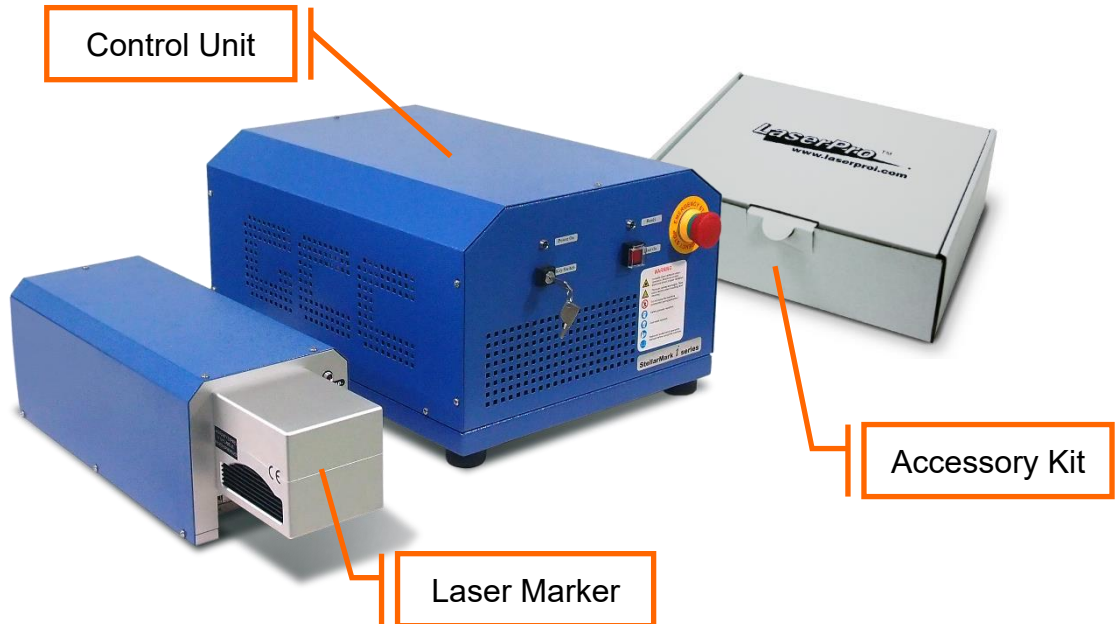
## **Unpacking & Content**

**Unpacking and Unloading**

**Accessories Checklist**

## 2.1 Unpacking and Unloading

The Stellar Mark IFII-series is shipped in one crate that contains laser marker, Control Unit, 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 IFII- series Checklist

	Item	Quantity
1	Hex Head Screws Driver	1
2	User's Manual CD Set	1
3	G-Mark Software CD Set	1
4	G-Mark Keypro	1
5	Lens Cleaner	1
6	Lens Cleaning Paper	1
7	Cotton Bud (100 units / Package)	1
8	Lens Parameter List	1
9	GCC Promise Card Set	1
10	Focus Tool	1
11	1064nm Goggle YG3 900	1
12	AC Power Cable (Europe)	1
	AC Power Cable (US)	1
	AC Power Cable (Australia)	1
13	USB Cable 1.8M	1
14	Stainless Steel (9 x 5.5cm)	2
15	Door Switch Short Circuit Wire 5cm	1
16	M6 Screw Plastic Foot	4
17	Nut (M6 x T5 x S10)	4
18	System Key	1
19	I/O Terminal Platform (5ESDVM-10P)	1
20	Laser Head Power Cable (2.5M)	1
21	SCSI Cable 50 pin (2.5M)	1
22	I/O Terminal Cable 25 pin	1

# Chapter **3**

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## **Mechanical Overview**

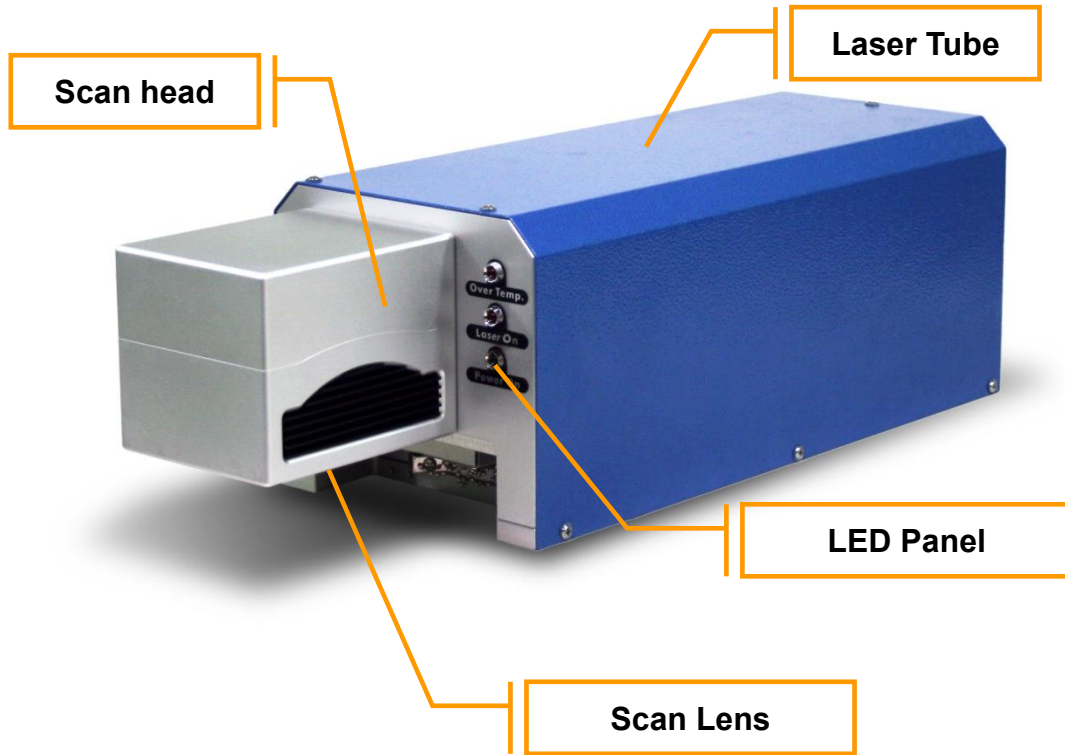
**Laser Marker**

**Control Unit**

**Foot Print**

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

### 3.1 Laser Marker



#### 3.1.1 LED Panel

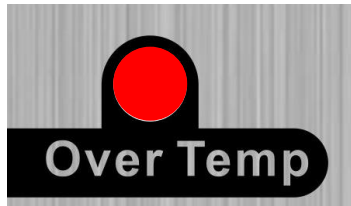


There are 3 LED lights on the panel and they will indicate out three working status of “Over Temp”, “Laser On” and “Power on” of the laser marker.

- Over Temp:

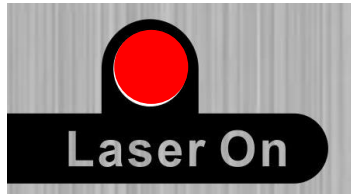
When the red LED light is on, the laser marker will stop firing.

Please turn off the master power of the laser marker and re-start it when the operating temperature is dropped below 35°C .



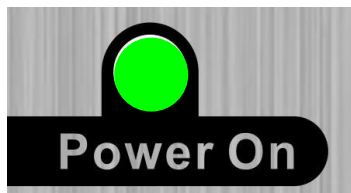
- Laser On:

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 Scan Lens

The StellarMark™ IFII-series offers 3 to 4 different scan lens size options to best suit your marking applications.

IFII 20JFL 070	IFII 20JFL 110	IFII 20JFL 180
70x70mm	110x110mm	180x180mm
IFII 20SHS 070	IFII 20SHS 110	IFII 20SHS 180
70x70mm	110x110mm	180x180mm
IFII 30JFL 070	IFII 30JFL 110	IFII 30JFL 180
70x70mm	110x110mm	180x180mm
IFII 60JFL 070	IFII 60JFL 110	IFII 60JFL 180
70x70mm	110x110mm	180x180mm

- The smaller field size scan lens will produce a smaller spot size with higher marking resolution.
- The larger field scan lens will produce a larger spot size with lower marking resolution.



#### WARNING

The scan lens is very fragile and must be careful while the cleaning and installing.

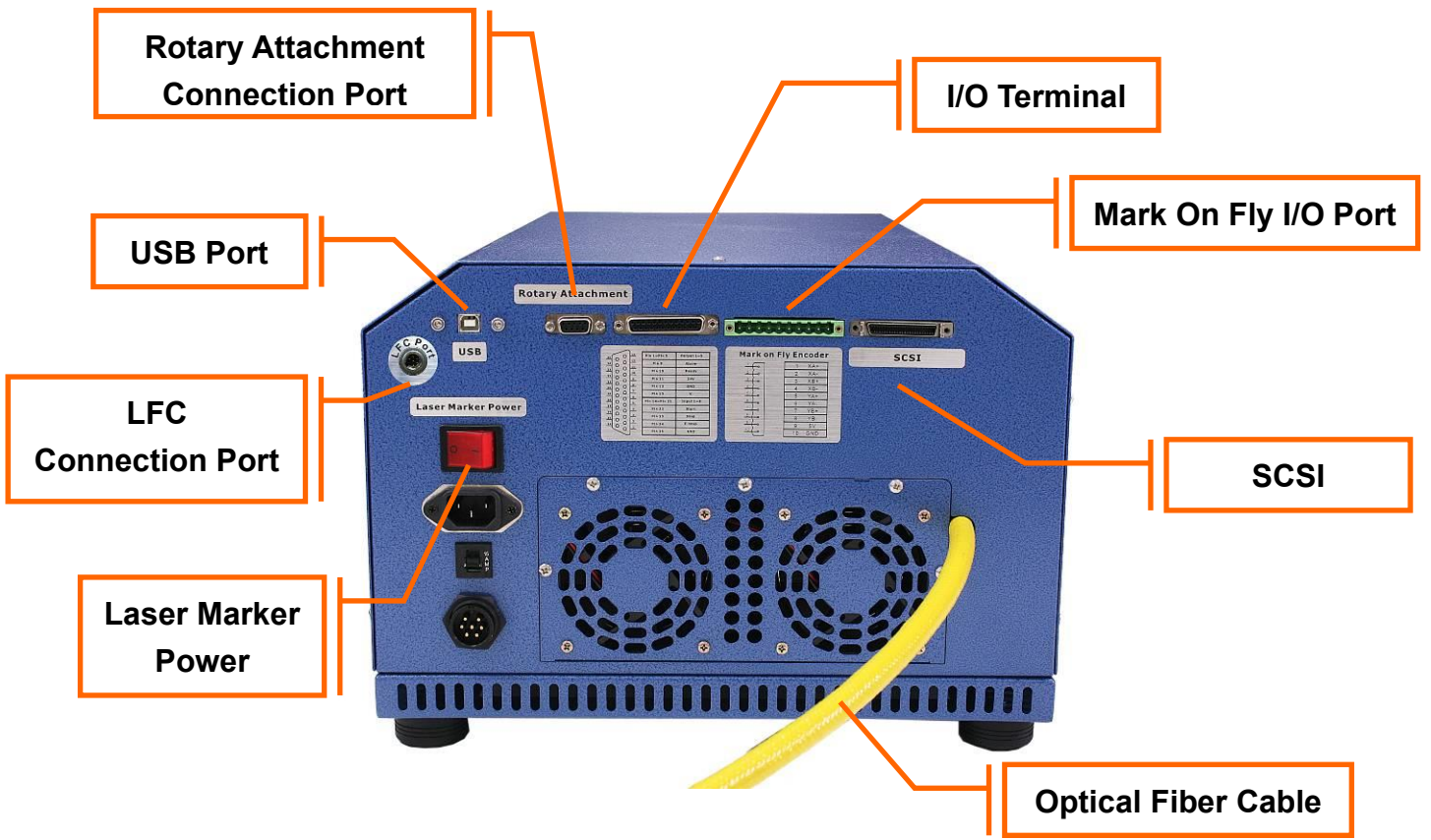
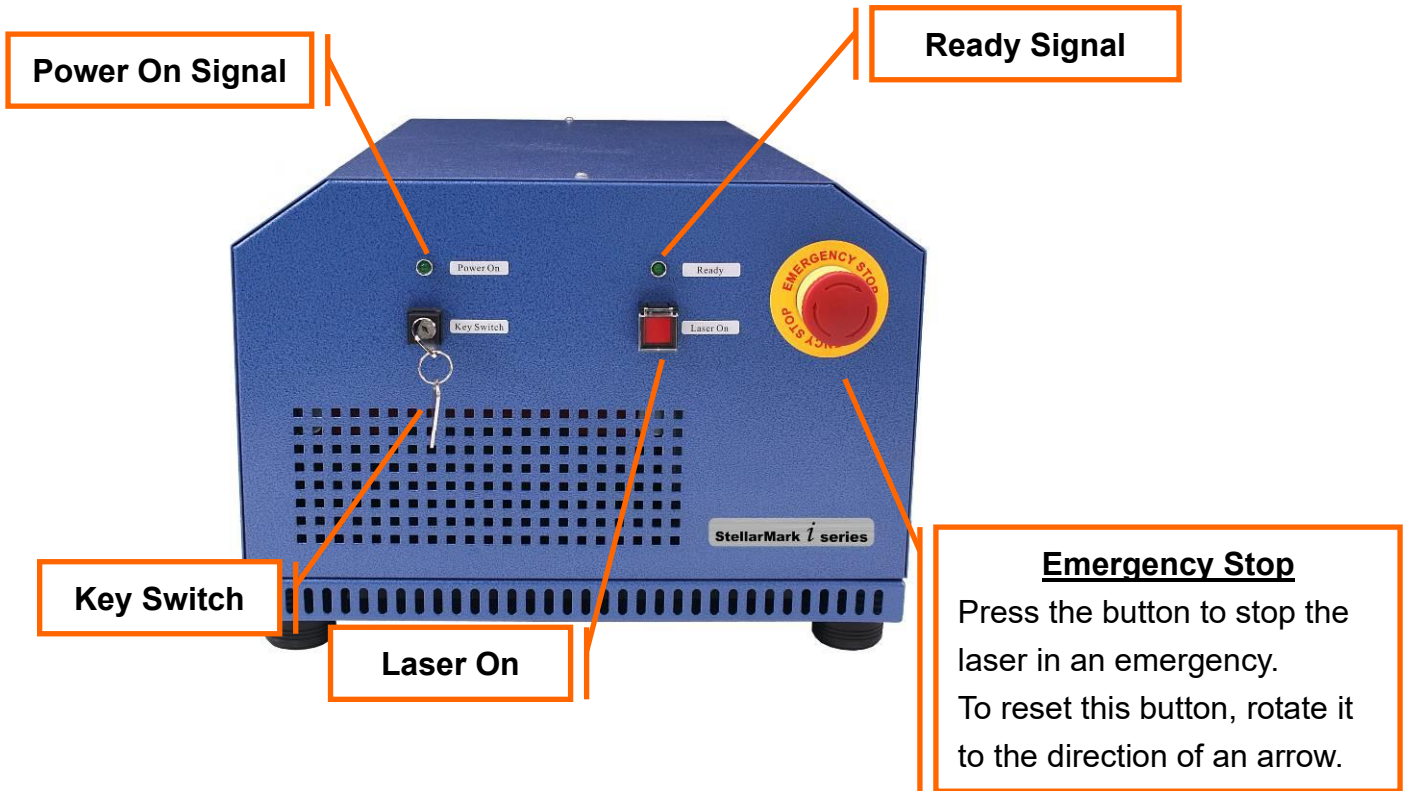
Defective or unworkable scan lens due to abuse, mishandling, misuse, accident, alteration, negligence, improper installation, deficient cleaning or other causes will not be covered in the warranty.

#### NOTE

Scan lens is protected by a cover to prevent damage during shipment. Always remove the cover prior to use.




### 3.2 Control Unit



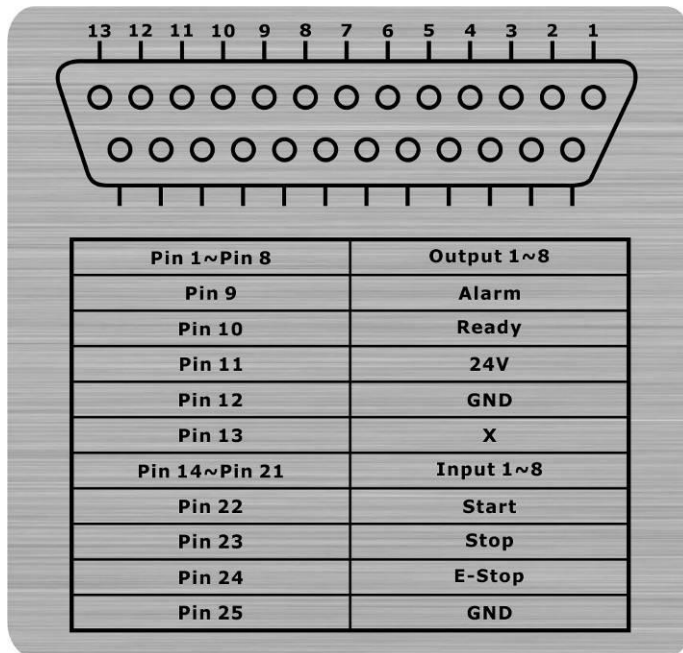
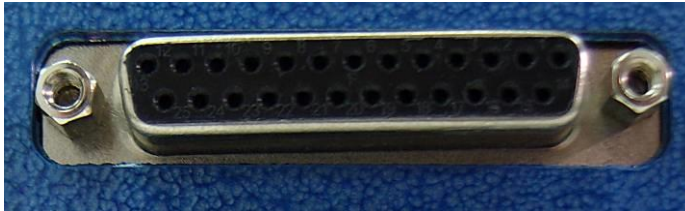
### 3.2.1 Optical Fiber Cable

Optical fiber cable is doped with rare-earth elements as a gain medium to generate 1064nm laser light.

 **WARNING**

- Excessively tight fiber bends (less than a 10 cm radius) will permanently damage and possibly ignite the fiber.
- Do not remove the two ends of fiber cable from the fiber module.

### 3.2.2 I/O Terminal Connector



The I/O pins are located at the back of Control Unit 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.

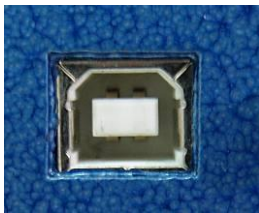
It will allow laser marker to receive signals **from** or **send out** the signal to the other automation devices.

### 3.2.3 Rotary Attachment Connector



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

### 3.2.4 USB Connector

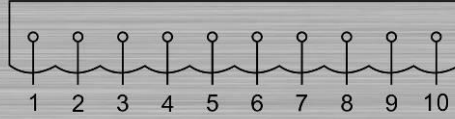


USB port connects laser marker to a desktop PC or Notebook.

### 3.2.5 Mark On Fly Terminal Connector



#### Mark on Fly Encoder

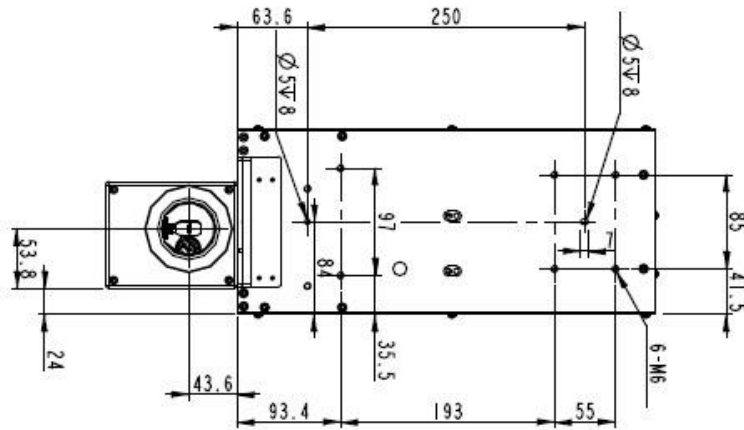
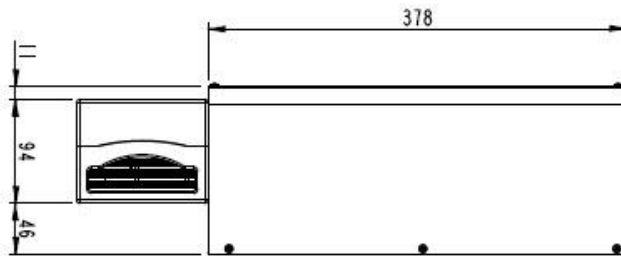
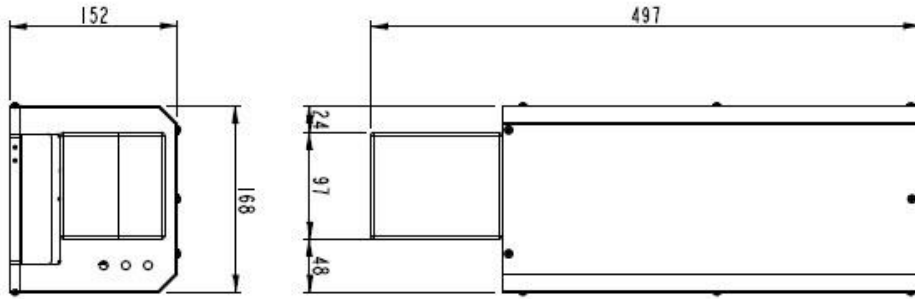


1	XA+	6	YA-
2	XA-	7	YB+
3	XB+	8	YB-
4	XB-	9	5V
5	YA+	10	GND

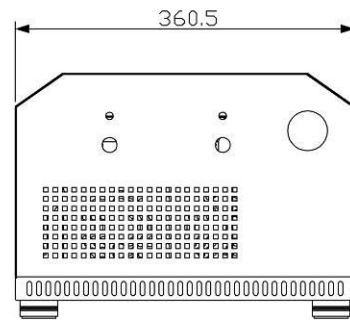
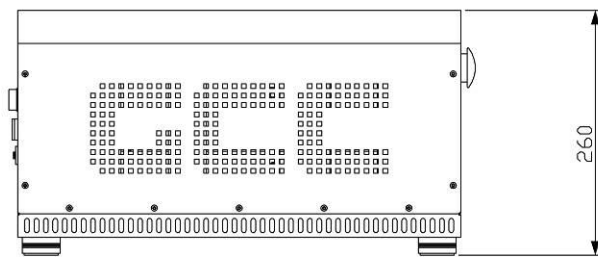
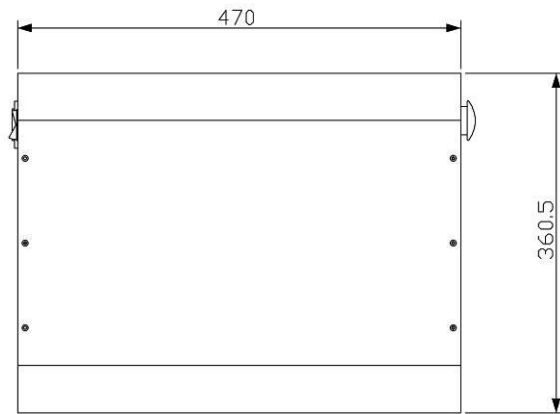
Mark On Fly Terminal connects laser marker to an external encoder of a conveyor system. It allows IFII- series laser marker to do non-stop, “on-the-fly” marking for mass production line.

### 3.3 Foot Print

#### 3.3.1 Laser Marker Footprint



### 3.3.2 Control Unit Footprint



# Chapter **4**

## **Working Distance**

**Recommended Working Distance**

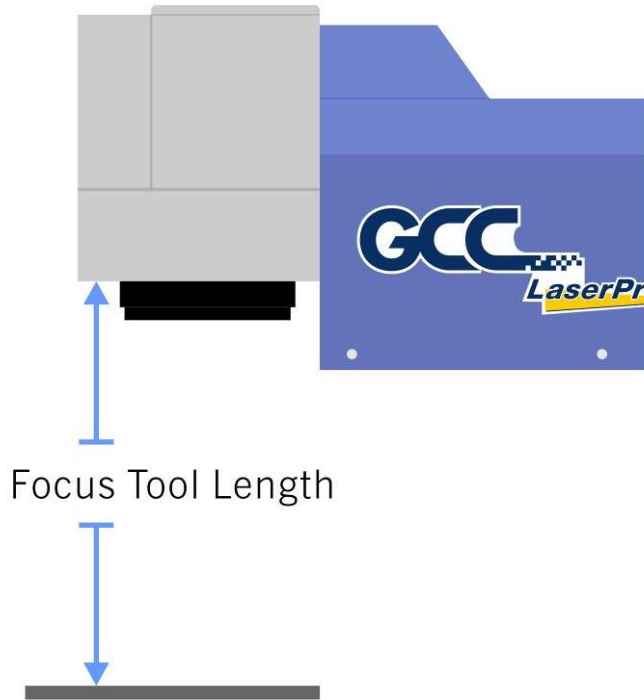
**Two Point Focus Finder**

**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 below:



Scan Lens	70x70mm	110x110mm	180x180mm	300x300mm
Focus Tool Length	134 ± 1mm	213 ± 2mm	372 ± 2mm	553 ± 2mm

### NOTE

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

For instance the 70x70 mm scan lens can only tolerate a distance which is +- 1mm different from the recommended working distance of 134mm.

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 IFII series.

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



### NOTE

Fixed length will be varied depend on the size of scan lens.

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 1.**

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.



**Bottom screw of Pyramid Ruler**

**NOTE 2.**

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



**Magnetic**

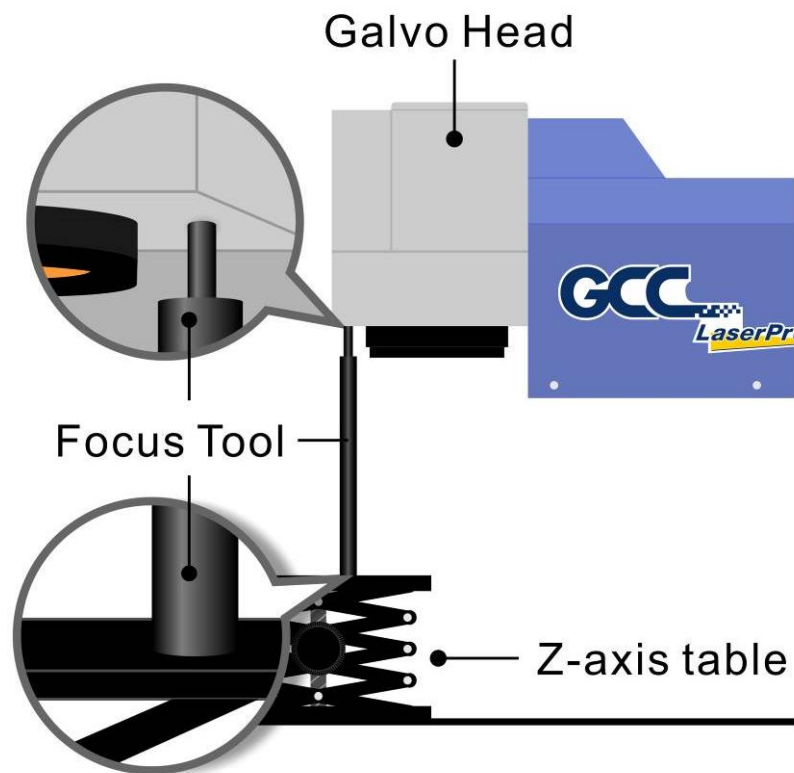
#### 4.2.1 Calibrate the Pyramid Focus Tool

When changing to different size scan lens for different applications, the calibration of Two Point Focus Finder position is required.

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.



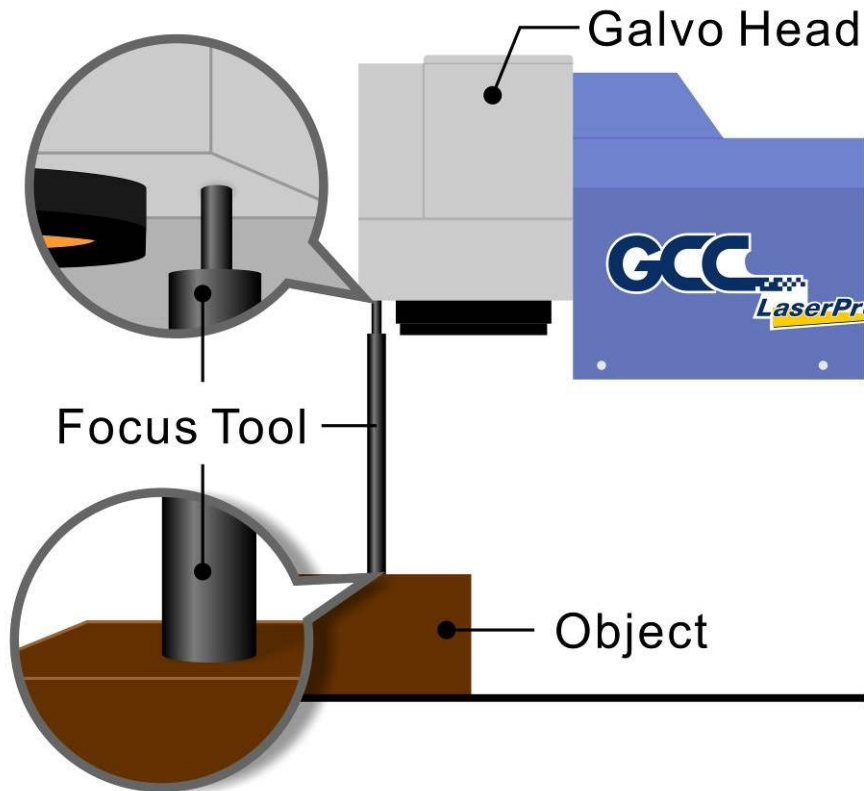
**Step 3.** Adjust the screw of the Pyramid Focus to fit the length with manual focus tool.



**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 scan lens. 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 Laser Marker power cable between the Control Unit and the Laser Marker.



**Step 2.** Connect the SCSI cable between the Control Unit and Laser Marker.



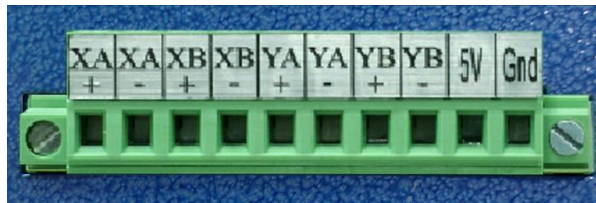
**Step 3.** Connect the USB cable between a PC or Laptop and the Control Unit.



**Step 4.** 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 5.** Plug the “rotary attachment” cable between Control Unit and the rotary attachment device if you have this optional item in hand.



**Step 6.** Plug the software keypro to a USB port on your PC or Laptop.



**Step 7.** Remove the cover of scan lens which is shipped along with StellarMark for protection.

Take care not to damage the lens after removing the cover.



## 5.2 Powering Up the Machine

### CAUTION

Make sure both StellarMark IFII-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 quality surge protector with connection to a properly grounded outlet.



- Step 2.** Plug the computer to AC outlet.

- Step 3.** Connect the female end of the Control Unit power cord to the power inlet located on the Control Unit's rear side.



### NOTE

The Stellar Mark IFII-series is designed to work with 110~220 VAC, 50/60Hz, Max 5A.



## 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.

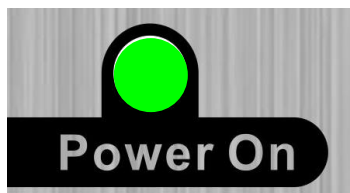
**Step 4.** Turn on the master power of the Control Unit.



## NOTE

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

**Step 5.** Make sure the green light of “Power On” in front of laser marker is on.



## 5.3 Control Unit operating instruction

Step 1. Make sure “Power On” LED of the Control Unit is on.



Step 2. Turn the key switch on so you will be able to fire the laser OFF (Left) / ON (right).



Step 3. Press “LASER ON” button. The indicator light will alternately turn on and ready to lasing.



### NOTE

- After finishing marking, push the LASER ON button again to turn off laser output.
- Please turn the key switch to the “Off” position if you would like to turn off the machine.

# Chapter **6**

---

## **Software Setup**

**Recommended Computer Configuration**

**Software Installation for Windows System**

**Software Installation for MAC System**

**Change the Series and Model Type**

**Waveform Setup**

## 6.1 Recommended Computer Configuration

The Stellar Mark is able to accommodate Laptop and compatible PC operating systems. Both the machine and G-Mark Basic™ 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
- CDRROM 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

### G-Mark Library 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:

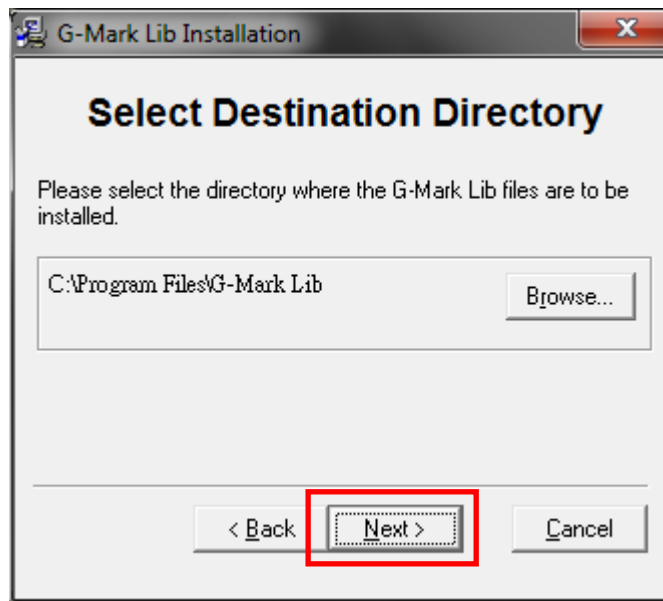
**Step 1.** Take out the G-Mark installation CD from the accessories kit

**Step 2.** Insert the G-Mark installation CD into the CD-ROM drive  
Wait a few seconds for the CD Manager to begin the Setup automatically

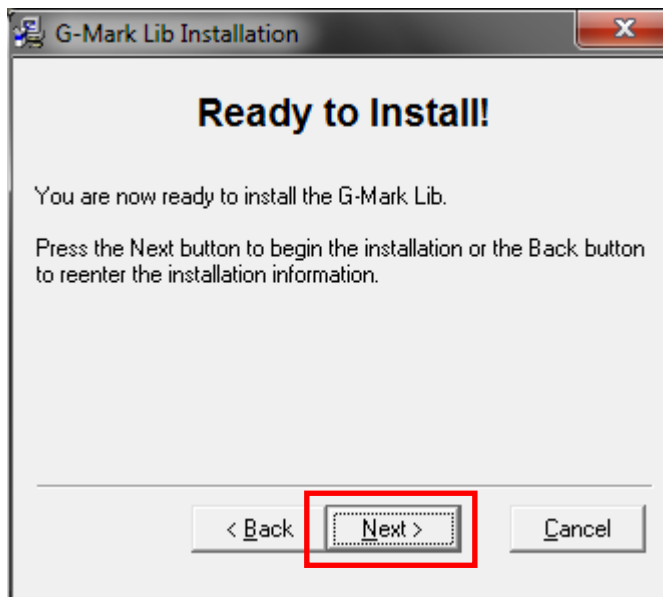
**Step 3.** Click on 32 bit or 64 bit version from the menu of the G-Mark installation CD depending on your operating system



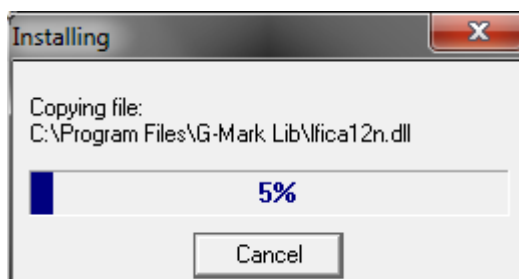
**Step 4.** Set the destination directory and click "Next>"



**Step 5.** Select "Next>"

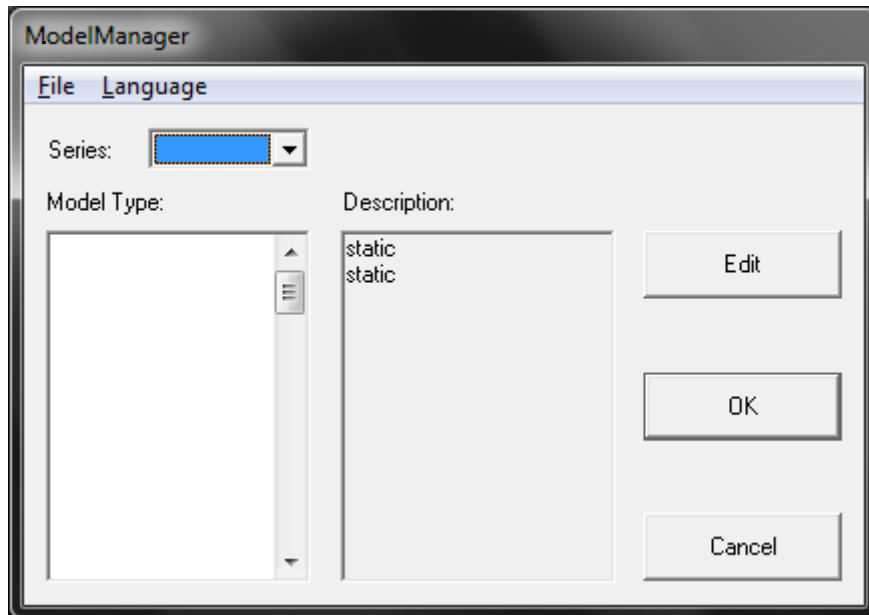


**Step 6.** Installing

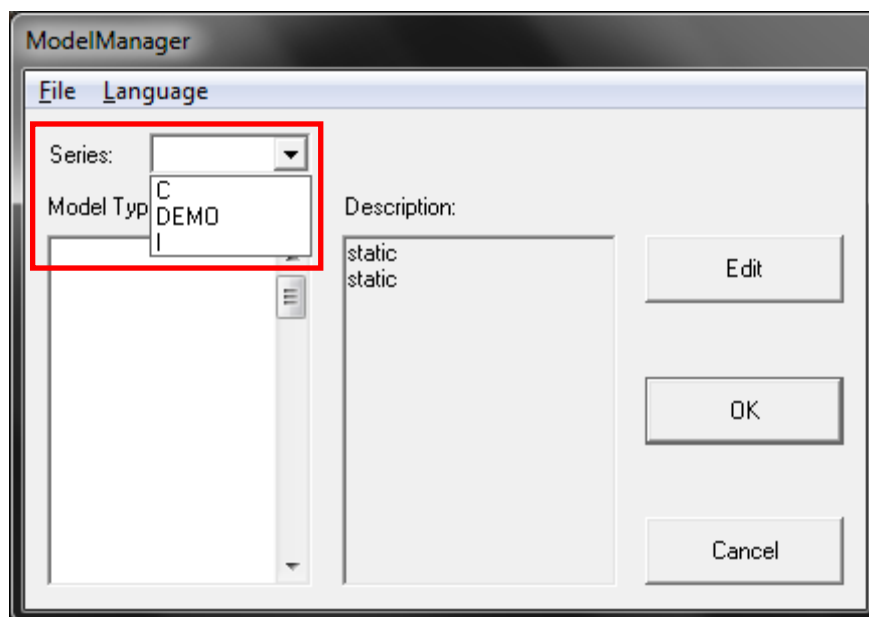


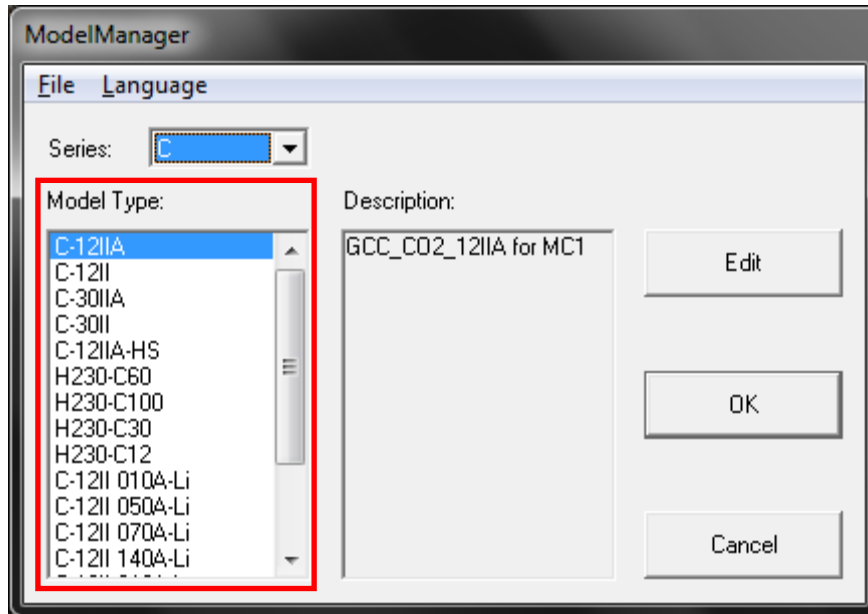


**Step 7.** At 95% completion of the installation, the ModelManger window will show up

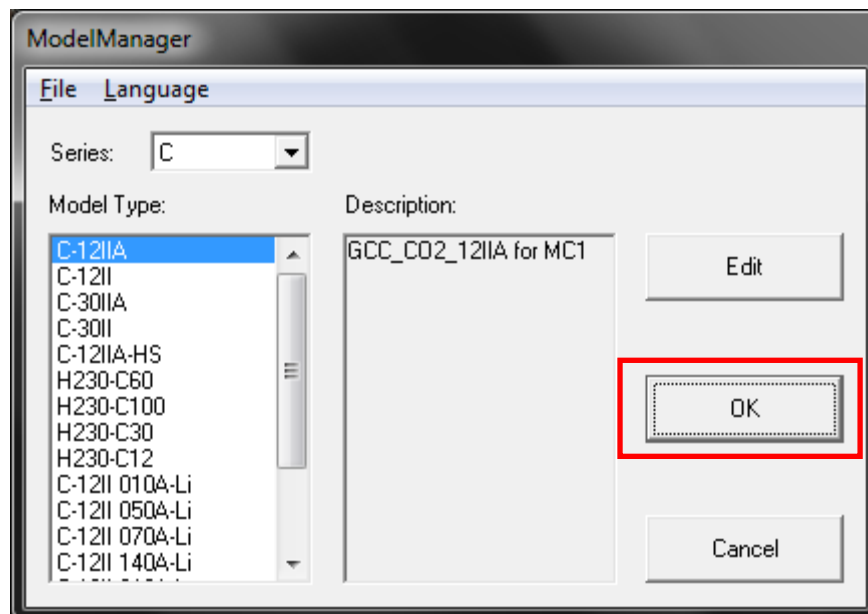


**Step 8.** Select your series & model type

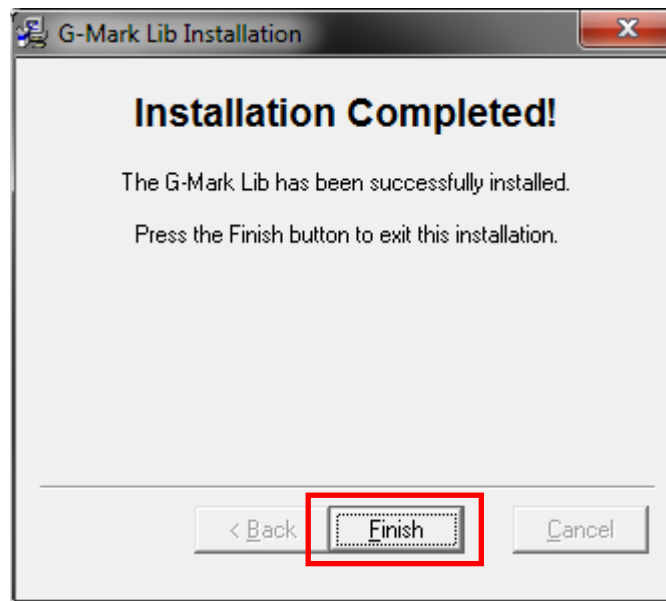




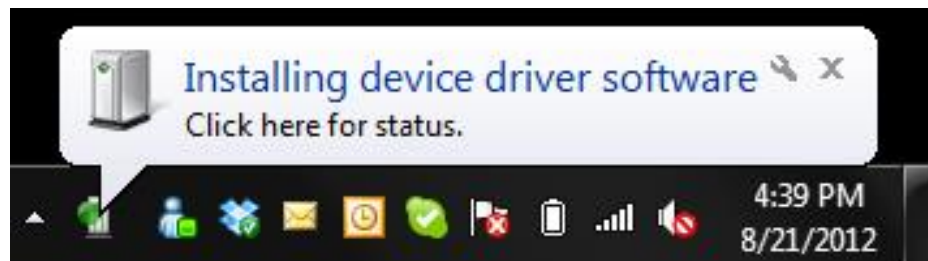
**Step 9.** Click “OK”



**Step 10.** Click “Finish” to complete the installation



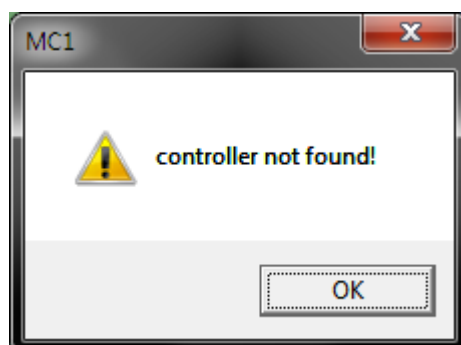
**Step 11.** Once the installation is completed, you will find “Laser marking controller” at the lower right hand corner on your computer screen, this indicates the computer is able to communicate with StellarMark.



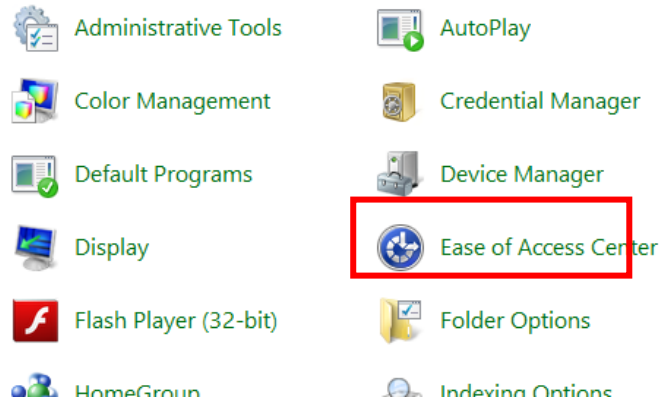
#### NOTE

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

Please perform the following steps:



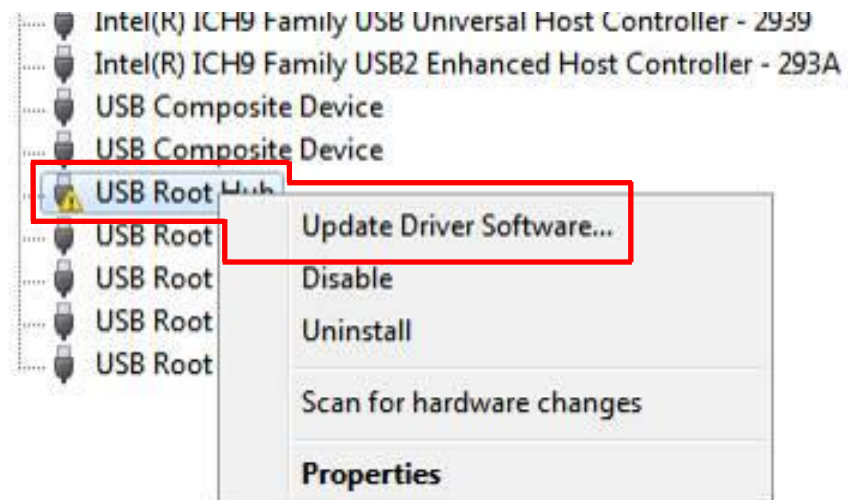
A. Please go to “Control” and click on “System”



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



C. Then click on “USB Driver” and click on right mouse button to update the driver.



D. 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.

E. Key in the specific path "C:\Program Files\G-Mark Lib \Drivers\MC1", and press "Next."

Browse for driver software on your computer

Search for driver software in this location:

C:\Program Files\G-Mark Basic \Drivers\MC1

Include subfolders

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

F. Press "Finish" and now you can activate the G-Mark 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 in MAC computers and run Windows based software under MAC computer and output with G-Mark.

**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

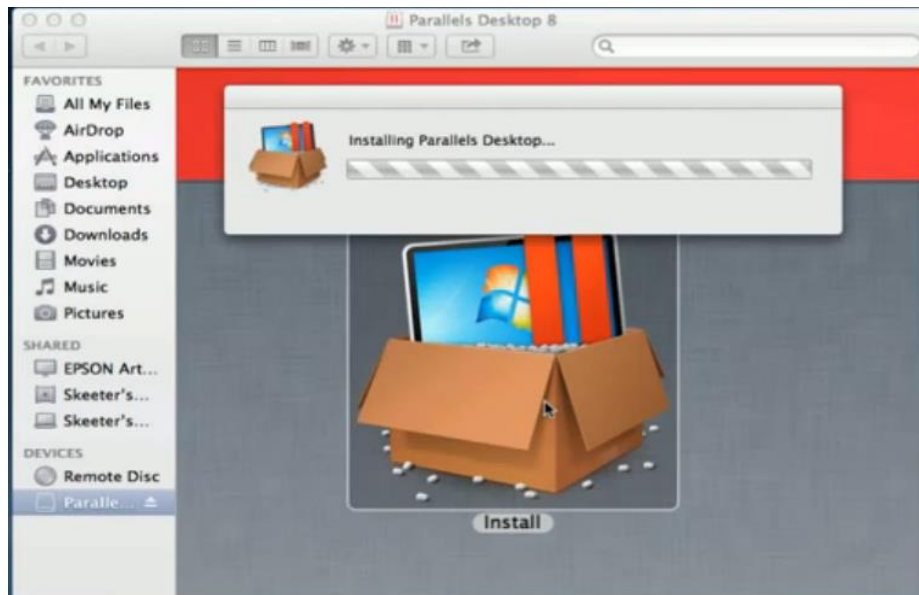
Parallels Desktop 8 for Mac lets you seamlessly run Windows and Mac applications side-by-side, without rebooting.

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**.

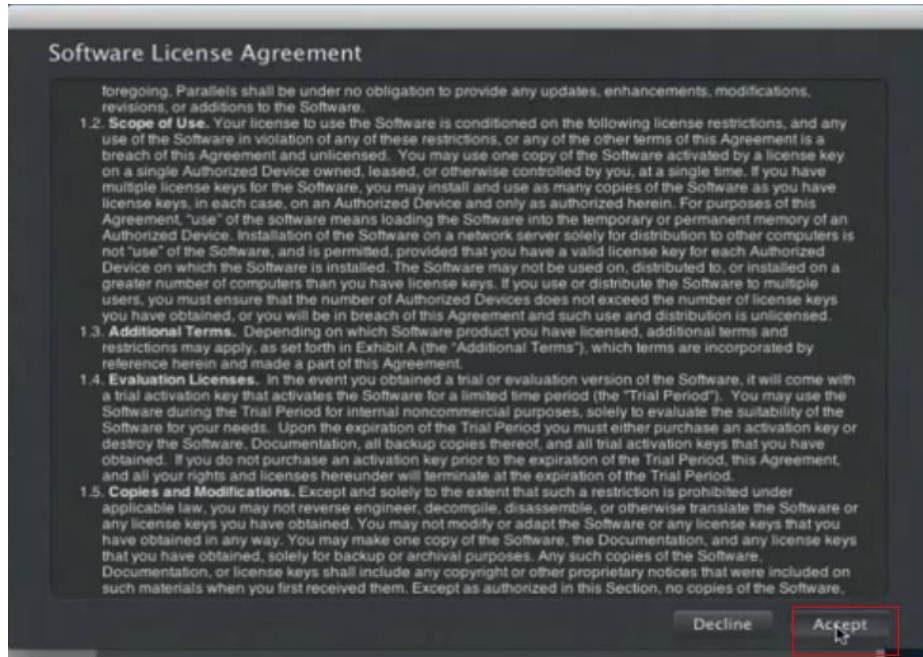
Buy \$79.99 | Watch Video | Try Free  
Upgrade now for \$49.99

**Step 2.** Install Parallels Desktops under Mac OS environment.

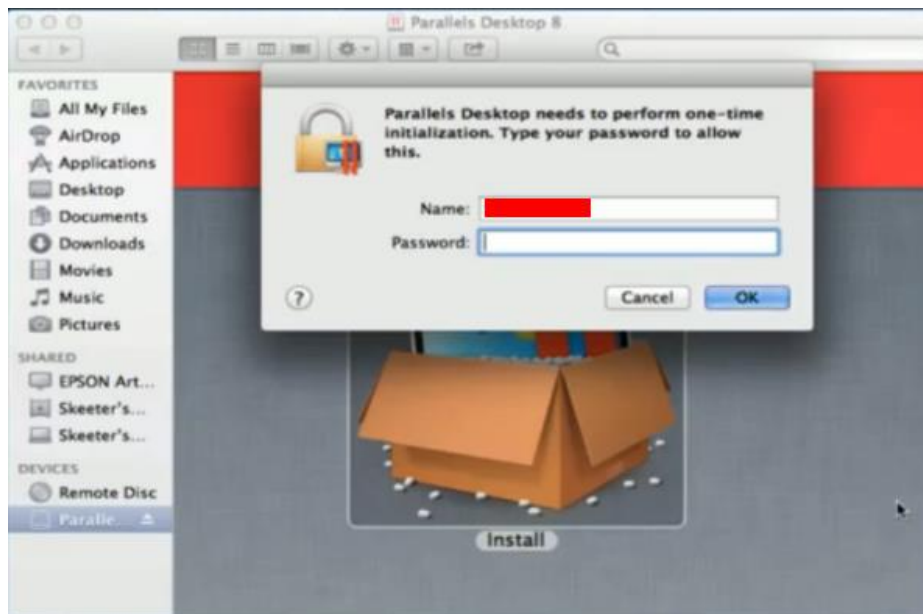




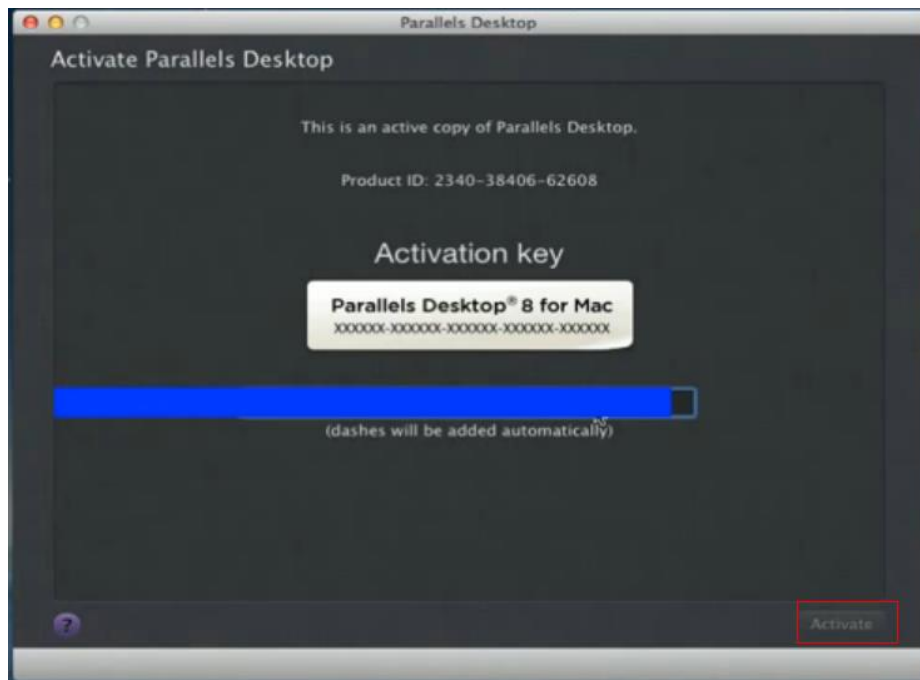
**Step 3.** Read Software License Agreement and press “Accept” to continue installation



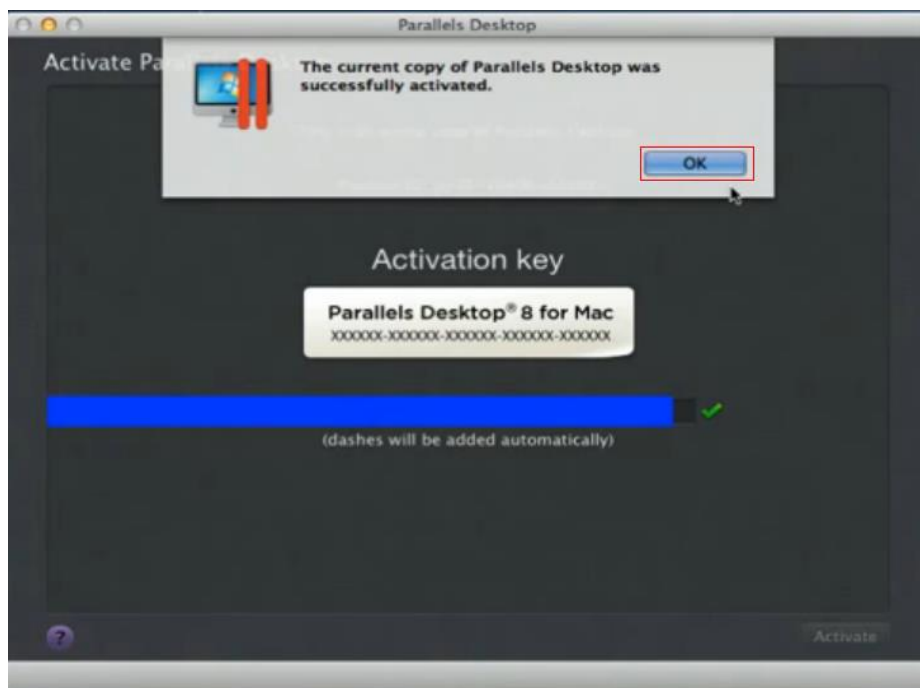
**Step 4.** Enter your Mac OS X User Name and Password then press “OK”



**Step 5.** Press “Active”

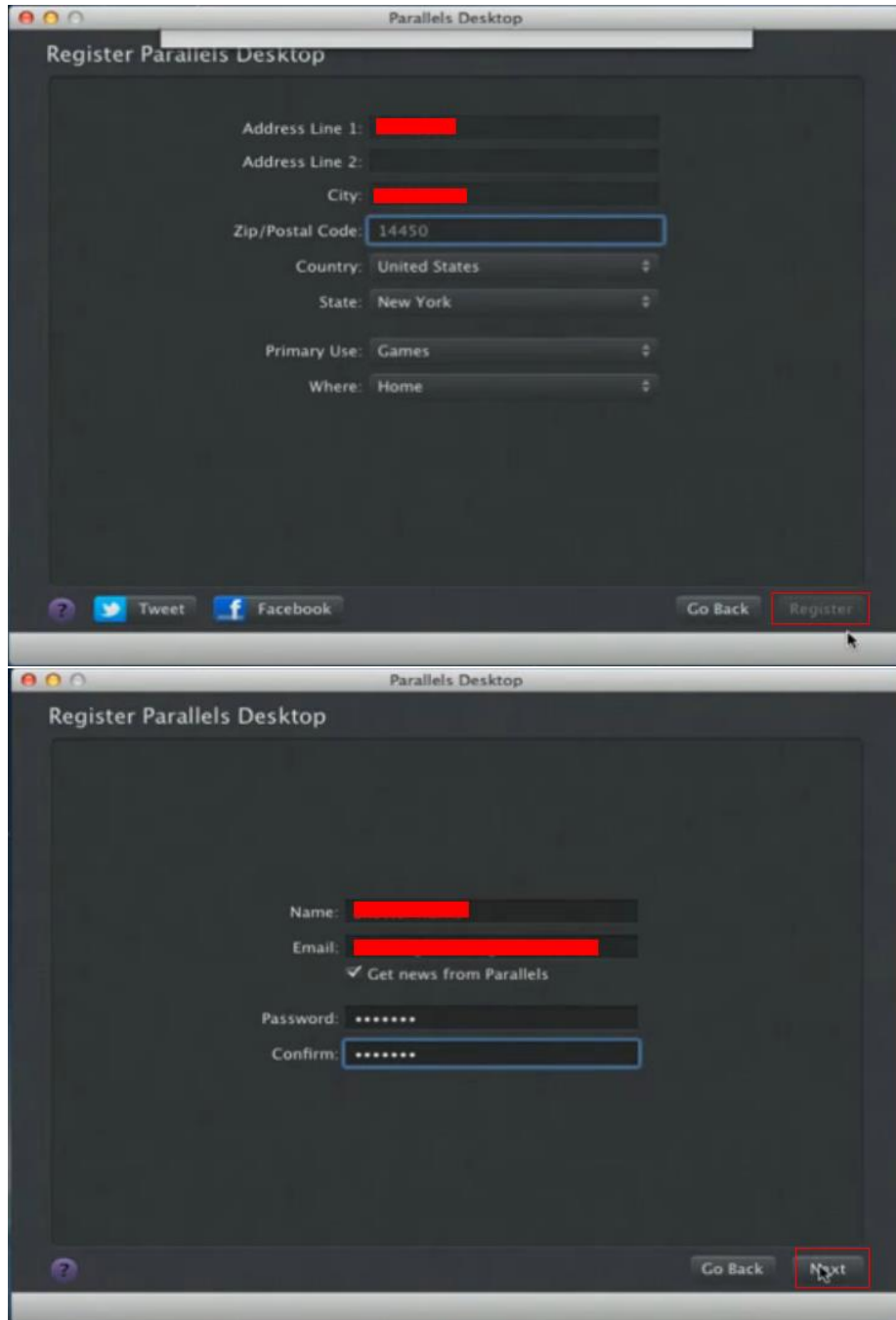


**Step 6.** Press “OK” when activation is complete.





### Step 7. Register Parallels Desktop



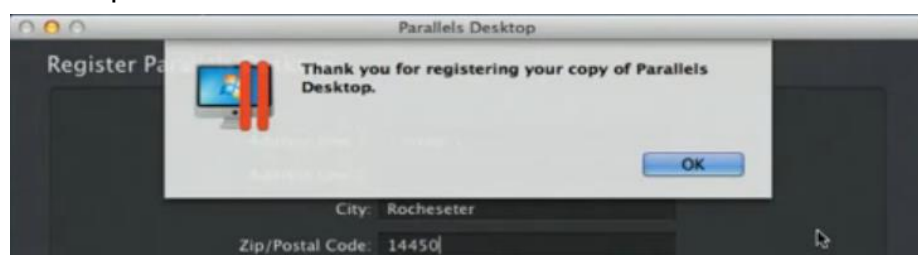
The first screenshot shows the "Register Parallels Desktop" window with the following fields:

- Address Line 1: [Redacted]
- Address Line 2: [Redacted]
- City: [Redacted]
- Zip/Postal Code: 14450
- Country: United States
- State: New York
- Primary Use: Games
- Where: Home

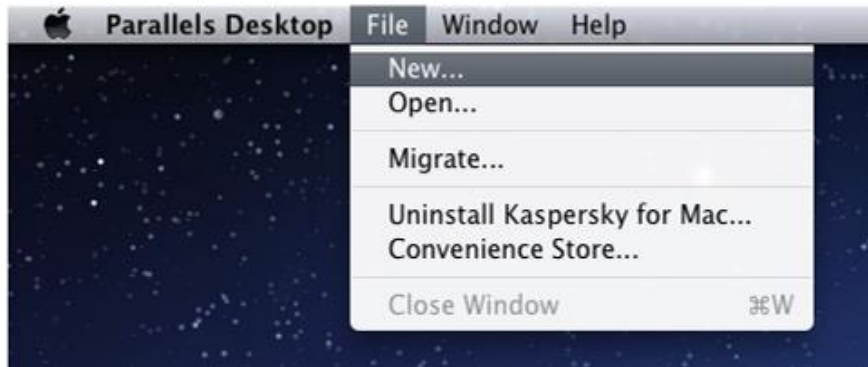
The second screenshot shows the "Register Parallels Desktop" window with the following fields:

- Name: [Redacted]
- Email: [Redacted]
- Get news from Parallels
- Password: [Redacted]
- Confirm: [Redacted]

### 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**



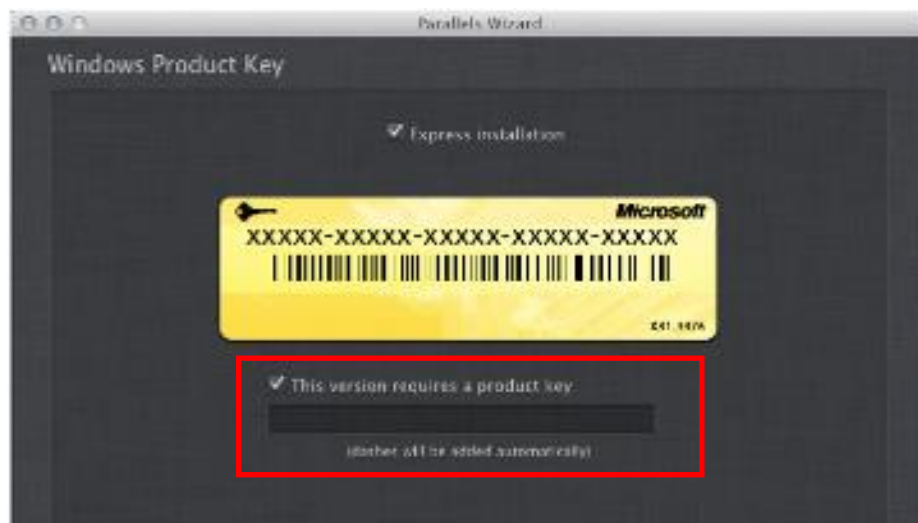
**Step 10.** Press “Install Windows from DVD or image file” then press “continue” to install windows OS



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



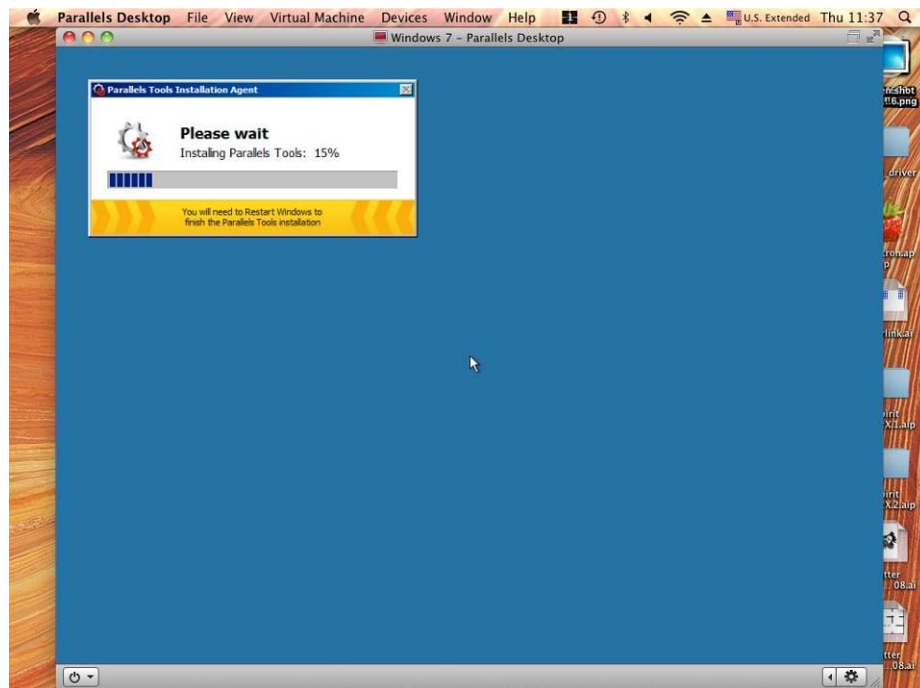
**Step 12.** Enter the Windows OS product key

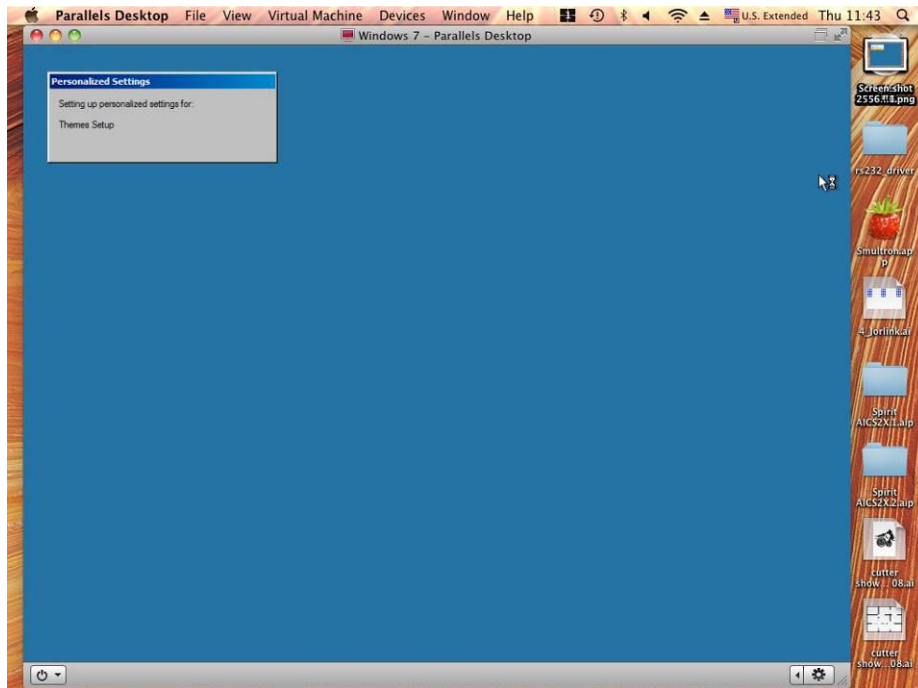


**Step 13.** Select how you would like to run your Windows program.



**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 G-Mark / G-Mark Library.

#### **NOTE**

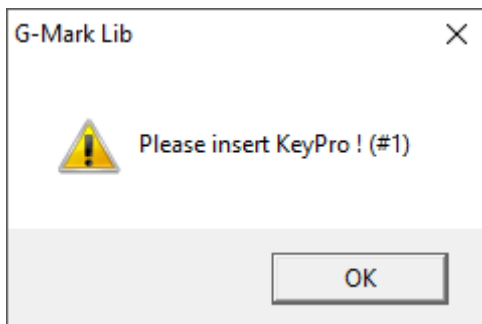
Once the G-Mark software installation is completed, you can start to open a new file to edit or import an existing file to G-Mark for laser processing. For G-Mark software operation manual, you can refer to “G-Mark software user

## 6.4 Communication Troubleshooting

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

Please perform the following steps to solve problem.

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



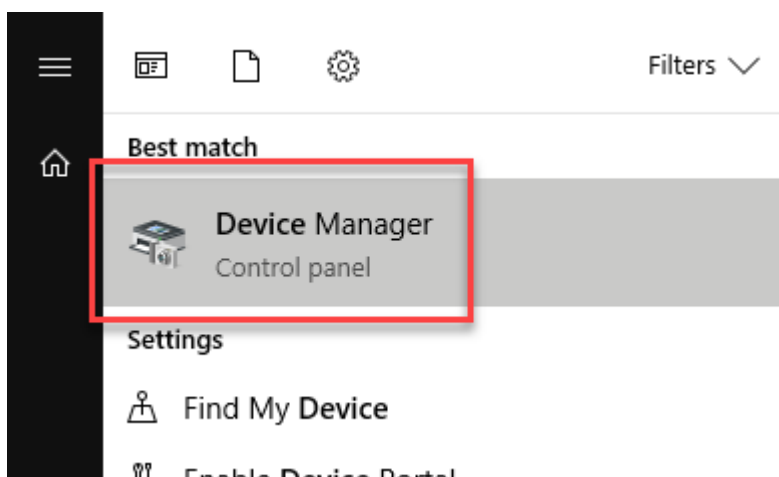
**Fix 1:**

Please close the G-Mark software program and re-plug the KeyPro from PC/Laptop, and then reopen the G-Mark software program.

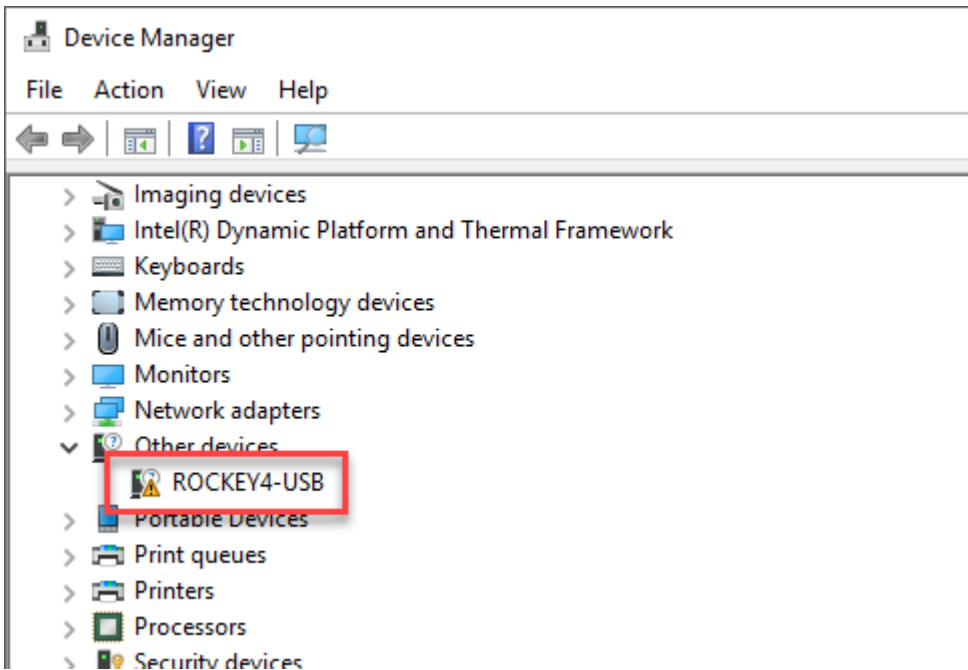
**Fix 2:**

**Step 1.** Select the “Start” button and type “device manager”.

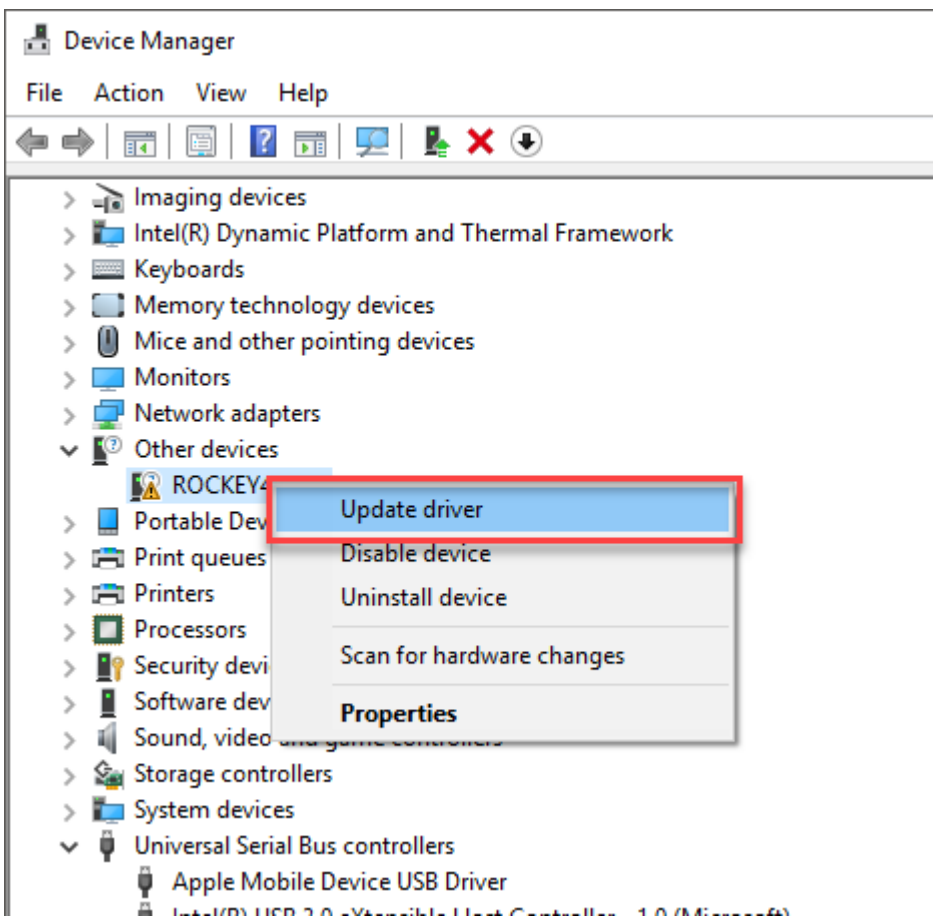
**Step 2.** Select “Device Manager”



**Step 3.** Please check if there is any “!” USB device from the below chart:



**Step 4.** Then click on “USB Driver” and click on right mouse button and update the driver.



**Step 5.** 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.

**Step 6.** Key in the specific path: "C:\Program Files\G-Mark Lib\Drivers\MC1. Then press "Next"

Browse for driver software on your computer

Search for driver software in this location:

C:\Program Files\G-Mark Basic \Drivers\MC1

Browse...

Include subfolders

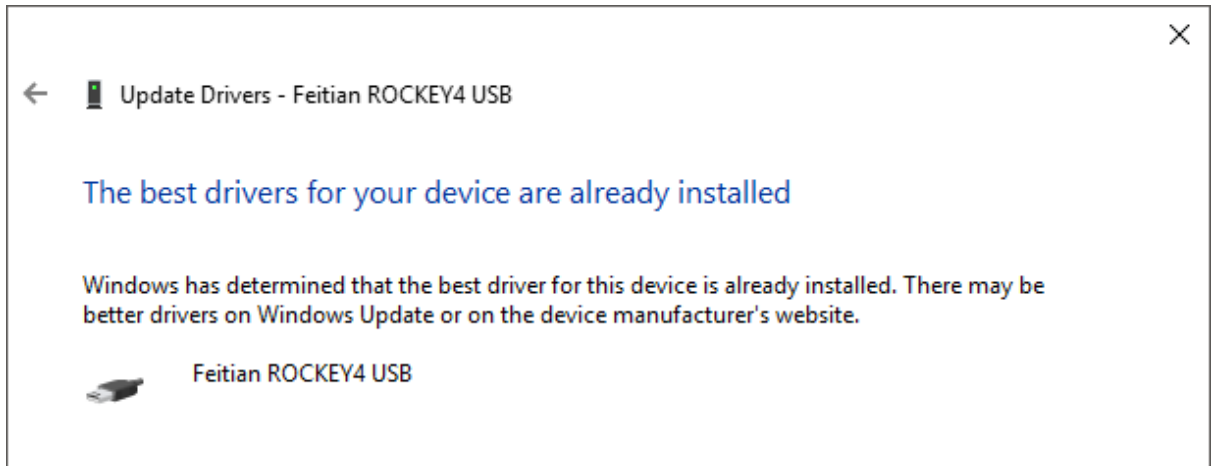
→ **Let me pick from a list of device drivers on my computer**  
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.

Next

Cancel



**Step 7.** Press “Close” and now you can reopen the G-Mark software



- Error message 2 – Controller not found!



**Fix 1:**

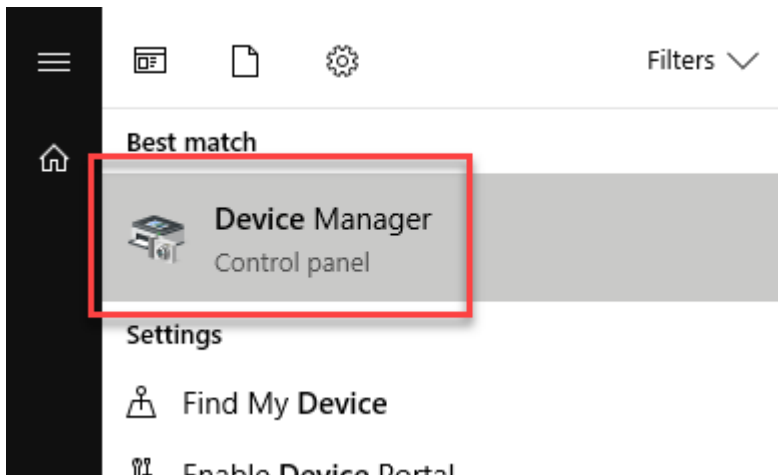
Reconnect the USB cable between a PC or Laptop and the Control unit, and then reopen the G-Mark software program.

**Fix 2:**

Update the controller driver

**Step 1.** Select the “Start” button and type “device manager”.

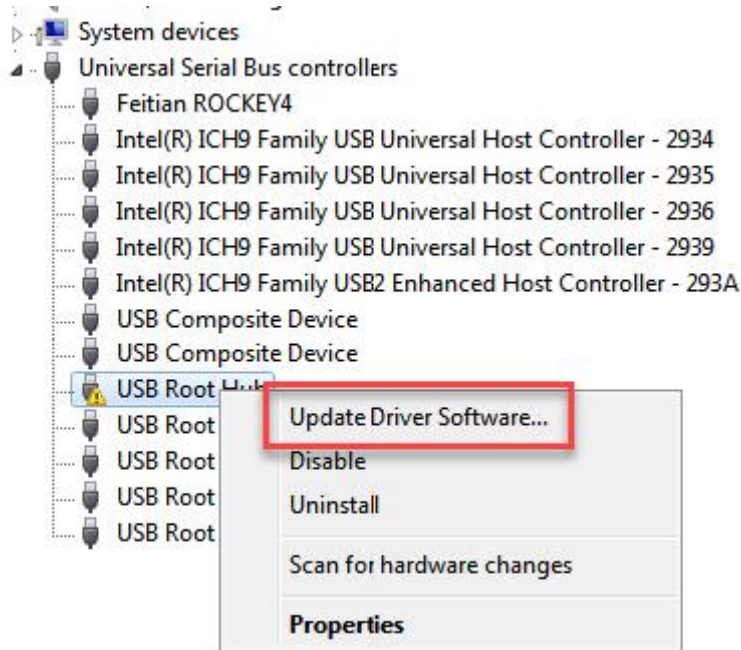
**Step 2.** Select “Device Manager”



**Step 3.** Please check if there is any “!” USB device from the below chart:



**Step 4.** Then click on “USB Driver” and click on right mouse button and update the driver.



**Step 5.** 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.

**Step 6.** Key in the specific path: “C:\Program Files\G-Mark Lib\Drivers\MC1. Then press “Next”


Browse for driver software on your computer

Search for driver software in this location:

C:\Program Files\G-Mark Basic \Drivers\MC1

Browse...

Include subfolders

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

Next

Cancel

**Step 7.** Press “Finish” and now you can activate the G-Mark 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

### Fix 3:

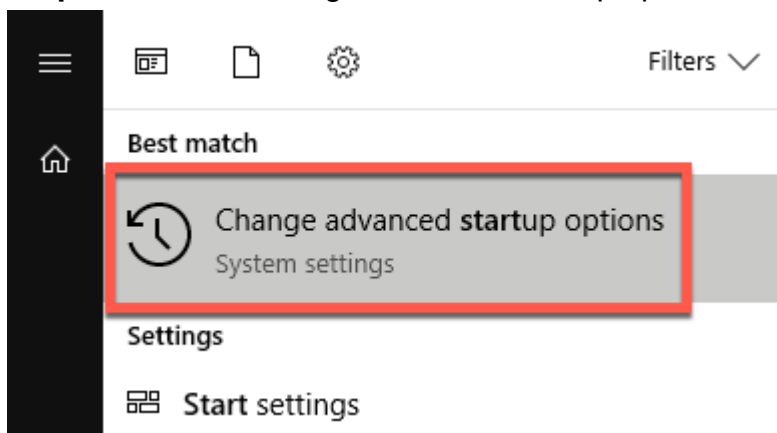
Some users of windows 10/11 has found the “!” USB device from list of the device manager, but cannot update the driver. We recommended you disable the driver signature enforcement on safe mode, please perform the following steps

#### For Win 10 users

**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. Then the computer will reboot and enter to the safe mode

## Go back to an earlier build

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

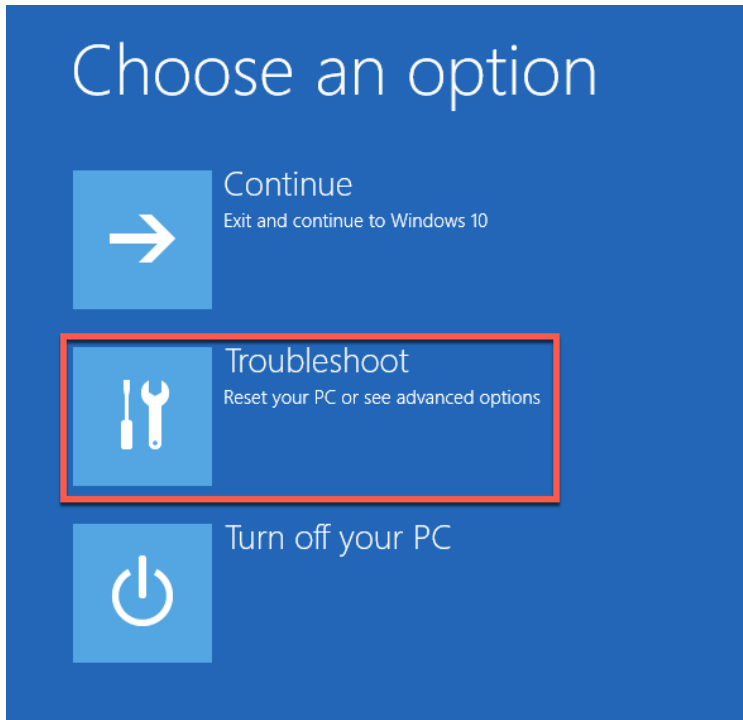
Get started

## Advanced startup

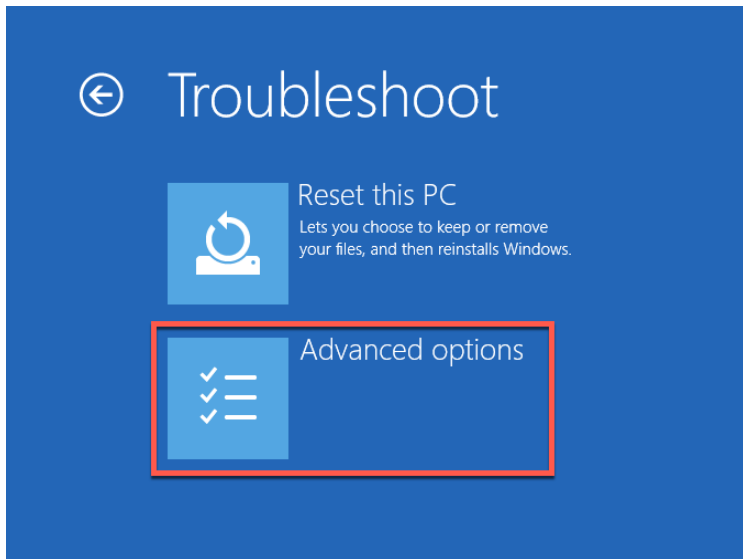
Start up from a device or disc (such as a USB drive or DVD), change Windows startup settings, or restore Windows from a system image. This will restart your PC.

Restart now

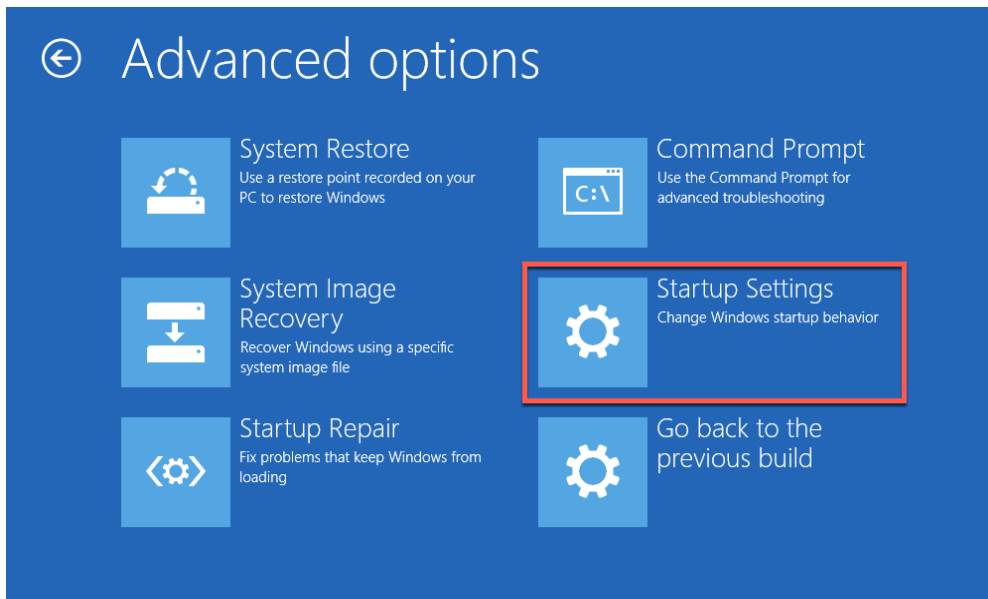
**Step 5.** Select “Troubleshoot”.



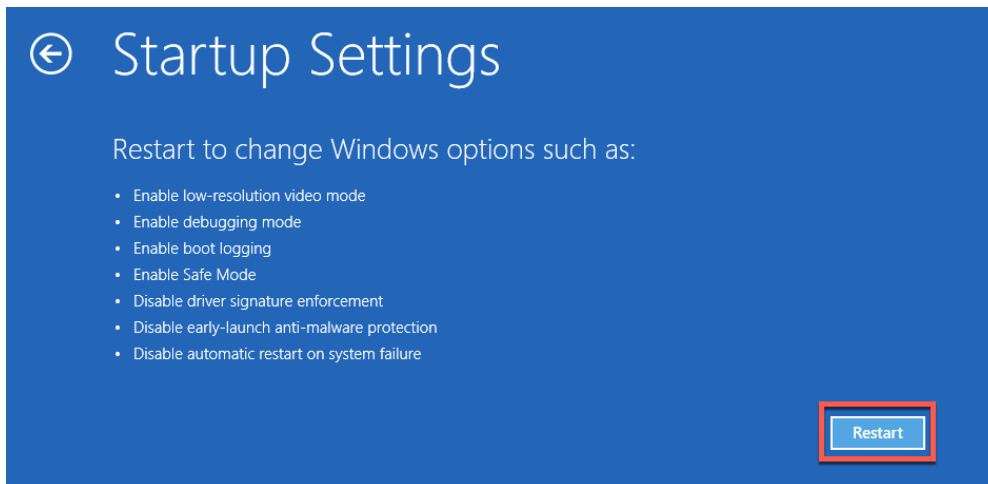
**Step 6.** Select “Advanced Options”



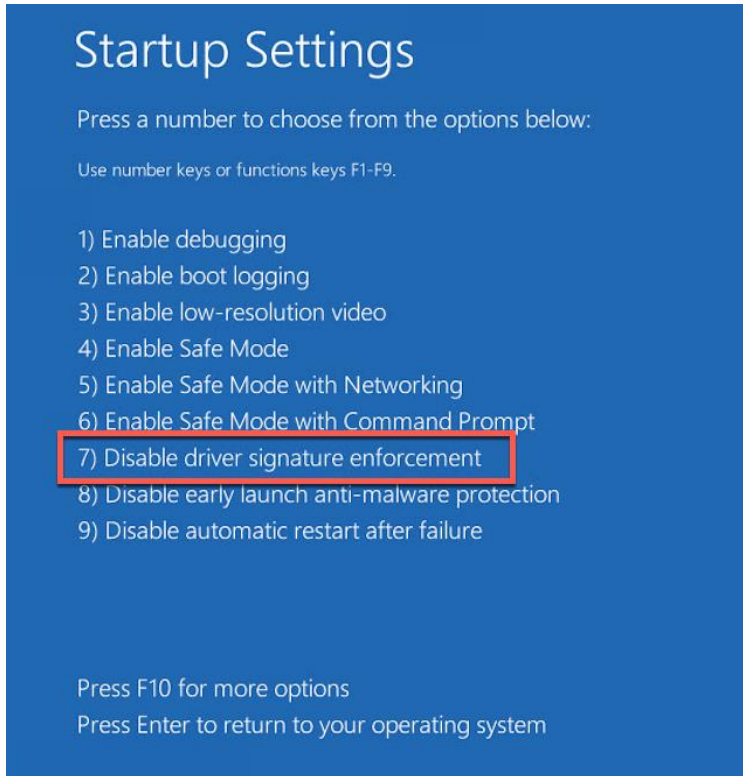
**Step 7.** Select “Startup Settings”.



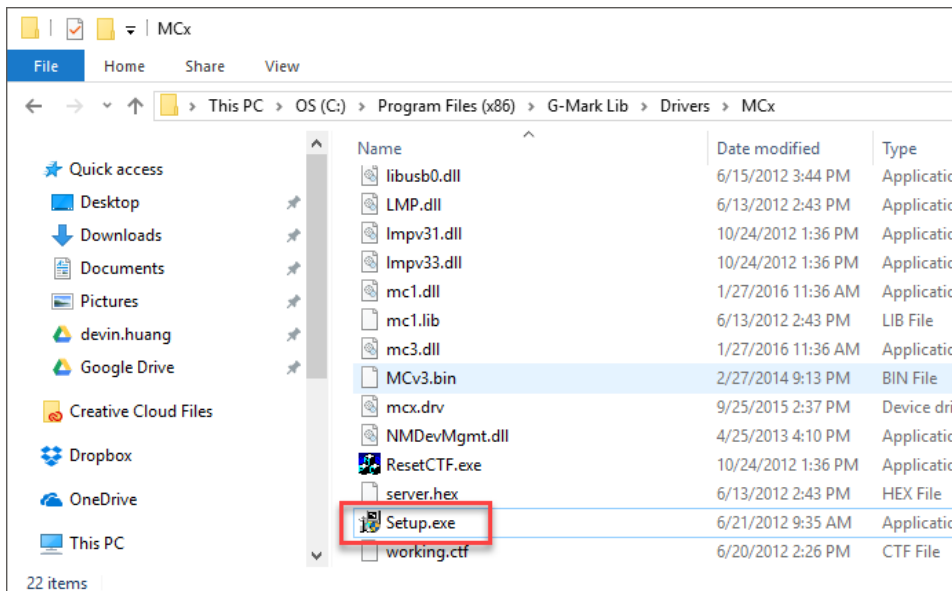
**Step 8.** Select “Restart”.



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

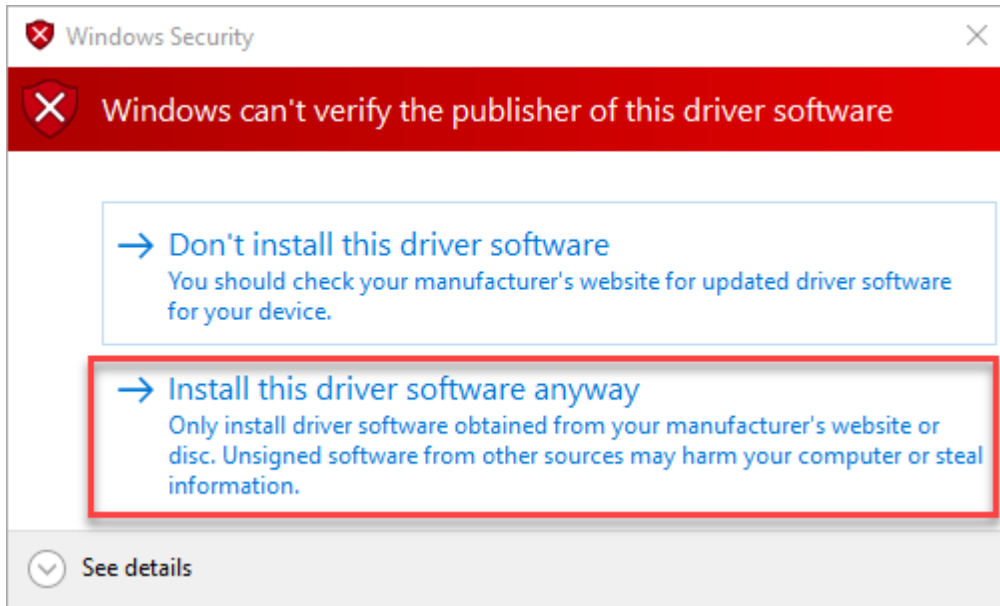


**Step 10.** After rebooting, go to “C:\Program Files (x86)\G-Mark Lib\Drivers\MCx” and click on “Setup.exe” to install.

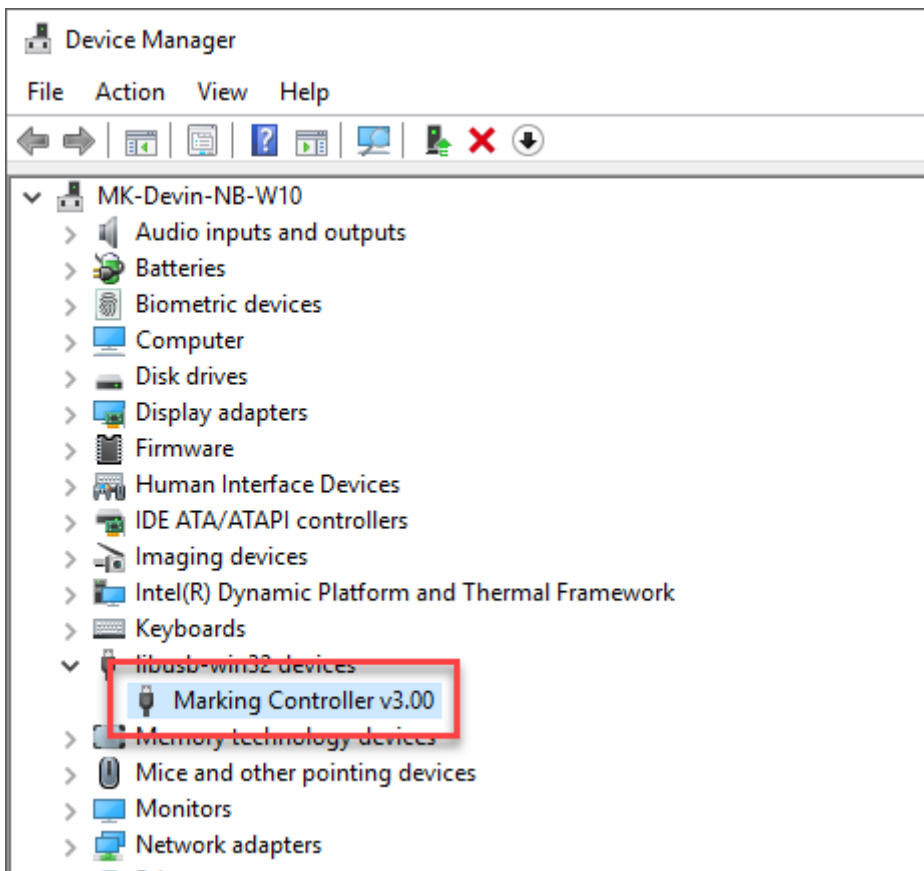




**Step 11.** “Windows Security” will pop up, and then click on “Install this driver software anyway”

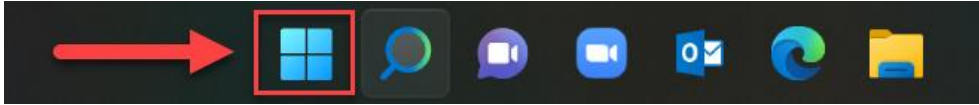


**Step 12.** After installing, go to device manager and make sure the controller driver has been installed.

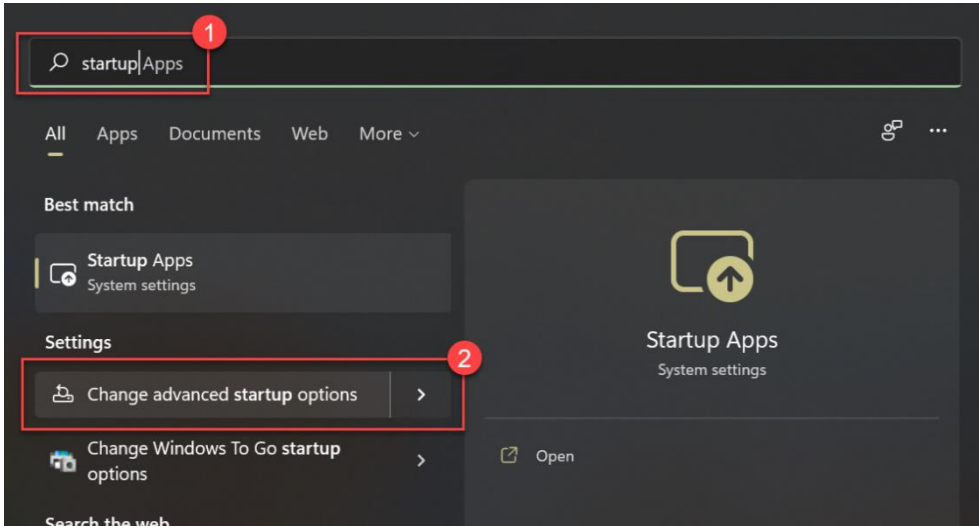


## For Win 11 users

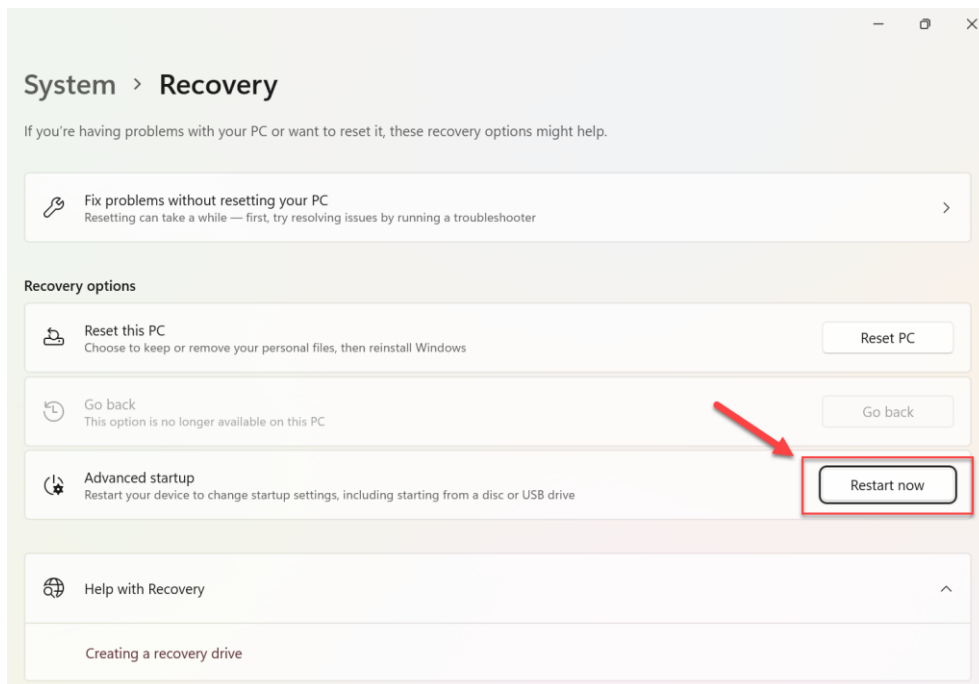
**Step 1.** Select the “Start” button.



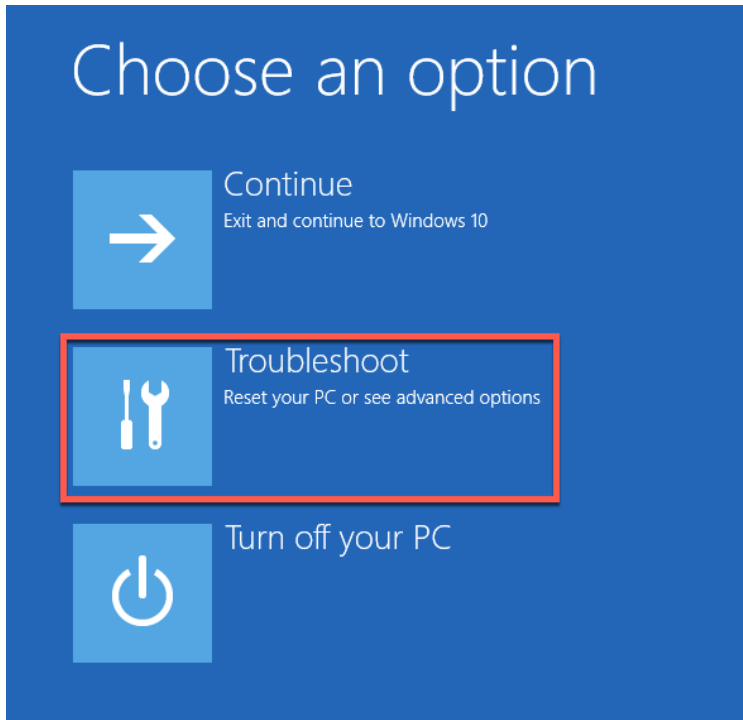
**Step 2.** Type “startup” and select “Change advanced startup options”.



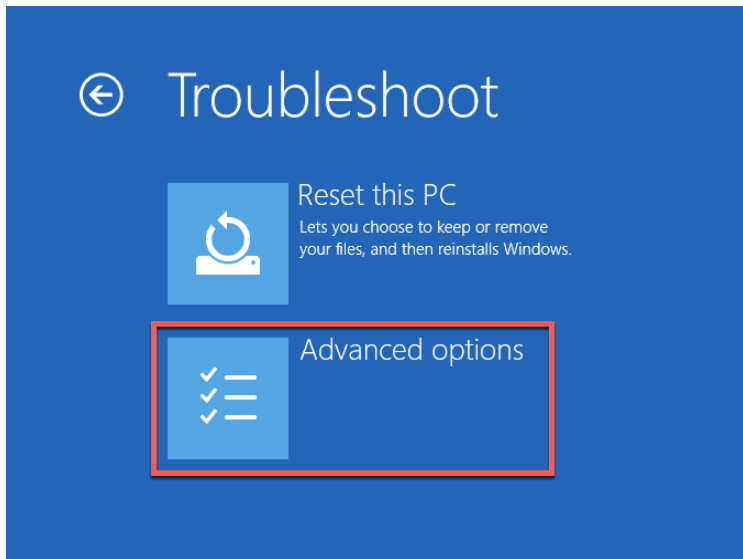
**Step 3.** Select “Restart now” under the “Advanced startup” area. Then the computer will reboot and enter to the safe mode



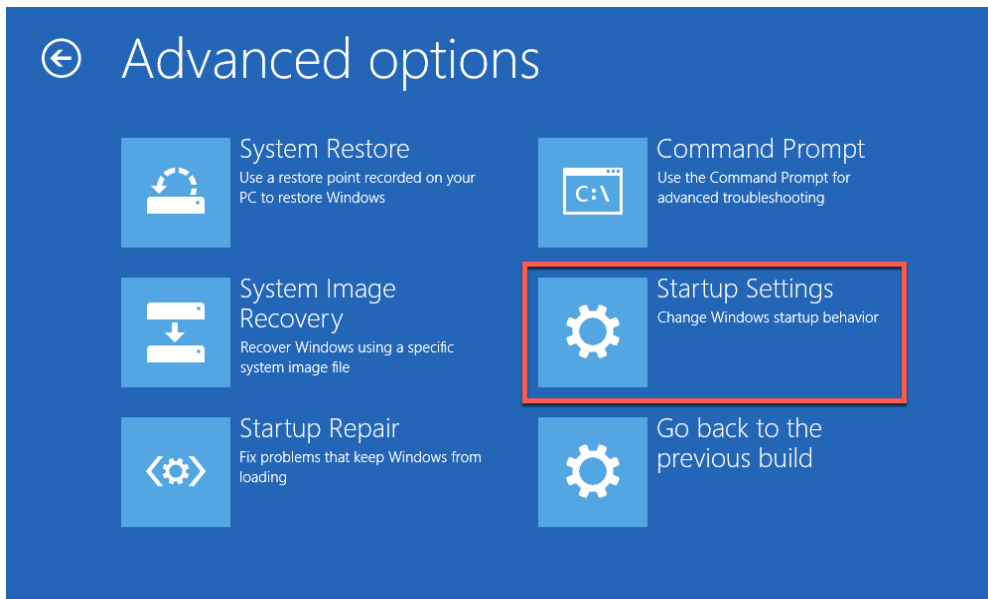
**Step 4.** Select “**Troubleshoot**”.



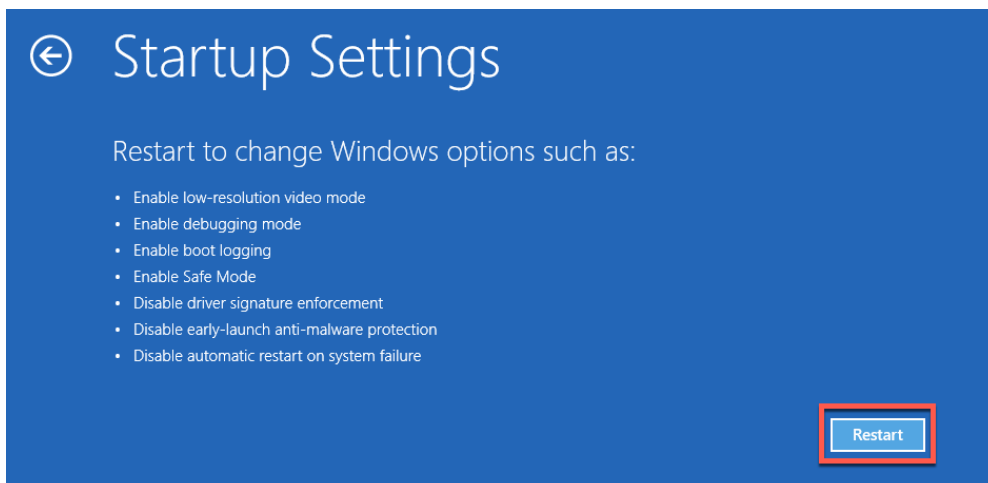
**Step 5.** Select “**Advanced Options**”



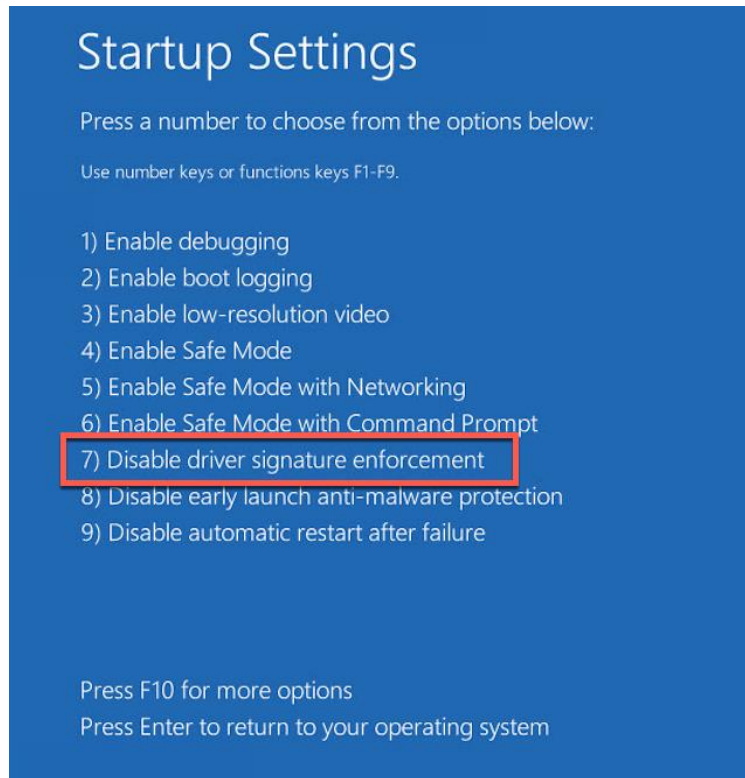
**Step 6.** Select “Startup Settings”.



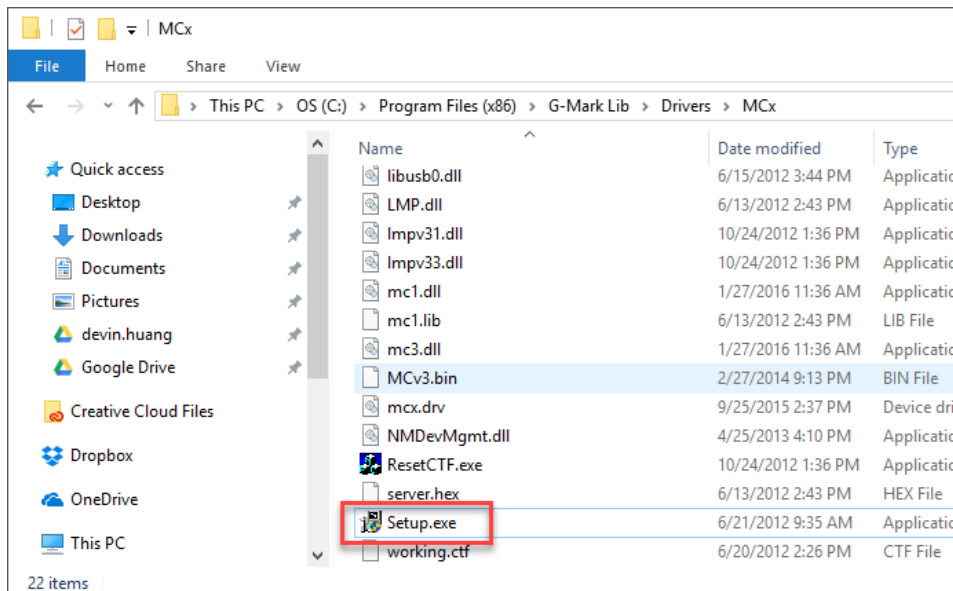
**Step 7.** Select “Restart”.



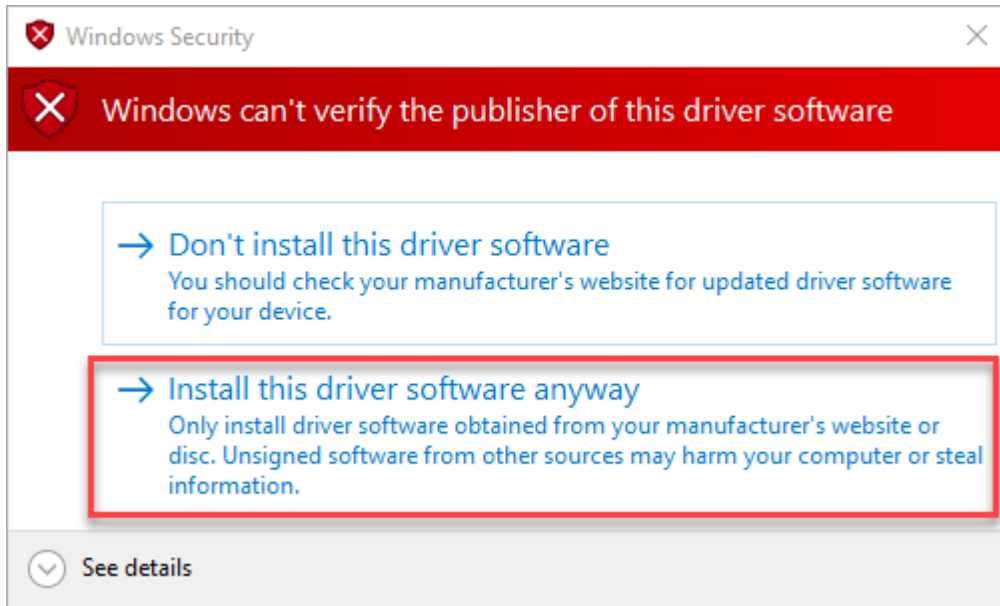
**Step 8.** A menu will appear where you can press “F7” on your keyboard to choose “**Disable driver signing enforcement**”.



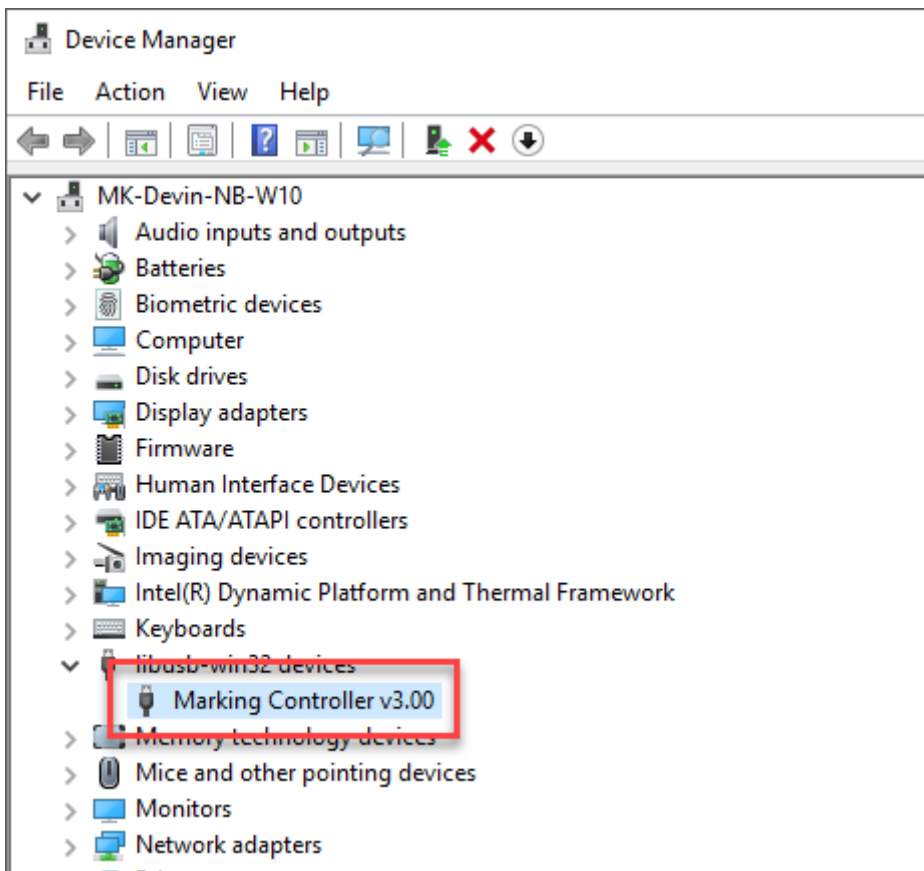
**Step 9.** After rebooting, go to “C:\Program Files (x86)\G-Mark Lib\Drivers\MCx” and click on “Setup.exe” to install the driver.



**Step 10.** “Windows Security” will pop up, and then click on “Install this driver software anyway”



**Step 11.** After installing, go to device manager and make sure the controller driver has been installed.



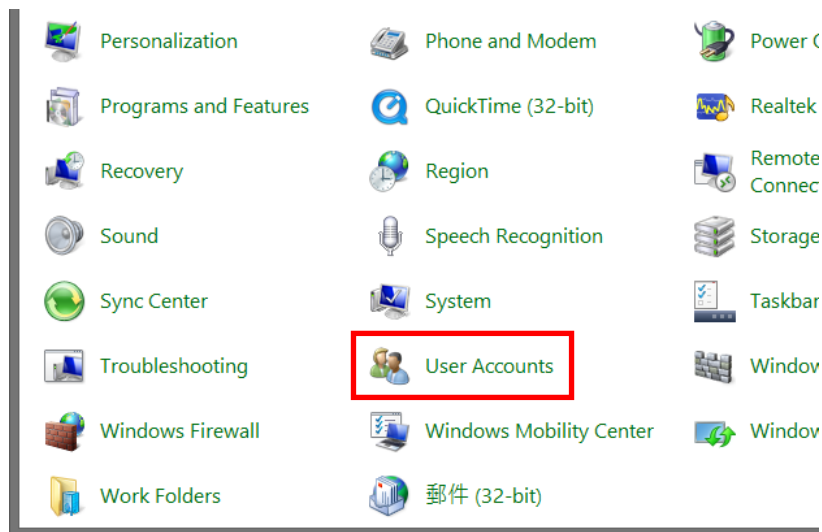
## 6.5 Change the Series and Model Type

After installing G-Mark, you can change the series and model type through the model manager program.

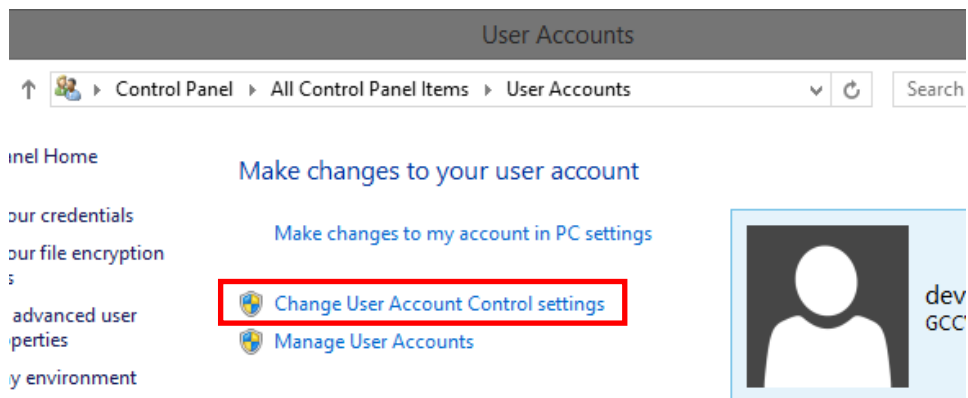
The following steps illustrate how to change the series and model type

### 6.5.1 Change the User Account Control Settings

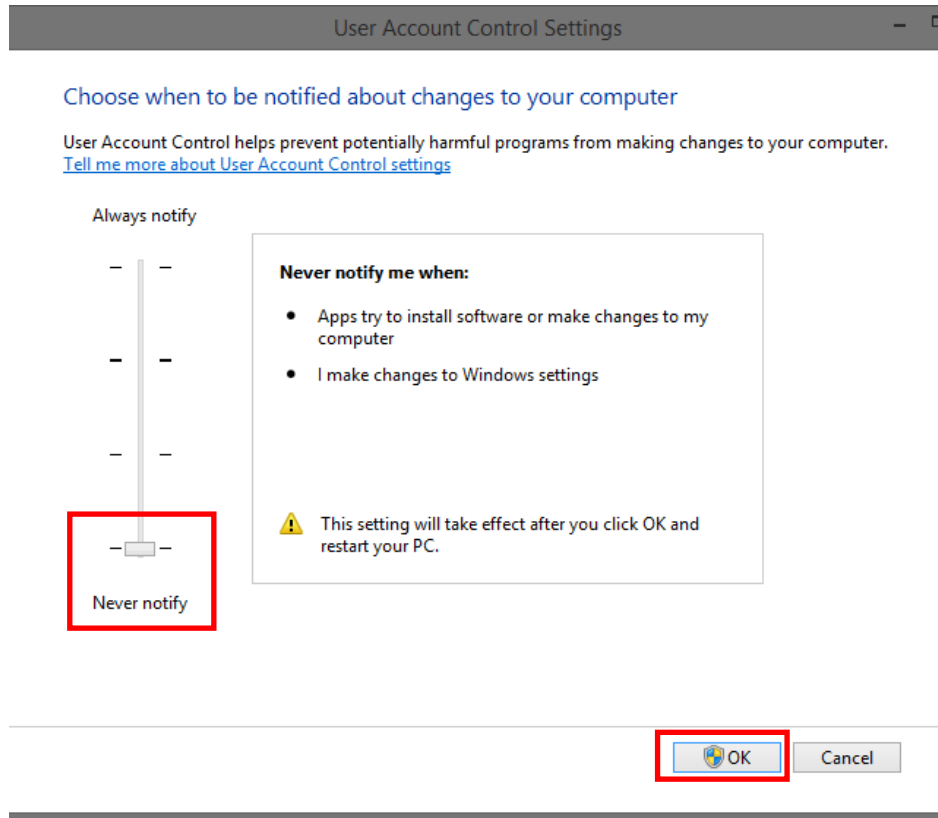
**Step 1.** Please go to “control panel” and click on “User Accounts”



**Step 2.** Then click on “Change User Account Control settings”

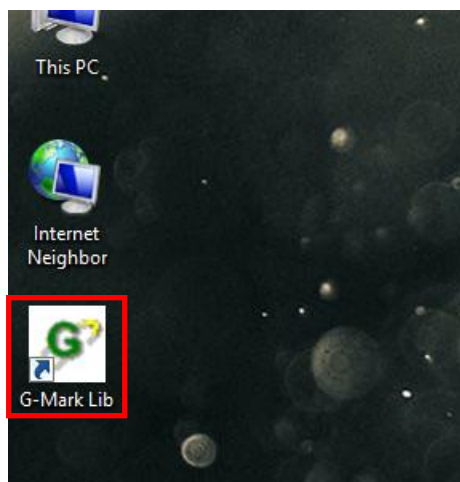


**Step 3.** Set the notification to be “Never notify” and press “OK” to complete the setting



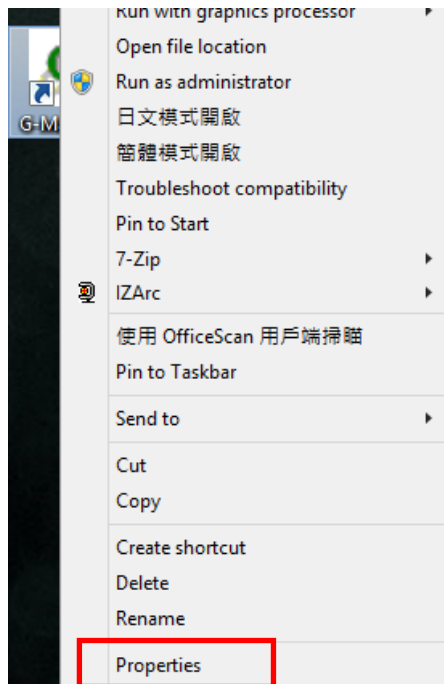
## 6.5.2 Setting the “Run this program as an administrator”

**Step 1.** Find the "G-Mark Lib" which is located at the desktop of PC

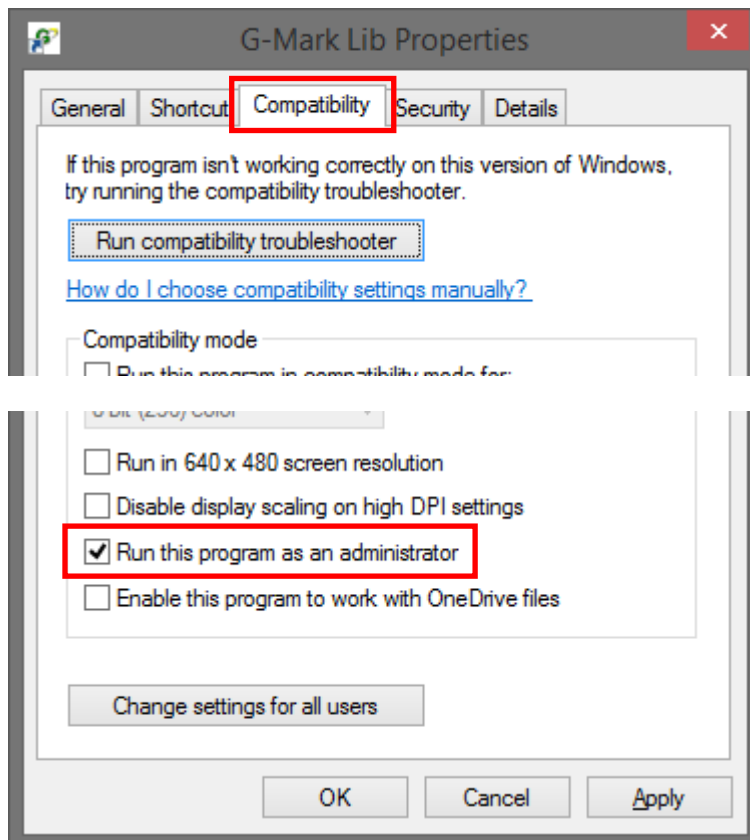




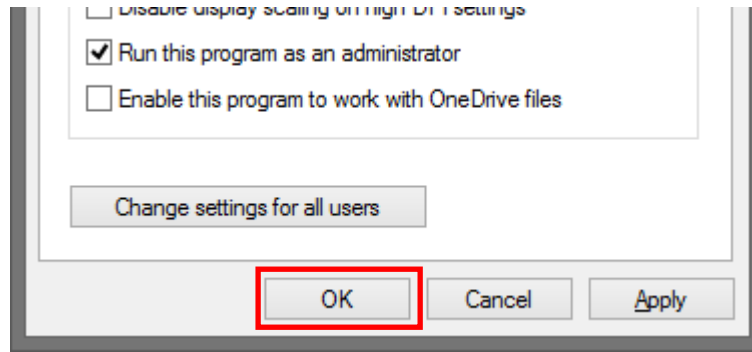
**Step 2.** Position the mouse on the "G-Mark Lib" and right-click, properties for the "G-Mark Lib" appears then press the properties.



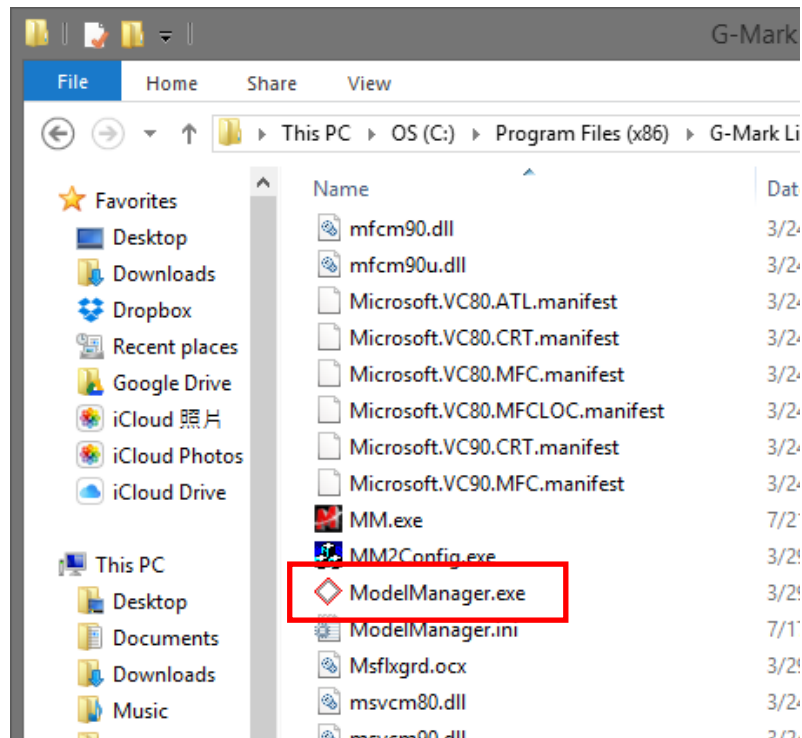
**Step 3.** Click "Compatibility" tab and select checkbox "Run this program as an administrator"



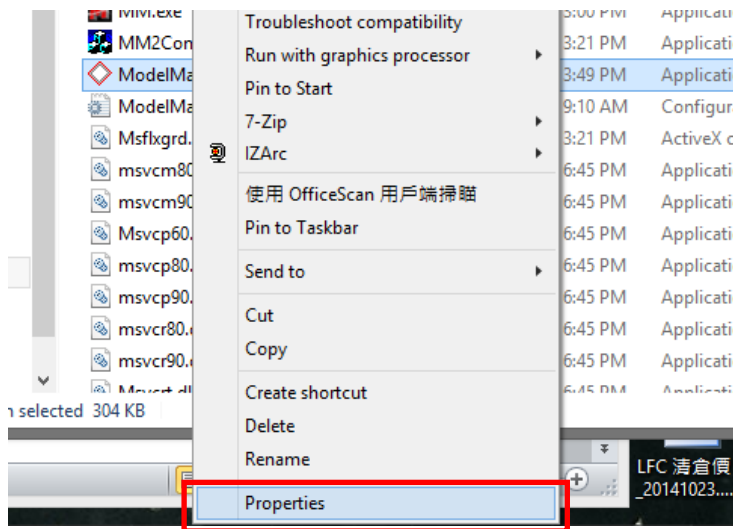
**Step 4.** Press “OK” to complete the setting



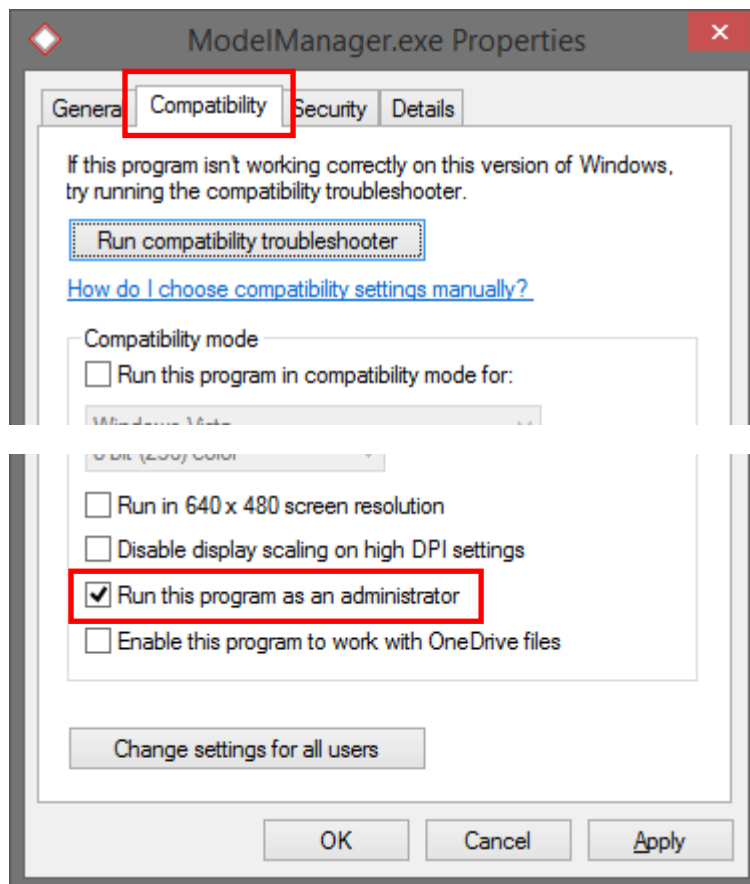
**Step 5.** Find the "ModelManager.exe" which is located at "C:\Program Files (x86)\G-Mark Lib"



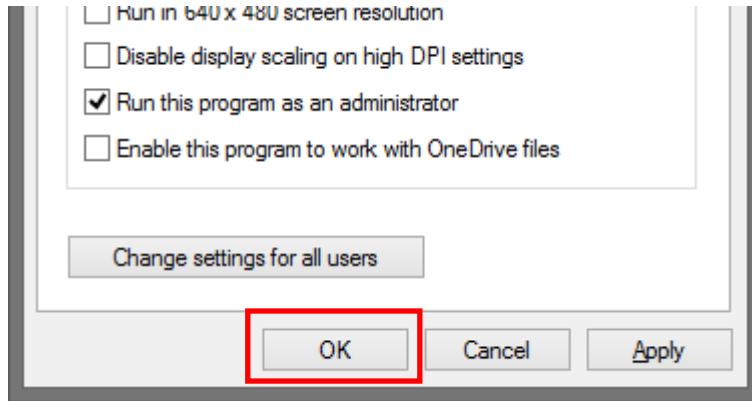
**Step 6.** Positions the mouse on the “ModelManager.exe” and right-click, properties for the “ModelManager.exe” appears then press the properties



**Step 7.** Click “Compatibility” tab and select checkbox “Run this program as an administrator”

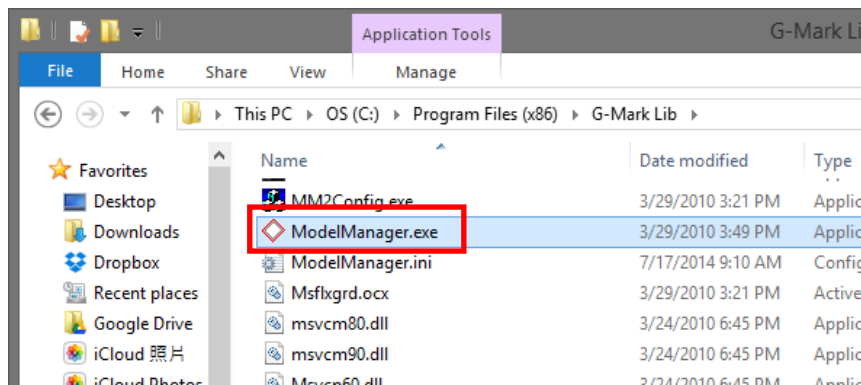


**Step 8.** Press “OK” to complete the setting

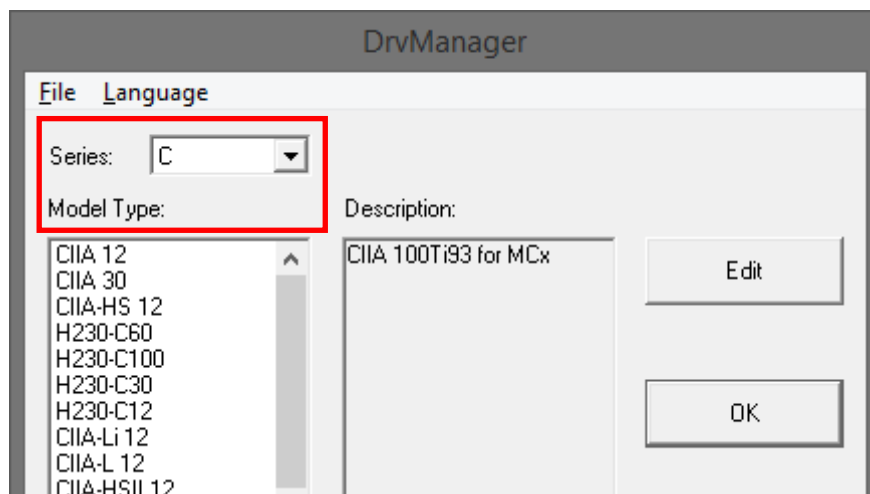


### 6.5.3 Change the series and model type

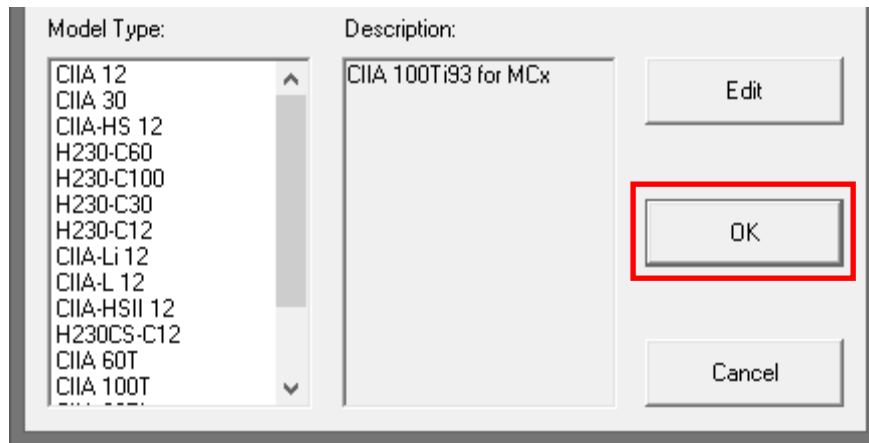
**Step 1.** Open the "ModelManager.exe" which is located at "C:\Program Files (x86)\G-Mark Lib"



**Step 2.** Model Manger window will show up, select your series & model type



**Step 3.** Press “OK” to complete the change series and model type



#### NOTE

Wrong setting for series and model type may cause the machine out of order.

## 6.6 Waveform Setup

### 6.6.1 Waveform

A waveform is a pulse with a specific shape, pulse energy and duration. The benefits of this are that it allows the customer to adjust the pulse conditions to optimize marking, micromachining and applications.

This gives users flexible control over pulse duration and peak power through the use of predefined waveforms. Each waveform is optimized for pulse energy and peak power at a given pulse duration and frequency. These waveforms can be used at any power demand and frequency giving users great scope for pulse characteristic optimization for specific applications.

### 6.6.2 Waveform Application

One of the waveform benefits is to do many marking effects on metal materials. The illustration utilizes a GCC LaserPro StellarMark IFII 20SHS to process matte 304 stainless steel. Apply different waveform selection, contrast marking of black, white, glossy and deep marking can be achieved.



#### **Gold Effect**

Marking with WF3



**White Effect**  
Marking with WF0



**Deep Effect**  
Deep engraving with WF0  
Polishing with WF4



**Glossy Effect**  
Marking with WF20



**Black Effect**  
Marking with WF5

#### **NOTE**

1. Color marking is very sensitive to material surface treatment or texture (matte, glossy, brushed, or mirror), spot size (power density), and material composition. Even same parameters applied on same materials, the color can't be guaranteed to repeat correctly.
2. Different spot size will generate different laser marking contrast, ensure materials placed evenly during laser processing will help deliver consistent laser marking quality.
3. The color of marking may vary to different colors when viewing in different angle with reflecting ambient light.

### 6.6.3 Waveform Table

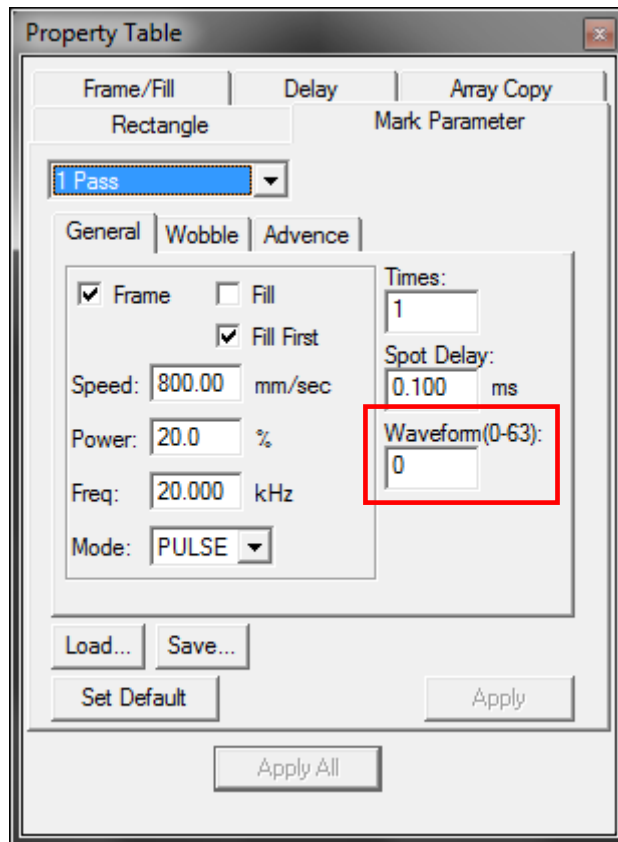
Below chart is the different waveform technical data.

Waveform Number	IFII 20JFL			IFII 20SHS			IFII 30JFL			IFII 60JFL											
	Pulse Duration (ns)	Pulse Frequency (kHz)	Pulse Energy (mJ)	Pulse Duration (ns)	Pulse Frequency (kHz)	Pulse Energy (mJ)	Pulse Duration (ns)	Pulse Frequency (kHz)	Pulse Energy (mJ)	Pulse Duration (ns)	Pulse Frequency (kHz)	Pulse Energy (mJ)									
0	200	25	0.8	220	35	0.57	200	37	0.8	200	50	1.2									
1				120	55	0.36															
2				55	90	0.22															
3				25	170	0.12															
4				18	270	0.074															
5 - 10				15	290	0.068															
11				220	35	0.57															
12				205	37	0.54															
13				200	39	0.51															
14				190	44	0.45															
15				160	48	0.42															
16				140	51	0.39															
17				120	55	0.36															
18				100	60	0.33															
19				95	63	0.32															
20				85	68	0.29															
21				75	72	0.28															
22				65	80	0.25															
23				55	90	0.22															
24				45	105	0.19															
25				35	125	0.16															
26				25	170	0.12															
27				18	270	0.074															
28				15	290	0.068															
29 - 63				Duplicate of waveform 28																	



### 6.6.4 Waveform Parameter Adjustment

Waveform selection can be adjusted under the Marking Parameter tab of the Property Table in StellarMark G-Mark software



# Chapter **7**

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## **Lens Adjustment**

[Import Lens Parameter](#)

[Lens Parameter Card](#)

[Lens Parameter Adjustment](#)

## 7.1 Import Scan Lens Parameter

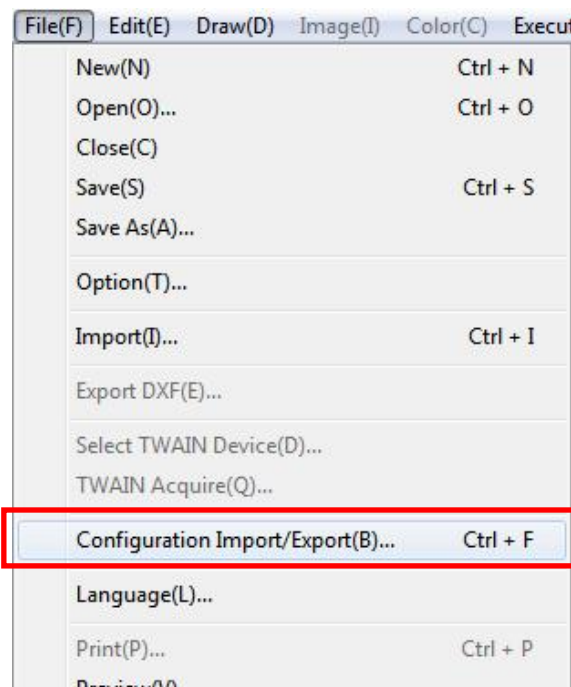
Each StellarMark marking system is calibrated with different scan lens size in factory to ensure precise marking quality. Please perform the following steps to import the factory default scan lens parameters.

### NOTE

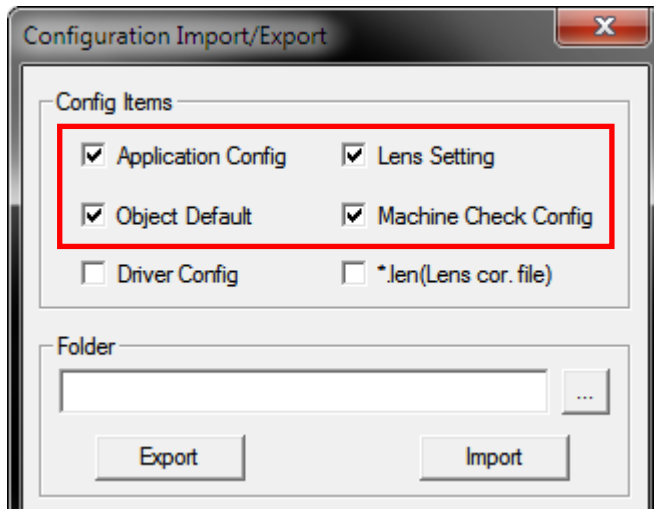
The lens parameter in the CD is specific to each laser marker, apply it to different laser marker may cause imprecise marking results. If changing to different scan lens is required, always re-do the lens calibration following steps in section 7.3.

**Step 1.** Start the G-Mark software program.

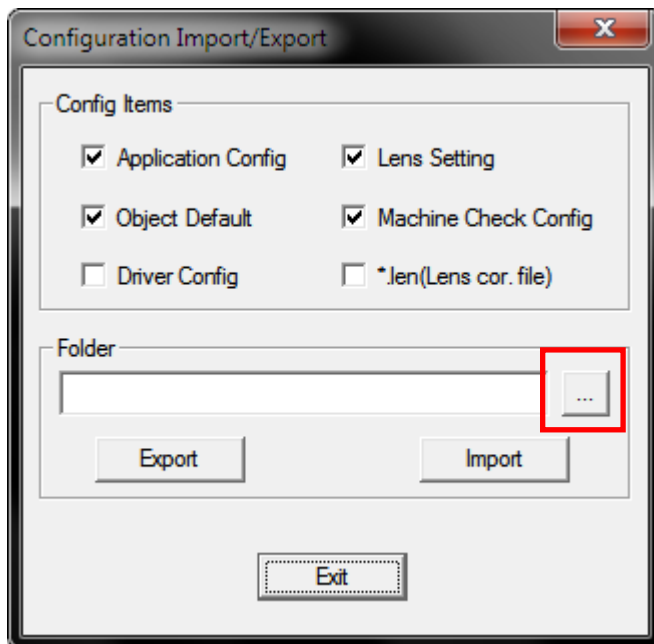
**Step 2.** Select File→Configuration Import/Export.



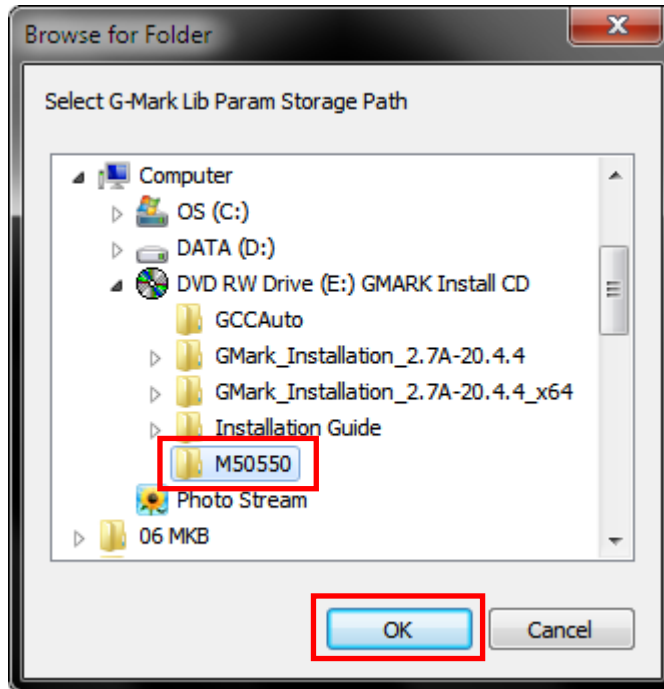
**Step 3.** Check the Application Config, Lens Setting, Object Default and Machine Check Config selections.



**Step 4.** Click on the Folder location icon shown below.

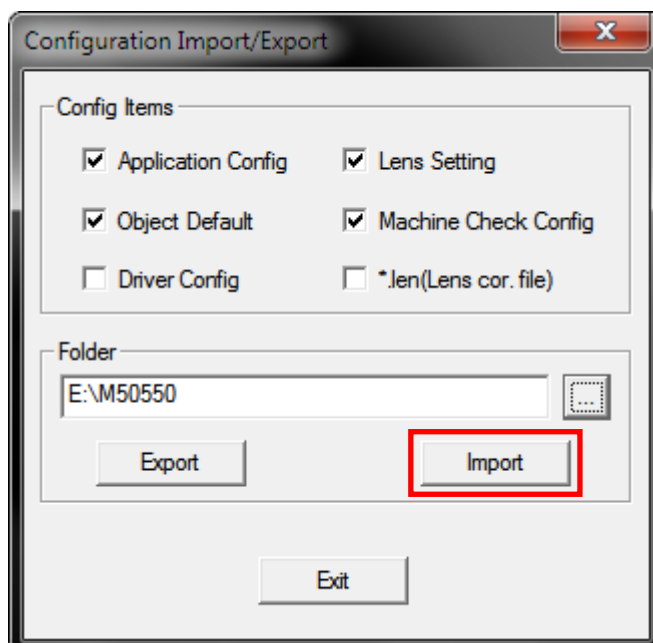


**Step 5.** Locate the Lens Parameter folder in the Installation CD and select OK. (Note: The lens parameter folder is named with the serial number of your machine.).

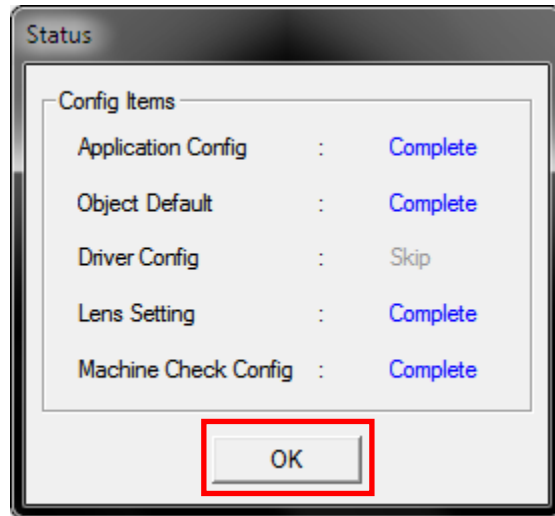


If there is no "Lens Parameter" folder found under G-Mark installation CD, please skip to section 7.2 and follow the Lens Parameter Card instructions.

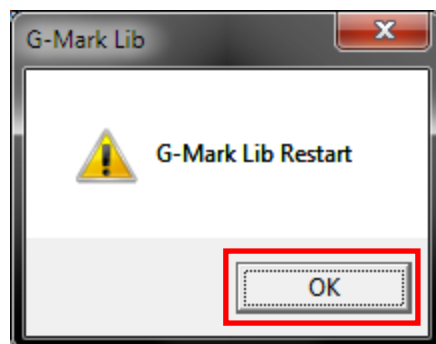
**Step 6.** Click the "Import" button.



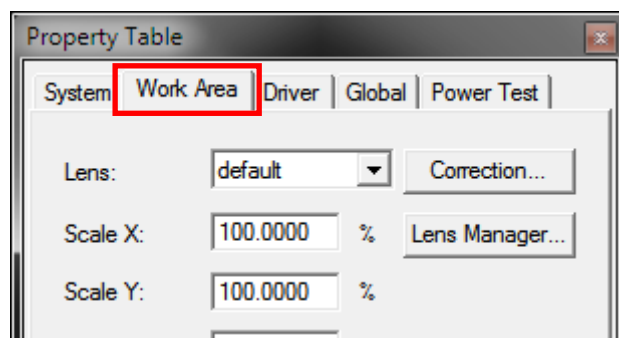
**Step 7.** Click on the "OK" button after the Status screen shows Complete.



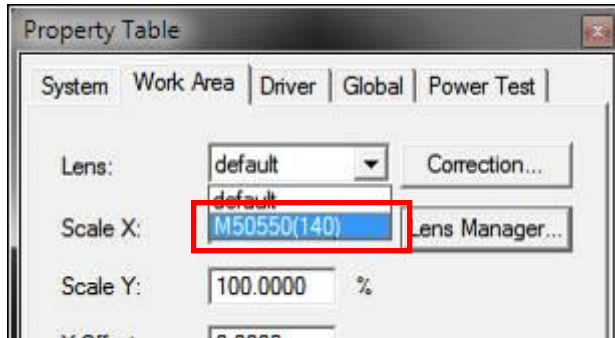
**Step 8.** Click on "OK" when the "Restart message prompts up.



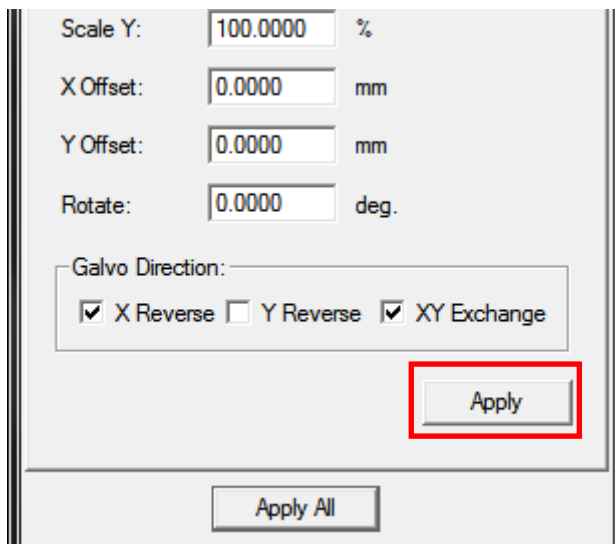
**Step 9.** Click on the "Work Area" Tab under the Property Table after G-Mark restarts.



**Step 10.** The Lens parameter can be found in the Lens list. ( Named with the serial number of your machine.)



**Step 11.** Click on "Apply" after selecting the Lens and the settings will be loaded.



## 7.2 Lens Parameter Card

Before you start to operate the laser marker, the output scale of laser marker and the G-Mark marking software must be adjusted to match each other. Otherwise, the marking lines will be distorted or will have an improper scale of the marking content.

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

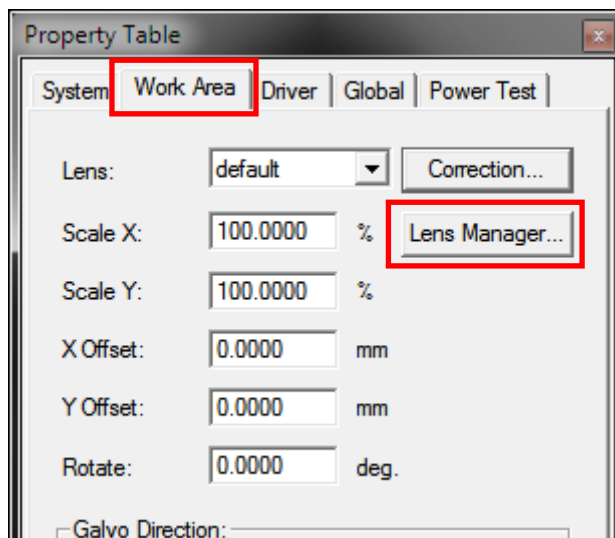


The image shows a lens parameter card for the GCC LaserPro StellarMark system. It features the following fields and controls:

- Working Area:** A text input field followed by "mm".
- Offset:** Two columns of input fields. The first column has "X:" and "Y:" labels with "mm" units. The second column has "X:" and "Y:" labels with "%" units.
- Scale:** Two columns of input fields. The first column has "X:" and "Y:" labels with "%" units. The second column has "X:" and "Y:" labels with "%" units.
- Rotate:** An "Angle" input field, and "Center X" and "Center Y" input fields.
- Correction:** Three checkboxes: "X reverse", "Y reverse", and "XY exchange".
- Correction Diagrams:** Three small diagrams representing different correction shapes: a rectangle, a trapezoid, and a parallelogram.
- Correction Parameters:** Three columns of input fields for "X:" and "Y:" values, corresponding to the three diagrams above.

**Step 2.** Open G-Mark marking software

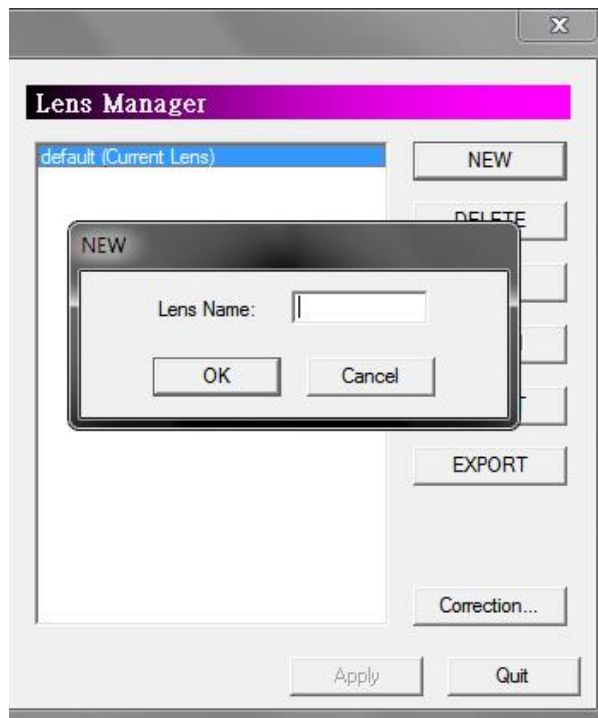
**Step 3.** Click on work area from property table and press "Lens Manager..."



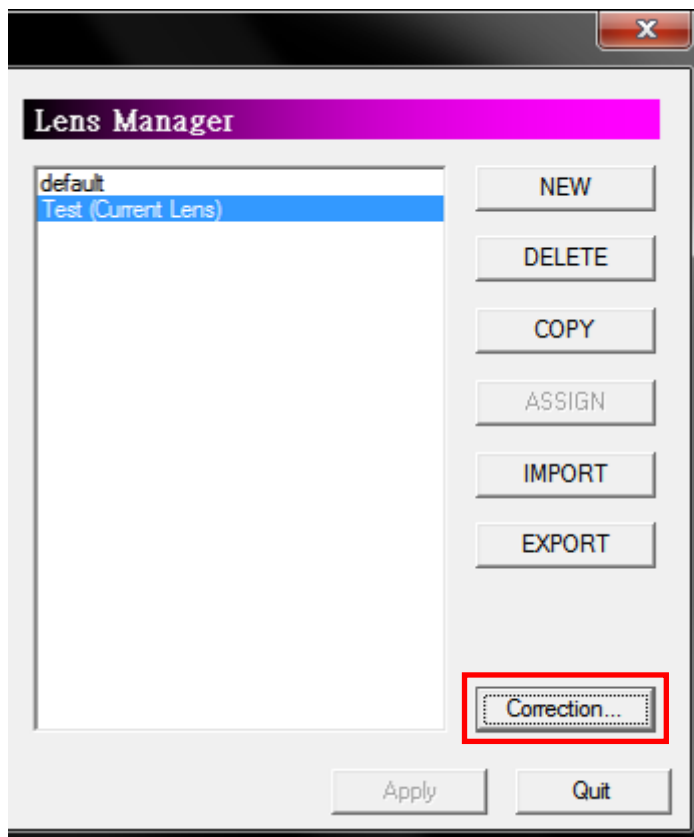
The image is a screenshot of the "Property Table" dialog box in the G-Mark marking software. The "Work Area" tab is selected and highlighted with a red box. The "Lens" dropdown menu is set to "default". The "Scale X" and "Scale Y" fields are both set to "100.0000 %". The "X Offset" and "Y Offset" fields are both set to "0.0000 mm". The "Rotate" field is set to "0.0000 deg.". The "Lens Manager..." button is highlighted with a red box. The "Correction..." button is also visible.



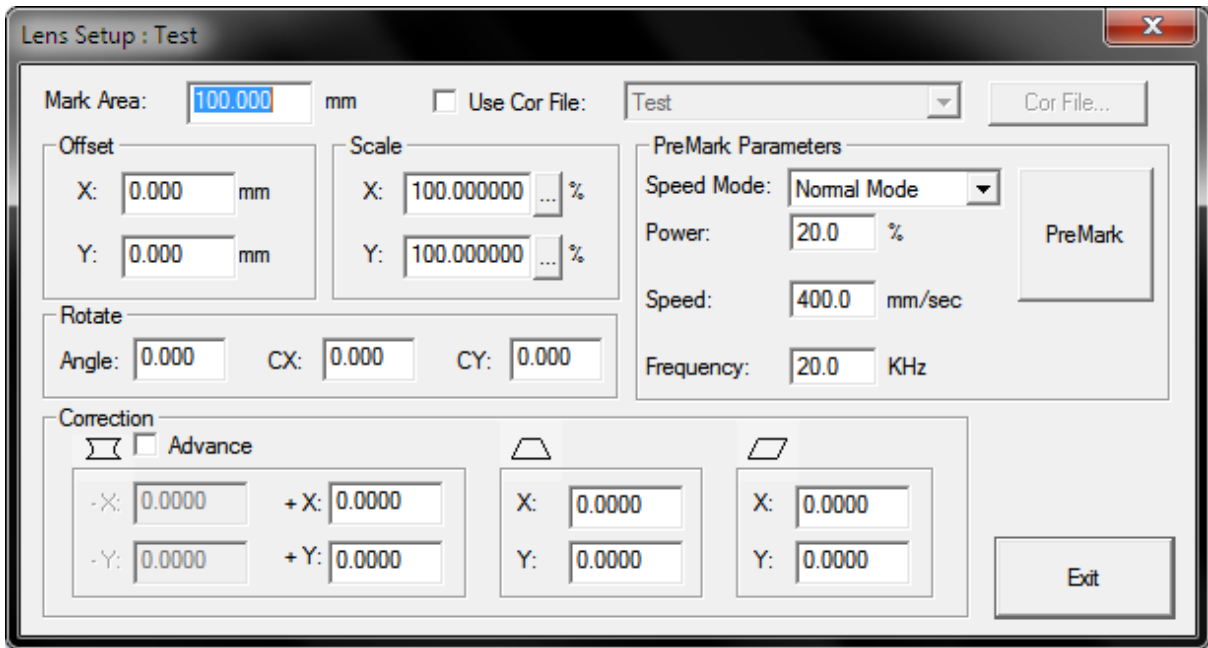
**Step 4.** Press “New” to create a new name for the lens and press “OK”



**Step 5.** Click “Correction...” to settings lens



**Step 6.** Fill in the numbers that are showing on the card to the below table.  
 Press “Exit” to save the settings of the lens



**NOTE**

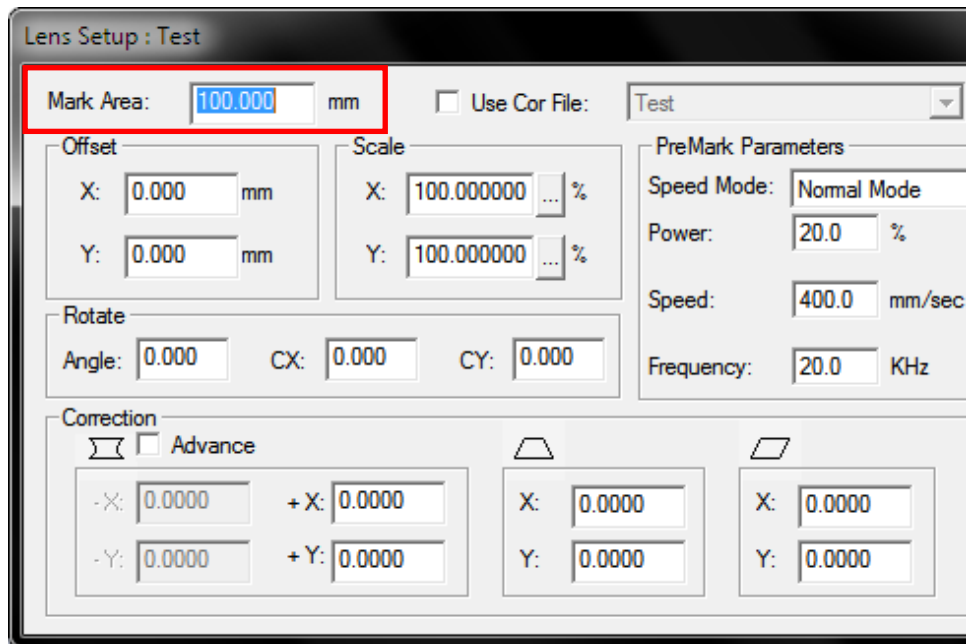
If the size of scan lens is changed, the lens parameter will be varied too. Follow section 7.3 to calibrate with new scan lens.

## 7.3 Lens Parameter Adjustment

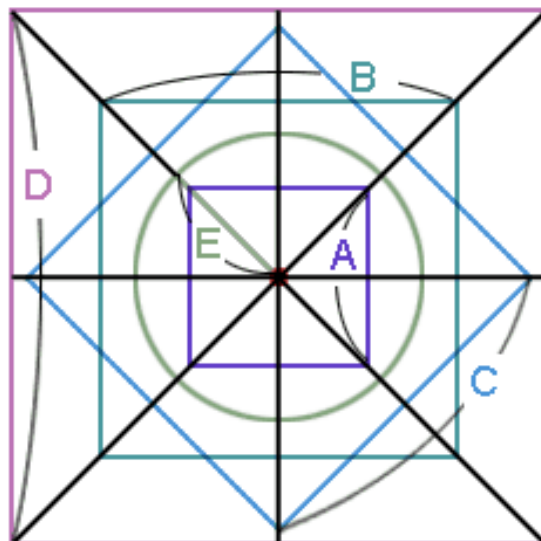
Please perform the following steps to find the appropriate lens parameter when changing to different scan field of scan lens.

**Step 1.** Create new name for the new lens.

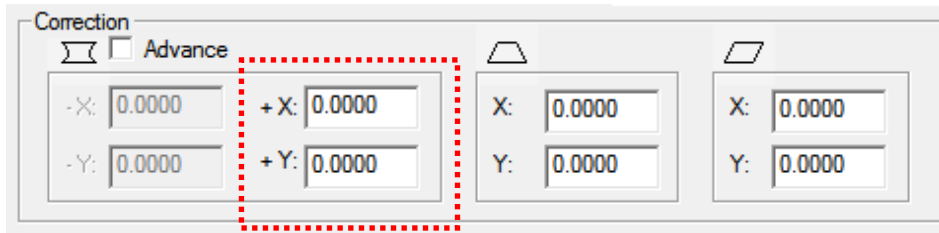
**Step 2.** Change the mark area and press “Exit” to save the settings



**Step 3.** Mark the below pattern and check the output quality.



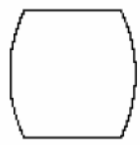
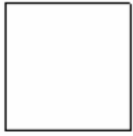
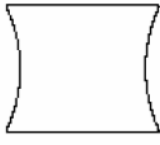

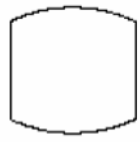

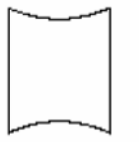

**Step 4.** If there is barrel square, go back to the “lens setup” to correct it.



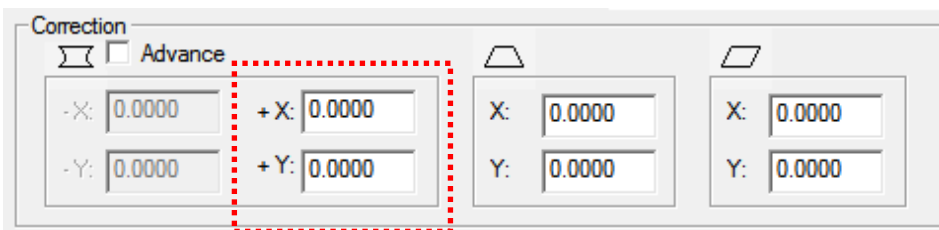
**Step 5.** If the figure becomes protuberant in X-axis, the X value will need to be.

Increased like 0.002; while if now it become indentation, the X value will have to be reduced to as 0.0014.

Keep adjusting the value until it is acceptable.

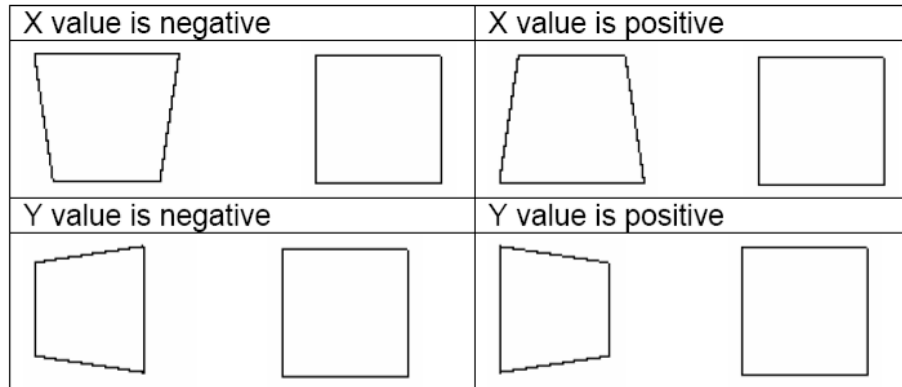
X value is positive	X value is negative
 	 
Y value is positive	Y value is negative
 	 

**Step 6.** If the square is trapezoid, go back to the “lens setup” to correct the irregular square.

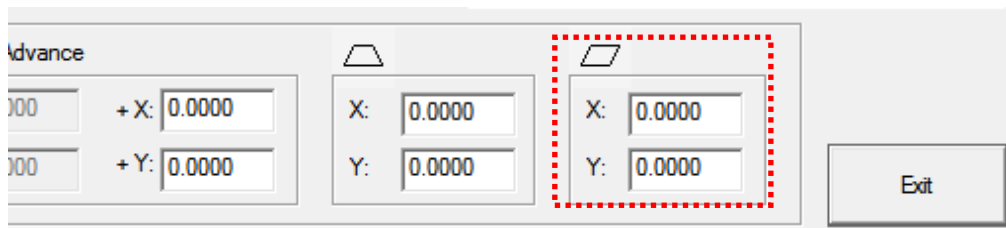


**Step 7.** If the number is adjusted from 0.0 to 0.1, the adjustment range is from 0mm up to 0.5mm. (For 140x140mm scan lens)

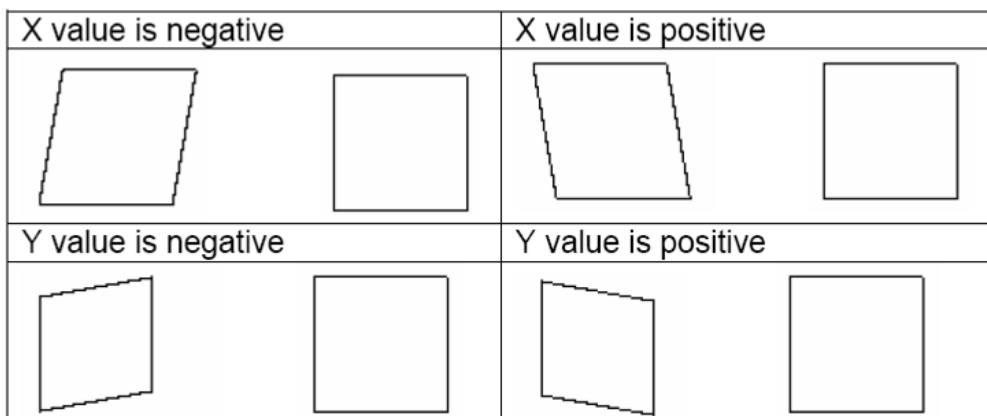
Keep adjusting the value until it is acceptable.



**Step 8.** If there is an irregular parallelogram, go to the “lens parameter” under the Configure to correct the irregular angle.

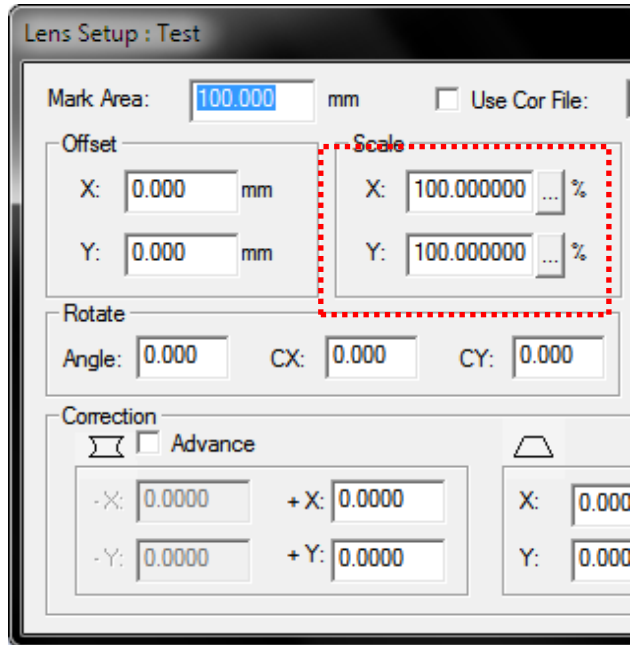


**Step 9.** Keep adjusting the value until it is acceptable.



**Step 10.** Measure the lengths of A, B, C, D and E of the square pattern.

Make sure these lengths match to the expected length you set from the marking software.



**Step 11.** If not, correct scale proportionally.

# Chapter **8**

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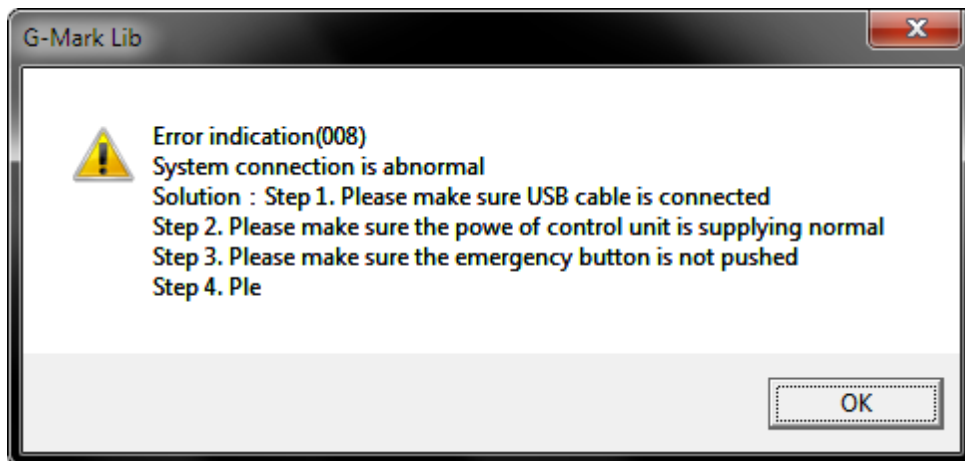
## **Error Message**

The error indications shown on G-Mark 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 G-Mark 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:**

<b>Error Indications</b>
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 9

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## External Control

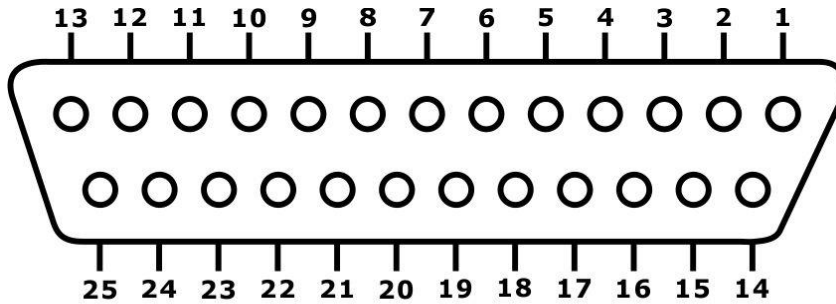
I/O Pin Assignment

Laser Working Flow Chart

Laser Reaction Timing Diagram

## 9.1 I/O Pin Assignment

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



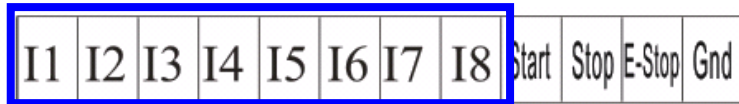
<b>Pin 1~Pin 8</b>	<b>Output 1~8</b>
<b>Pin 9</b>	<b>Alarm</b>
<b>Pin 10</b>	<b>Ready</b>
<b>Pin 11</b>	<b>24V</b>
<b>Pin 12</b>	<b>GND</b>
<b>Pin 13</b>	<b>X</b>
<b>Pin 14~Pin 21</b>	<b>Input 1~8</b>
<b>Pin 22</b>	<b>Start</b>
<b>Pin 23</b>	<b>Stop</b>
<b>Pin 24</b>	<b>E-Stop</b>
<b>Pin 25</b>	<b>GND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

I/O	TYPE	DESCRIPTION
O1~O8	<b>OUTPUT</b>	There are 8 output signals (Stellar Mark → External device) available to communicate with external devices.
Alarm (Out)	<b>OUTPUT</b>	<ul style="list-style-type: none"> <li>➤ When Alarm is inactivated, the laser marker will send signal out.</li> <li>➤ When Alarm is activated, the laser marker will send out a signal out.</li> <li>➤ 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).</li> </ul>

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

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

**(1) Input pins**



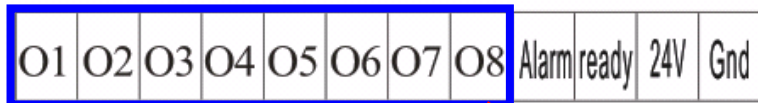
Property Table

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

Not Available

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

**(2) Output pins**



Property Table

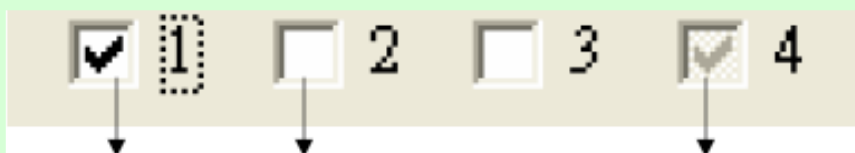
Layer	Input	Output
Output Status		
<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	3	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	4	<input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

Not Available

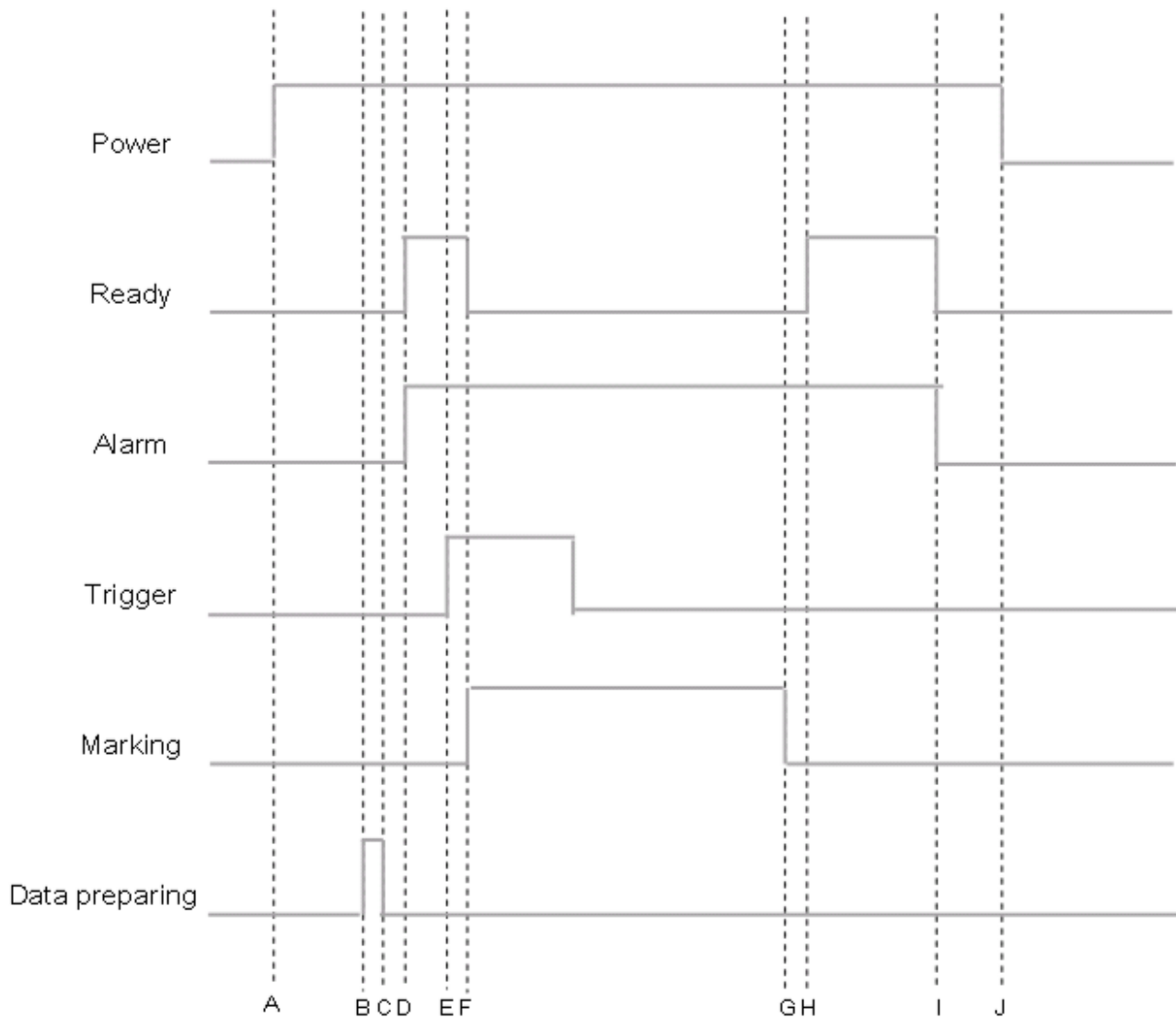
The pin 9 to pin 16 output status are not available to communicate with laser marker.

**NOTE**

Signal high and low definitions in G-Mark Library software



## 9.2 Laser Working Flow Chart



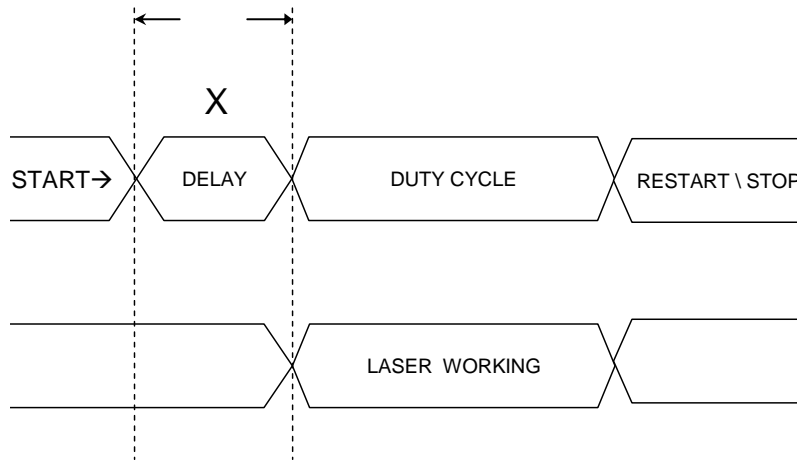
**Definitions:**

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	G-Mark marking software is closed
J	Power off

### 9.3 Laser Reaction Timing Diagram

◆ Start → Fire delaying time

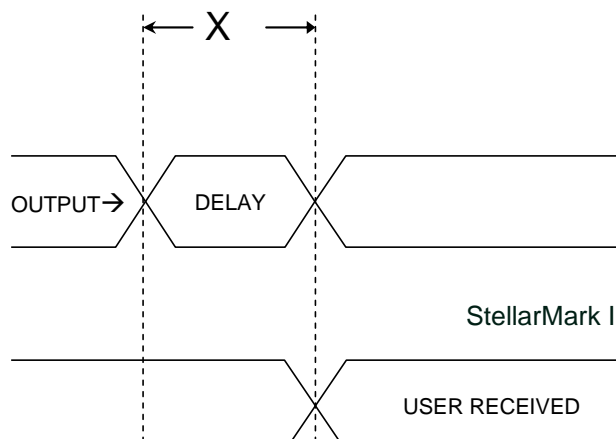
It will take about 0.1m sec  $<X<$  50m sec to fire after receive the command of “Start”



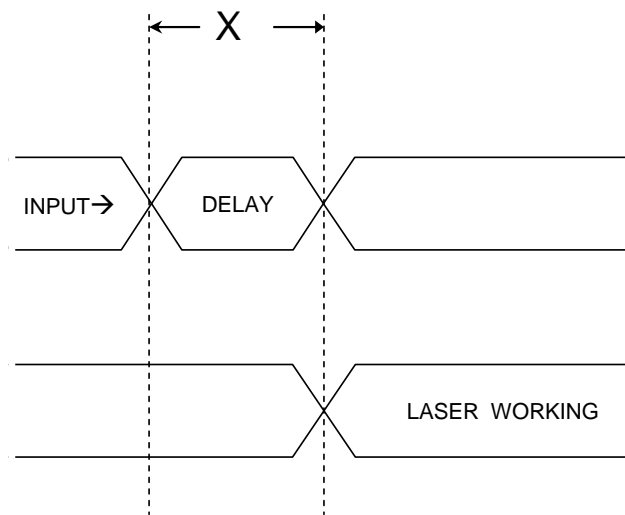
$$0.1 \text{ m sec} < X < 50 \text{ m sec}$$

◆ 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



- ◆ 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 10

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## Basic Maintenance

Keeping your StellarMark IFII-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 scan lean of IFII-series.

The frequency of the cleaning schedule will depend on 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 IFII-series before cleaning.

## **10.1 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 IFII-series is properly secured and mounted.

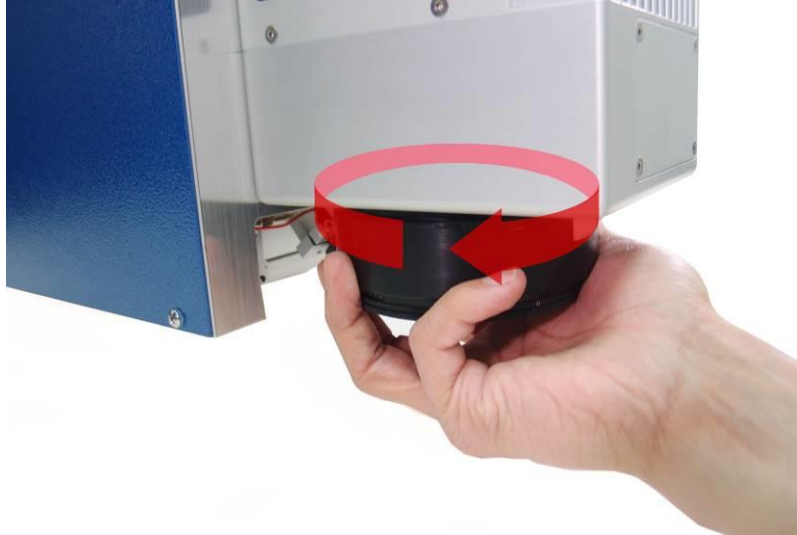
If a problem ever arises with the G-Mark software or the StellarMark laser marker, be sure to notify GCC local representative as soon as possible.

## **10.2 Cleaning the Focal Lens**

Oil from hands and the residue that builds up on the focal lenses can distort the laser beam passing through, resulting in poor quality markings and may cause cracks by the uneven heat conduction.

Please perform the following steps:

**Step 1.** Remove the focal lens from the marker



**Step 2.** Apply some lens cleaner on cotton swab



**Step 3.** Remove the residue mark.



**Step 4.** Let the focal lens dry before reattaching it to the marker.



Use acetone if the lens cleaner will not remove the mark. Be careful not to scratch the lens. 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**

Never touch the scan lens with your bare hand. The oils from your hand will distort the laser beam passing through the lens. Use finger caps or rubber gloves when cleaning is recommended.



# Chapter **11**

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## **Appendix**

### IFII-Series Specification

## 11.1 IFII-Series Specification

StellarMark I-series		IFIIS 20JFL	IFII 20SHS	IFIIS 30JFL	IFIIS 50JFL	IFIIS 60JFL
Laser Source	Wavelength	1064 nm				
	Type	Yb-doped, MOFA				
	Output Power	20W		30W	50W	60W
	Beam Mode	TEM00				
	Beam Quality (M <sup>2</sup> )	<1.5	<1.3	<1.5	<1.5	<1.8
	Frequency	1-600 kHz	1-1000 kHz	1-600 kHz	1-600 kHz	1-400 kHz
	Waveform	Single	25	Single	Single	Single
	Cooling	Air-cooled				
Max. Linear Marking Speed		3,000 mm/s				
Max. Marking Speed		10,000 mm/s				
Electrical Requirements	Power Supply	100~240V, 50/60 Hz Max 15 Amp				
	Power Consumption	Max. 1650W				
Dimensions	Laser head	L 497 x W 168 x H 152 mm				
	Control unit	L 470 x W 360 x H 241 mm				
Laser Marker Weight		9 kg				
Control Unit Weight		25 kg				
Operating system		Microsoft Windows 2000 / XP / Vista(32/64 Bit) / 7(32/64 Bit) / 8(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 LFC) 2006/42/EC Machinery Directive 2014/35/EU Low Voltage Directive 2014/30/EU Electromagnetic Compatibility Directive				

StellarMark IFIS 20/30/50/60JFL Scan Lens

Model No.	70	110	180	300
Working Area	70x70 mm	110x110 mm	180x180 mm	300x300 mm
Spot Size	27 μm	44 μm	71 μm	114 μm
Working Distance	142 ± 1 mm	220 ± 2 mm	350 ± 2 mm	553 ± 3 mm
Repeatability**	0.03 mm	0.03 mm	0.04 mm	0.06 mm

StellarMark IFIS 20SHS Scan Lens

Model No.	70	110	180
Working Area	70x70 mm	110x110 mm	180x180 mm
Spot Size	22 μm	35 μm	55 μm
Working Distance	142 ± 1 mm	220 ± 2 mm	350 ± 2 mm
Repeatability**	0.03 mm	0.03 mm	0.04 mm

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

All above spot size will be material dependent.

\*According to theoretical calculation.

\*\*The test is 8-hour continuous firing with power level at 30% using a 60JFL