

LFC II Workstation User Manual



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Chapter 1

Safety

Safety Ratings

Safety Label

The Safety Interlock System

Safety Measures

Operating Environment

1.1 Principles of CO2 Laser

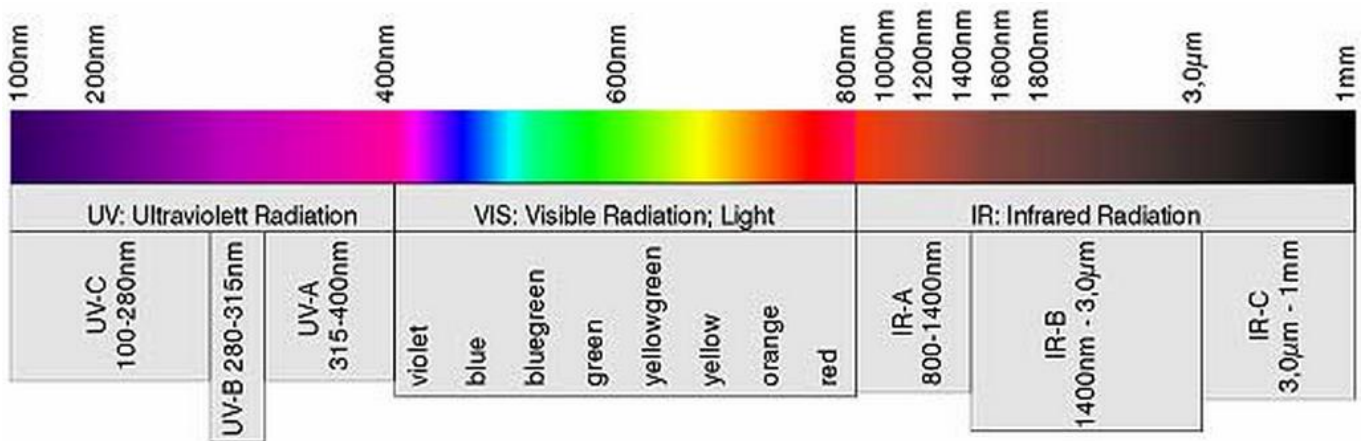
LASER is the acronym for Light Amplification by Stimulated Emission of Radiation. GCC LaserPro StellarMark C series CO₂ (carbon-dioxide) laser works by electrically stimulating the molecules within a carbon dioxide gas mixture. When focused through a lens, this highly-intense, invisible beam will vaporize many materials. Depending on the speed and intensity of the projected beam, a CO₂ laser may be used to mark or cut through a wide variety of materials.

1.2 Principles of 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.


1.3 Safety Rating

The GCC LaserPro LFC Series Workstation carries two kinds of laser markers, a sealed CO₂ (carbon-dioxide) laser for StellarMark C series laser marker, or a fiber laser for StellarMark I series laser marker. Both laser markers emit intense and INVISIBLE laser radiation, C series with a wavelength of 10.6 microns for CO₂ laser, while I series with a wavelength of 1064nm (1micron) for fiber laser in the infrared spectrum. The LFC Series Workstation is designed with laser safety rating of **Class 1**, meaning that the system is equipped with key safety features and an enclosed laser head to completely contain the laser under normal use. One of the key safety features found on the LFC Series workstation is **Class 2** red dot safety guidance pointers allowing users to see where the laser beam is travelling and helping find out the precise focus point for laser to do quality job. Even though the LFC Series Workstation is equipped with the most powerful laser, through proper usage and taking necessary hardware safe guards will make it an extremely safe machine. When the side doors (left and right) are open, the laser machine becomes a **Class 4** equipment, users **MUST** wear safety goggles to operate the machine.



1.4 The Safety Interlock System

The LFC Series Workstation is equipped with a safety interlock system utilizing limit switch sensors on the electronically controlled front door. The limit switch sensor will shut the laser off when detecting front door open. Do not attempt to remove or modify these limit switches or any other component of the safety interlock system. If any time, the front 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.

1.5 Safety Label

According to CDRH standards, all fixed or removable covers that allow access to a laser beam must have the 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 inside of the machine and be visible in the event the 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 outside of the machine.

In compliance with CDRH standards, the required warning labels are affixed at the time of manufacture to the GCC LFC Series Workstation in the 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 rear right side of LFC Series Workstation. All the product information such as Serial Number, Model Name, Electric power and Input can be found here. Before requiring any tech support, always provide service person the information on this label.

	
Manufacturer	Great Computer Corporation
Product	Laser Marking Center
Model	LFC II
Input	AC 110-240V, 50-60Hz / single phase
Power Consumption	1650W
Manufactured	January 2015
Serial Number	T1WS000001
Class 2 Laser Product This product complies with EN60204-1:2006 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 removed 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.



StellarMark C Series
Laser Marker CDRH Label



StellarMark I Series
Laser Marker CDRH Label

CE Label

This label identifies the classification of the Model in accordance with IEC 60825-1. It is located on the rear of the LFC Series Workstation.



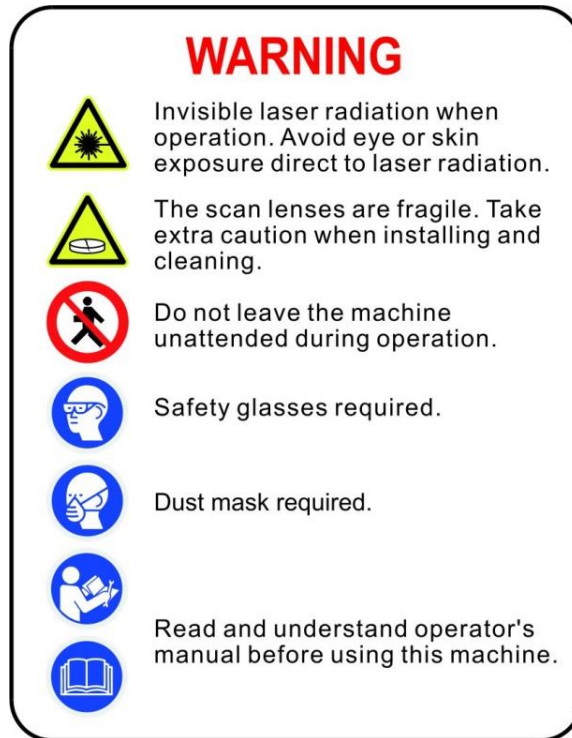
Emergency Stop Label

This label indicates the emergency stop button. You can find this label on the right side of LFC Series Workstation front button operation section.



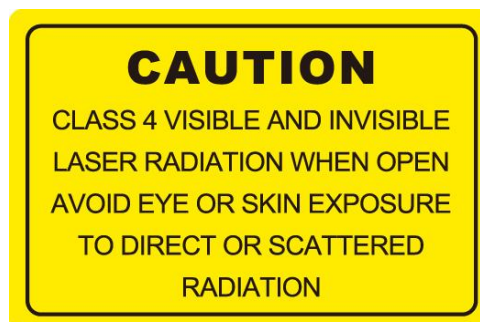
Warning Label

Warning Label is written with all the necessary information to be aware of during machine operation.



Door open warning labels

Labels are located on the machine's cabinet doors, machine becomes Class 4 when doors open.



1.6 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 GCC LFC Series 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

StellarMark C series laser marker is shipped with a single pair of safety goggles. If additional safety goggles are required, please contact GCC directly or GCC local representative. If you wish to purchase one on your own, please make sure the safety goggles meet these requirements:

190 - 398 nm OD5+

10,600 nm OD5+

Visible Light Transmission: 92.9%

NOTE

StellarMark I series laser marker is shipped with a single pair of safety goggles. If additional safety goggles are required, please contact GCC directly or GCC local representative. 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.
- 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.

1.7 Operating

Please follow the guidelines when considering a suitable location to set the GCC LFC Series. Improper work environments may lead to operational malfunction and/or unsafe working conditions. The GCC LFC 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 – 30 degrees Celsius** or 58 – 85 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

Unloading & Unpacking

Contents & Accessories checklist

2.1 Unloading & Unpacking

The GCC LaserPro LFC Series Workstation is shipped in one crate that contains machine, software, and all of the necessary accessories. The following section shows detailed step-by-step instructions for unpacking and assembly the accessory to workstation.

WARNING

More than one person may be needed when loading and unloading the shipping crate in order to avoid body injury or damage to the machine.

NOTE

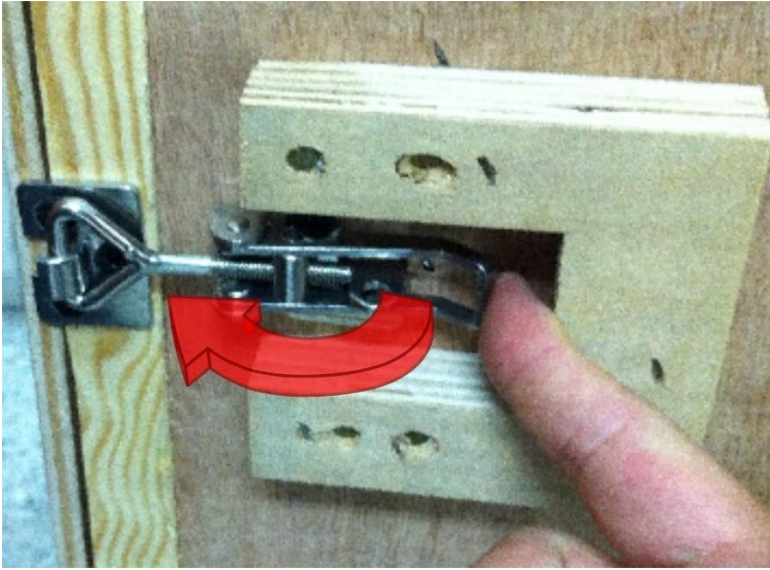
Please keep and store the original shipping crate in case it is needed for future transportation or product servicing.

Step 1. Move the shipping crate to the proximity of the designated work area.

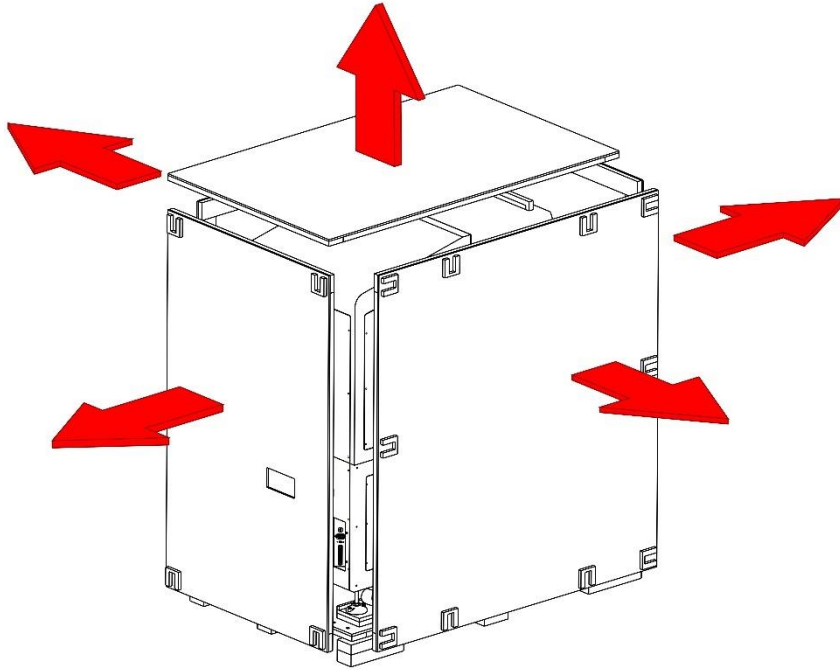
Step 2. Remove the bolt.



Step 3. Loosen the door lock



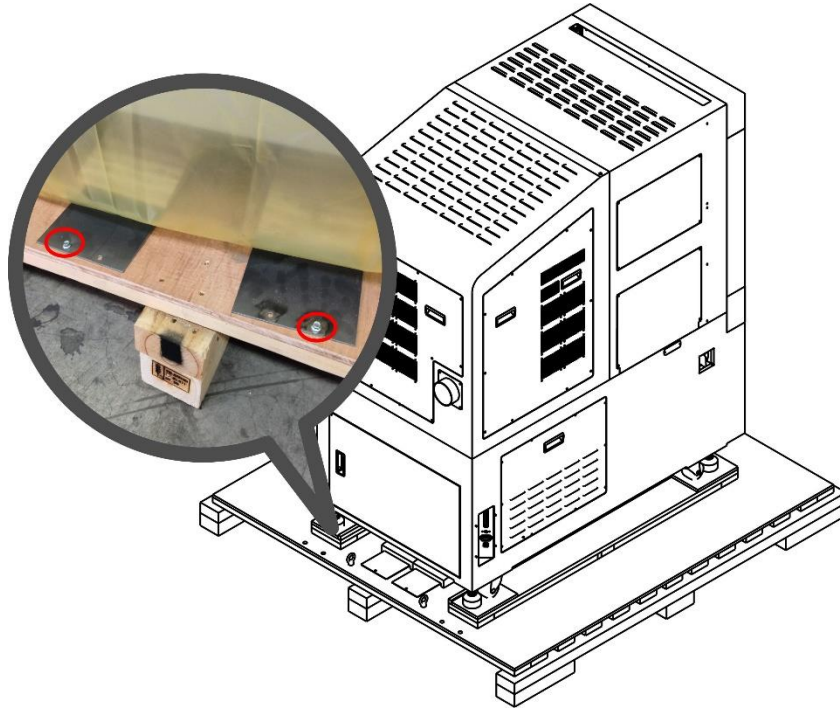
Step 4. Loosen the screws fixed crate top and side panels, and remove all the panels.



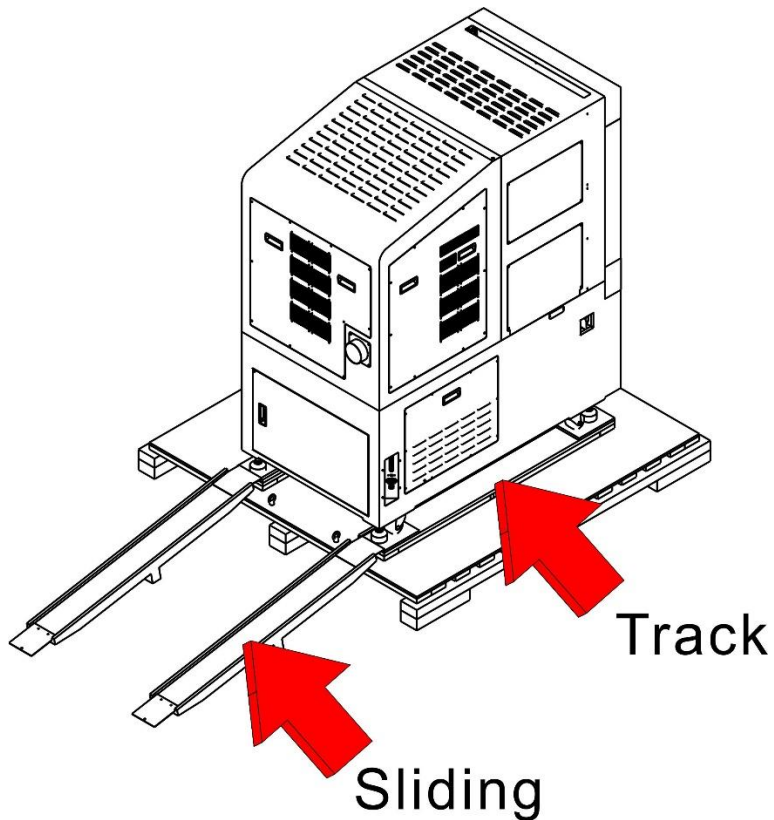
Step 5. Unbuckle and remove the two safety harnesses that hold the machine in place.



Step 6. Take out the sliding board, and the fixing screws with red circle marked below located in the rear side of the shipping crate.



Step 7. Fix the sliding board to the crate with the fixing screws shown in step 6 to create a ramp for machine to slide down.



⚠ WARNING

When LFC door open completely, its height will be 205 cm. Please make sure the height of operation environment is higher than 205cm to prevent LFC door from crashed.



2.2 Contents & Accessories Checklist

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

GCC LaserPro LFC Workstation Checklist

Item	Quantity
LaserPro CD set (User's Manual)	1
G-Mark CD set (Software)	1
CIIA 12/30 Dust Plate	1
CIIA 60Ti Dust Plate	1
IF Dust Plate	1
IFII Dust Plate	1
Safety Key	2
External Signal Indicator	1
AC Power Cable (Europe)	1
AC Power Cable (US)	1
AC Power Cable (Australia)	1
Control Box Fixed Bracket (Left)	2
Control Box Fixed Bracket (Right)	2
Control Box Fixed Bracket (Middle)	2
M3x6 Socket Head Set Screw	4
M6x12 Socket Head Set Screw	6
M3x6 Truss Head Machine Screw	3



GCC LaserPro StellarMark C Series Checklist (CO2 laser marker)

Item	Quantity
Hex head screws driver	1
LaserPro CD set (User's Manual)	1
G-Mark Advance CD set (Software)	1
G-Mark Advance Keypro	1
Lens cleaner	1
Lens cleaning paper	1
Cotton Bud (100 units/ package)	1
CO2#900 Goggles	1
Lens parameter list	1
M6 screw plastic foot	4
Nut (M6x5xS10).	4
I/O Terminal Platform(5ESDVM-12P)	2
I/O Terminal Platform(5ESDVM-10P)	1
Laser Head Power Cable (2.5M)	1
SCSI Cable 50pin (2.5M)	1
AC Power Cable(Europe)	1
AC Power Cable (US)	1
AC Power cable (Australian)	1
USB Cable 1.8M	1
GCC Promise Card Set	1
4 Port PCI USB 2.0 card	1
StellarMark Accessories checklist	1

GCC LaserPro StellarMark IF Series Checklist (Fiber Laser Marker)

Item	Quantity
SCSI Cable 50pin length 2.5m	1
System Key	1
Laser Marker Power Cable (48V/20A/7Pin 2.5m)	1
G-Mark LibrarySoftware CD set	1
User's Manual CD set	1
USB CABLE	1
AC Power Cable(Europe)	1
Power Cable (US)	1
Power Cable (AUS)	1
Pyramid Ruler Focus Tool	1
Software Keypro for G-Mark Advance	1
Lens Cleaner	1
Lens Cleaning Paper	1
Cotton Bud (100pcs/ pack)	1
1064nm Goggle	1
Lens parameter Card	3
M6 screw plastic foot	4
Nut (M6xt5xS10).	4
I/O Terminal Platform(5ESDVM-10P)	1
I/O Terminal Cable 25 pin	1
Hex head screws driver	1
Warranty Card	1

Chapter **3**

Mechanical Overview

Front View

Right View

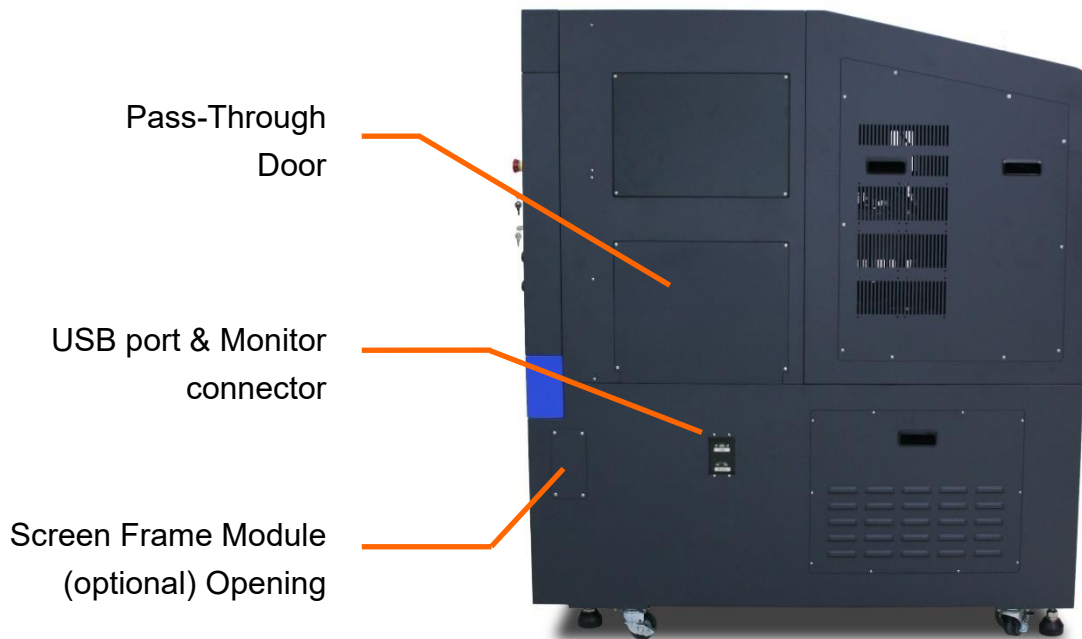
Left View

Rear View

3.1 Front View



Right View



3.2.1 Pass-Through Door

The left and right pass-through doors can be further removed to place long objects or allow external setup conveyor to feed in materials for laser marking on fly.

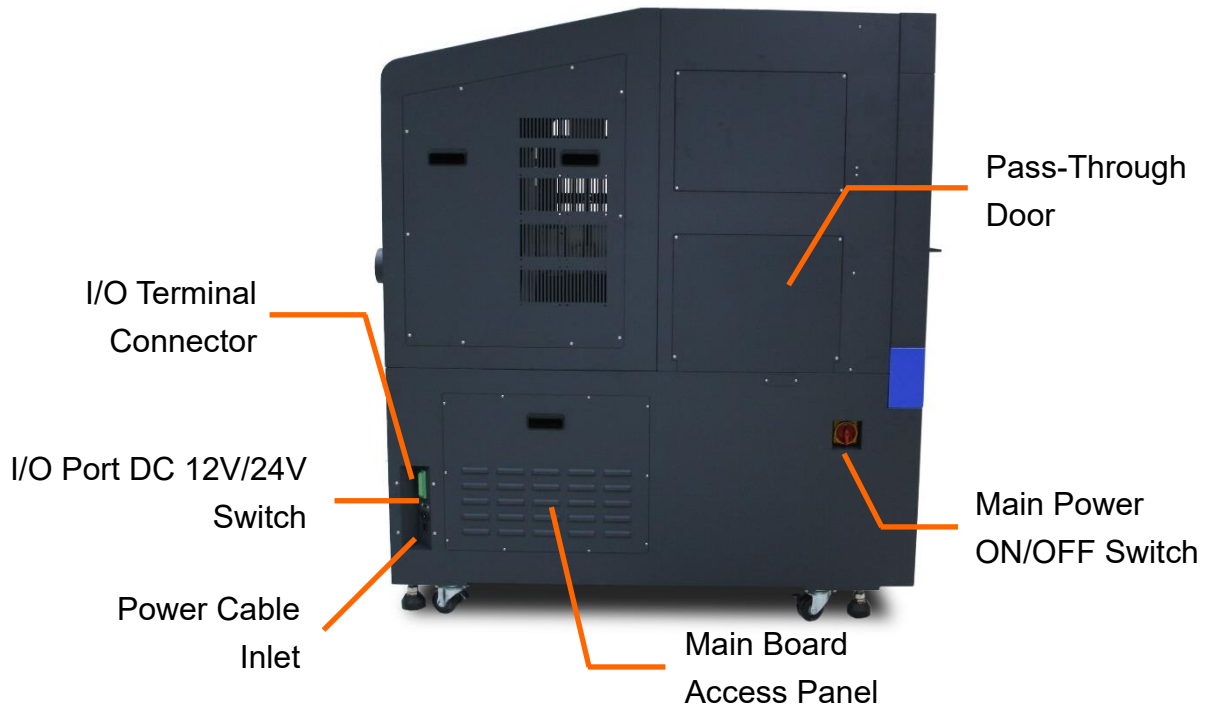
3.2.2 Screen Frame Module (Optional) Opening

After install the Screen Frame Module (optional item) on the opening, user can place laptop, monitor, keyboard and mouse conveniently.

3.2.2 USB port & Monitor Connector

LFC provides the external USB and monitor ports which allow you to insert the flash disk and connect monitor.

3.2 Left View



3.3.1 I/O Port DC 12V/24V Switch

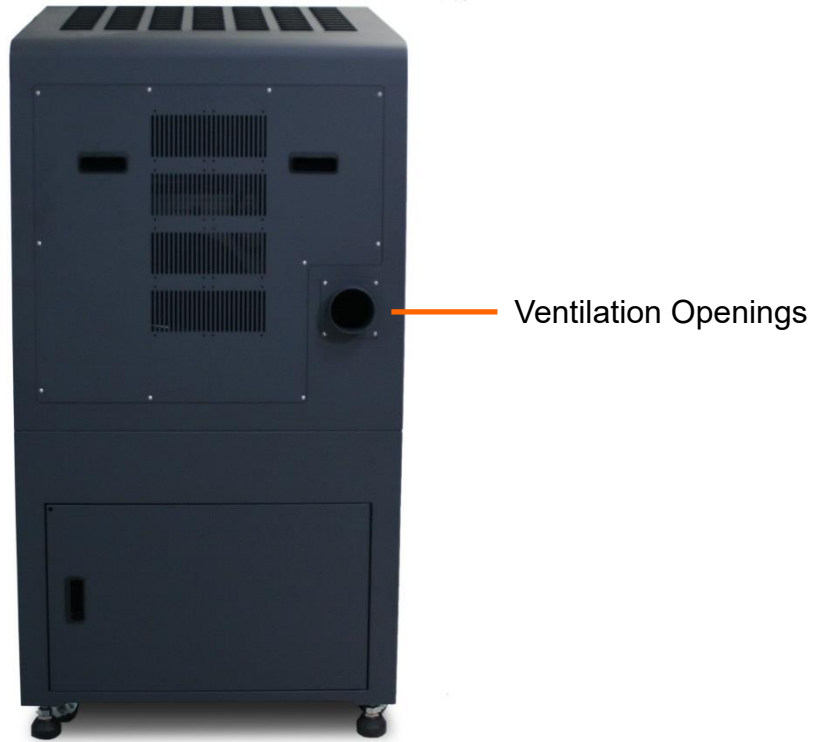
I/O Port DC 12V/24V Switch allows LFC workstation to switch between 12V and 24V for the I/O port

3.3.2 I/O Terminal Connector

The I/O pins are located at the back of LFC as the signal transmitting bridges between LFC workstation and external automation devices such as the foot trigger for automation controls. 4 Output signal pins and 4 Input signal pins are provided for any designated automation purposes.

It will allow laser marker to receive signals from or transmit the signal to the external automation devices.

3.3 Rear View



Chapter **4**

Machine Setup

Cable Connection

External Signal Indicator Installation

Adjustment of the Vent Position

4.1 Cable Connection

Follow procedures to connect Laptop or PC with laser marker.

4.1.1 Connection with Laptop

Step 1. Remove the cover of screen frame module.



Step 2. Take out the USB cable from accessory box, insert the USB cable through screen frame module opening in of the LFC workstation.



Step 3. Connect to the laser marker Control Unit inside LFC workstation.



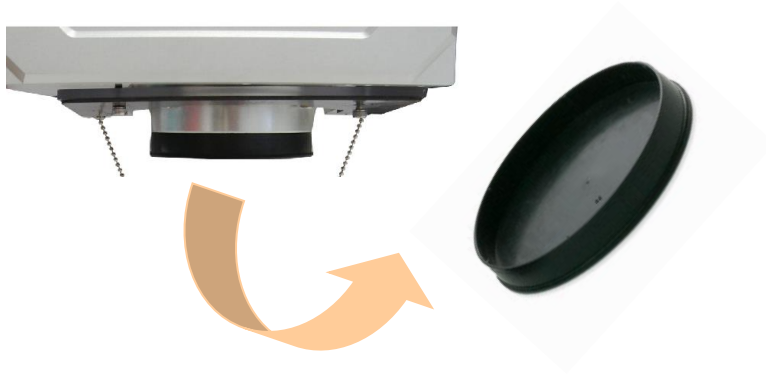
Step 4. Connect the USB cable to the laptop's USB port.



Step 5. Plug the G-Mark software keypro to the laptop's USB port.



Step 6. Remove the protection cover of scan lens on StellarMark laser marker. Take care not to damage the lens after removing the cover.



4.1.2 Connection with PC

Step 1. Take out the USB cable from accessory box, and connect to the laser marker Control Unit inside LFC workstation.



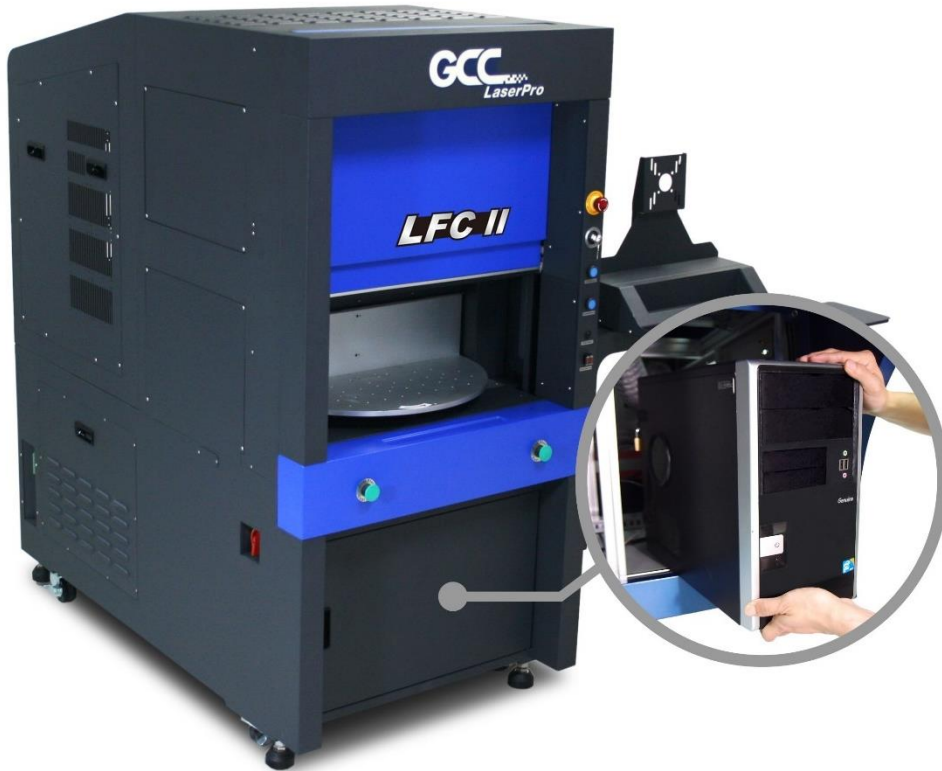
Step 2. Plug USB cable to PC.



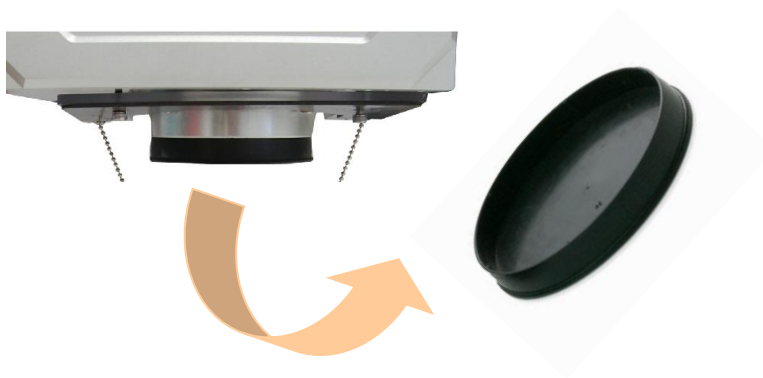
Step 3. Plug the G-Mark software keypro to USB port of PC.



Step 4. Place the PC into LFC workstation chamber by opening the bottom front panel.



Step 5. Remove the protection cover of scan lens on StellarMark laser marker. Take care not to damage the lens after removing the cover.



4.2 External Signal Indicator Installation

4.2.1 Installation

The following steps illustrate how to install the External Signal Indicator

- Step 1.** Take out the external signal indicator from LFC accessory box and connect it to external signal indicator port on the upper left of LFC workstation



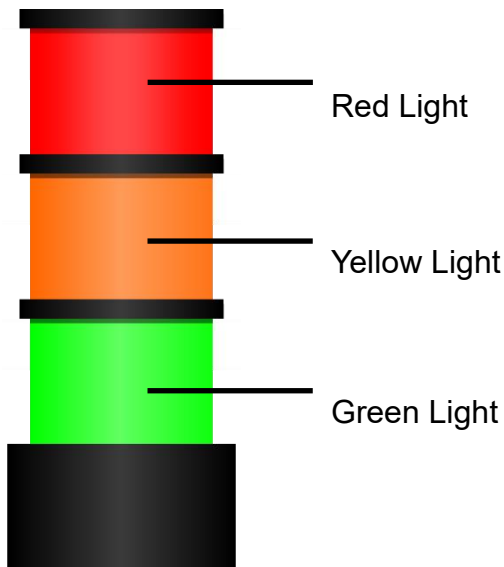
- Step 2.** There is a magnetic in the bottom of External signal indicator so user can set it on the top or right side of LFC workstation without effort.



Step 3. Installation is complete



4.2.2 External signal indicator instruction



- Red Light

When the emergency stop button is pressed and the red light is on.

NOTE

Please turn off the mater power of machine and reset emergency stop button then re-start the machine and G-Mark software after pressing the emergency stop button.

- Orange Light

When the marking is processing and the orange LED light is on.

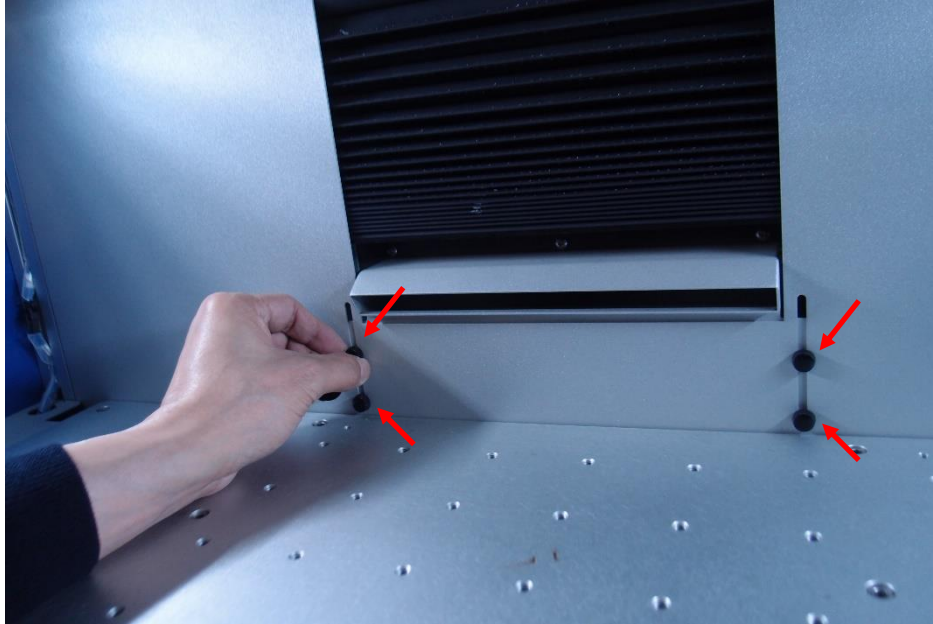
- Green Light

When the machine is power on and the green LED light is on.

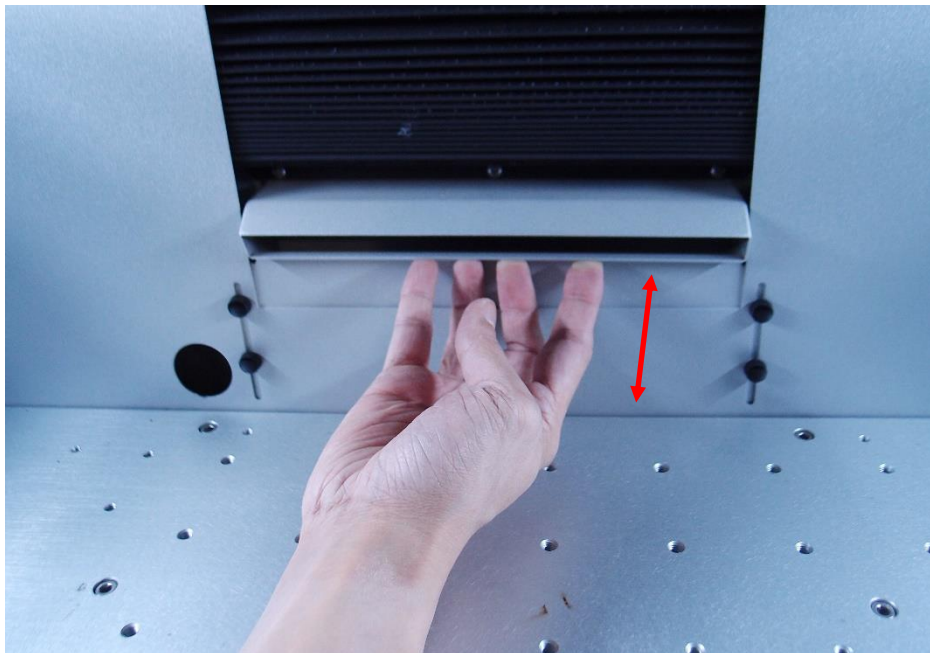
4.3 Adjustment of the vent position

Vent position can be adjusted slightly to make suction performance better. The following steps illustrate how to adjust the vent

Step 1. Loosen four screws of the vents.



Step 2. Push the vent gently by both hands to adjust its height under the adjustable tolerance 35mm.



Step 3. Set vent on appropriate position then fix it by screws



Chapter 5

Software Setup

Recommended Computer Configuration

Software Installation for Windows System

Software Installation for MAC System

Setting the User Level

5.1 Recommended Computer Configuration

The LFC Series Workstation and G-Mark software are 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)

Recommended Operating System for G-Mark Marking Software

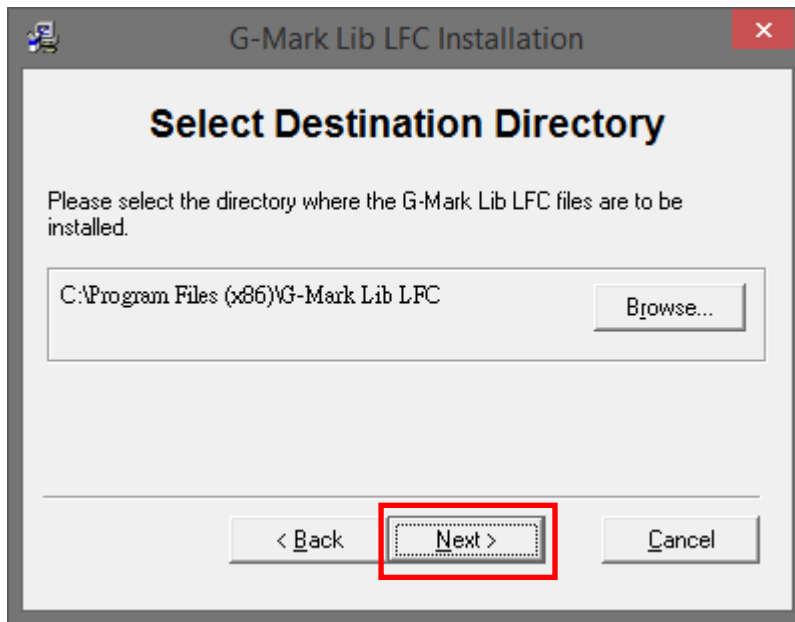
- Windows XP SP3
- Windows 2000
- VISTA 32 bit
- Windows 7 32 bit

5.2 Software Installation for Windows System

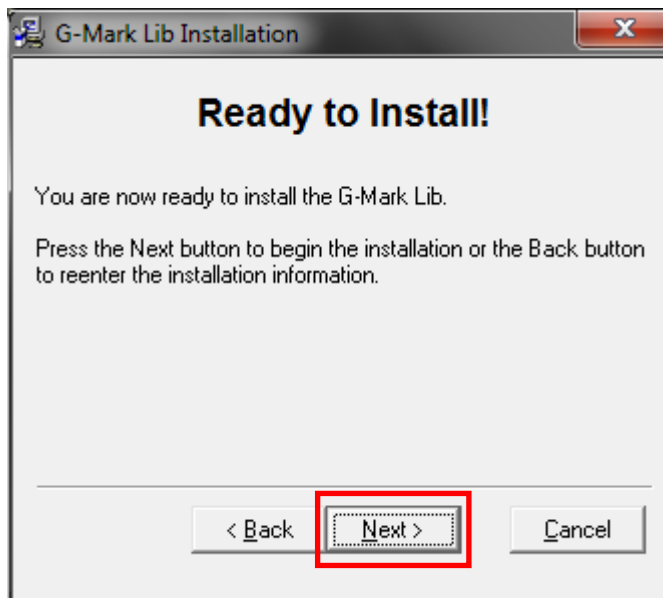
- Step 1.** Take out the G-Mark installation CD from the accessories kit and insert to CD-ROM drive of PC.
- Step 2.** Wait few seconds for the CD Manager to begin the Setup automatically
- Step 3.** Click on “for LFC Workstation” from the menu of the G-Mark installation CD according to your operating system



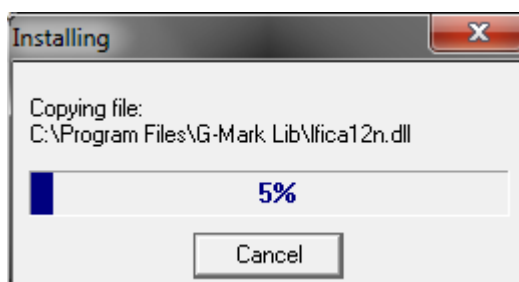
Step 4. Set the destination directory and click "Next>"



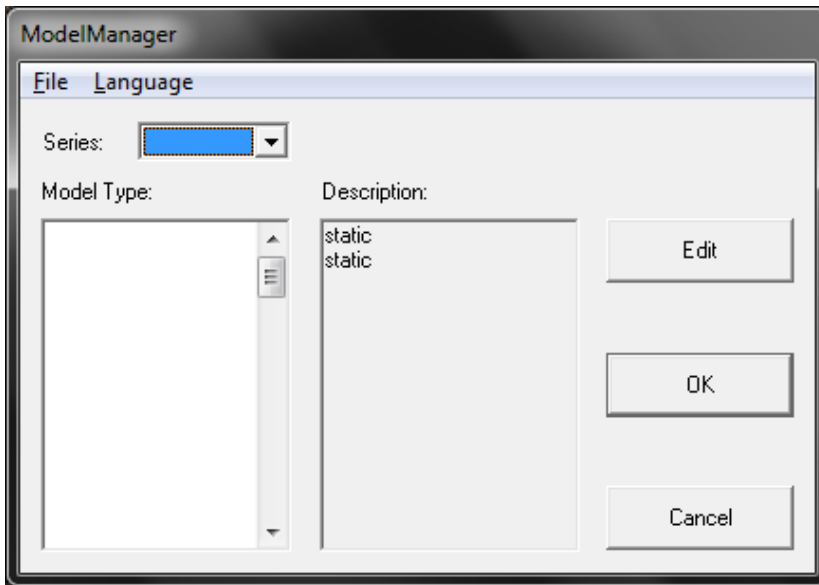
Step 5. Select "Next>"



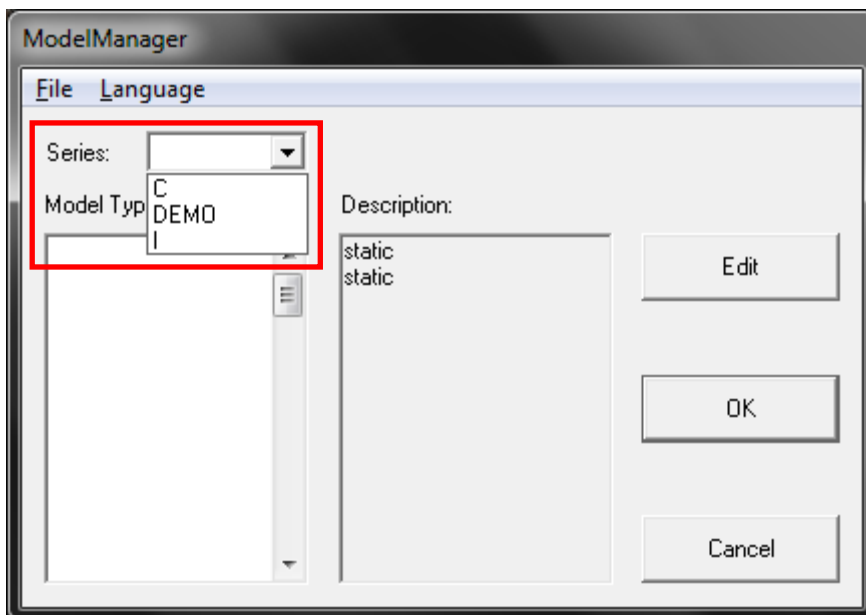
Step 6. Installing

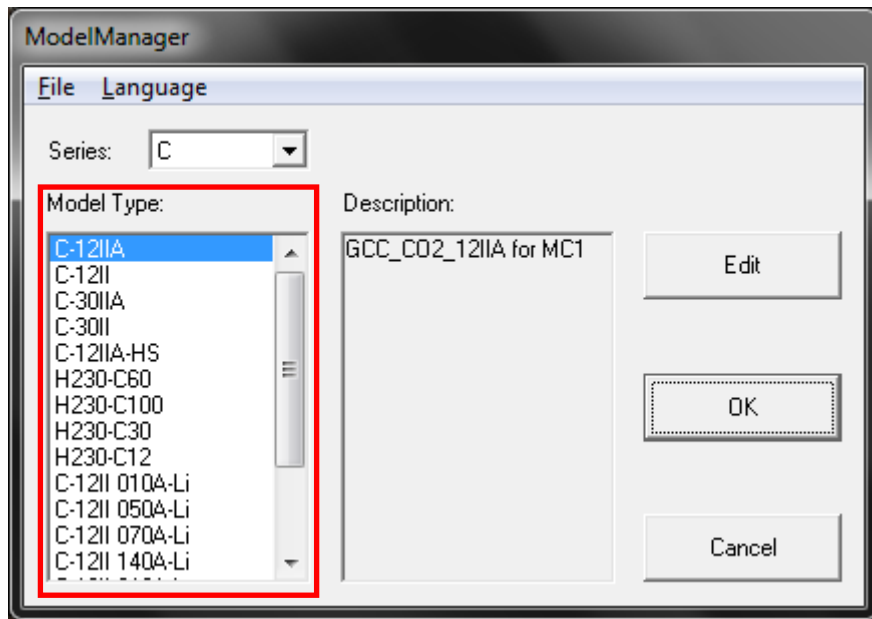


Step 7. At 95% completion of the installation, the ModelManger window will show up.

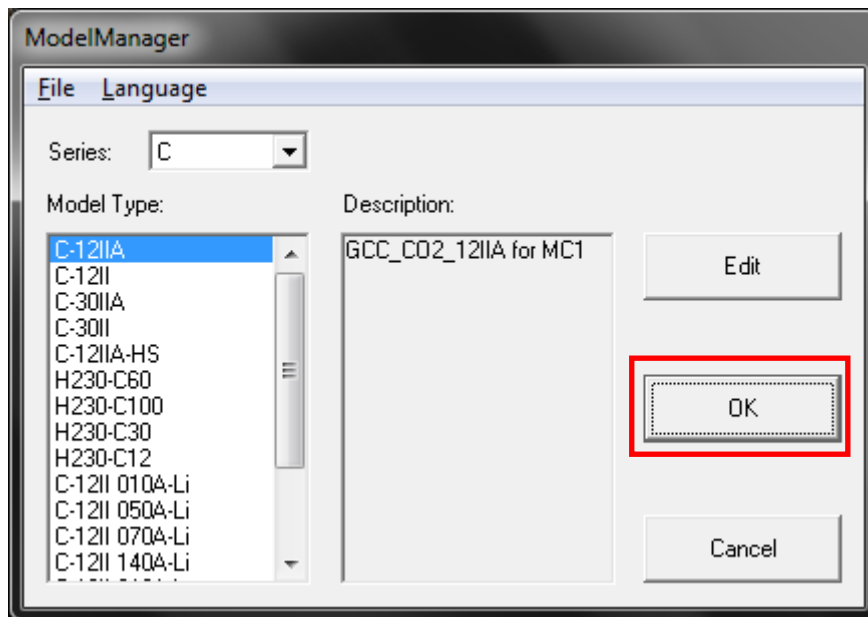


Step 8. Select the laser marker series & model type.

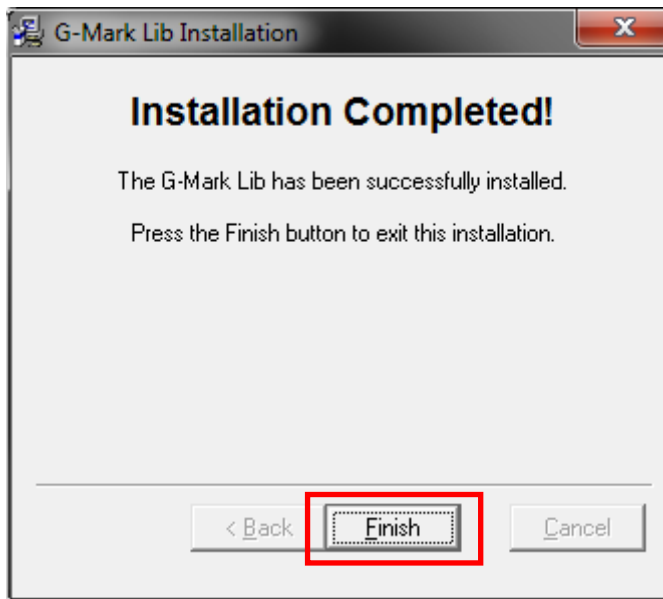




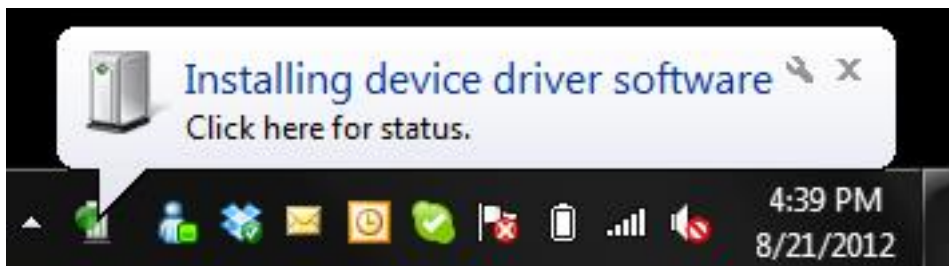
Step 9. Click “OK”



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 laser marking system.



Step 12. Import or Open a new G-Mark graphic file to start the graphic design and setup the laser parameters for output.

5.3 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.

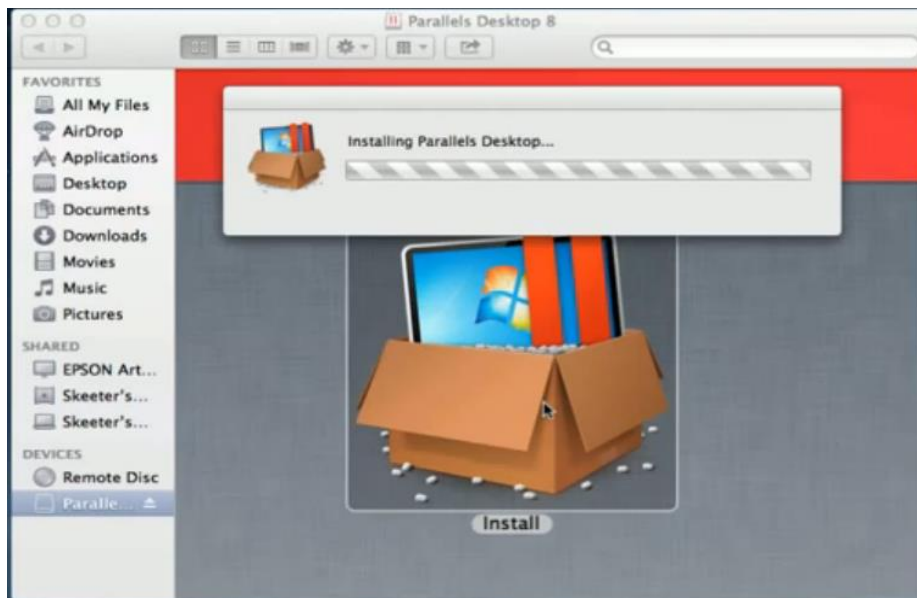
Enjoy the latest Mountain Lion and Lion features in Windows apps, and remotely access your Windows and Mac programs from your iPad or iPhone with the Parallels Mobile app, available for purchase in the App Store.

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.

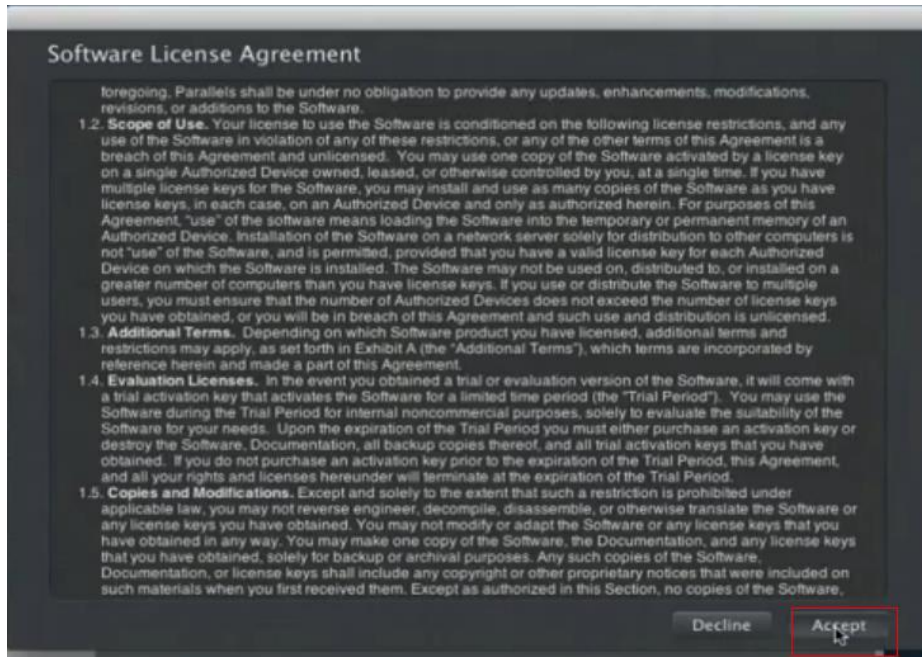
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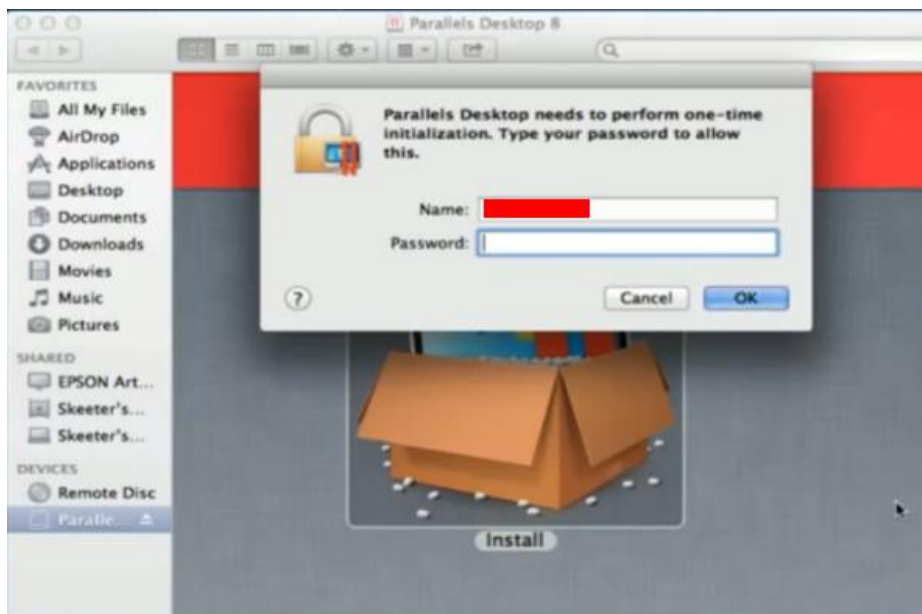
Step 2. Install Parallels Desktops under Mac OS environment.



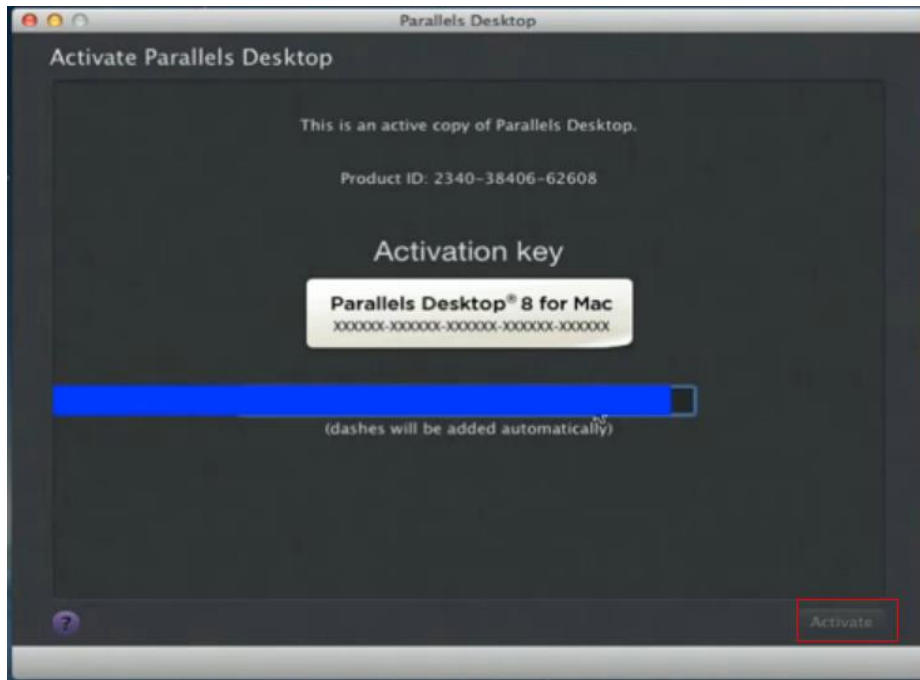
Step 3. Read Software License Agreement and press “Accept” to continue installation



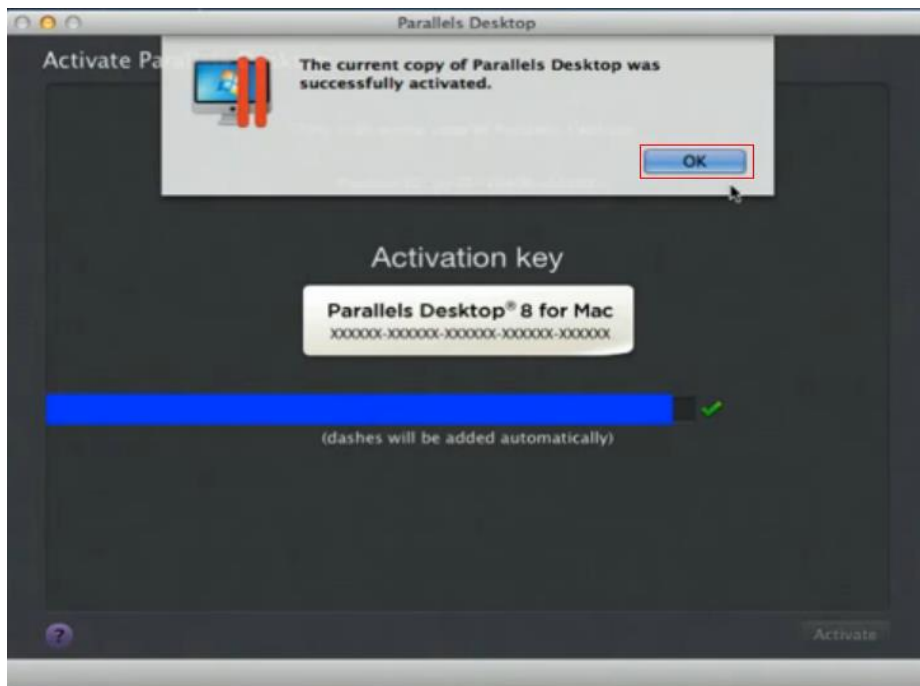
Step 4. Enter your Mac OS X User Name and Password then press “OK”



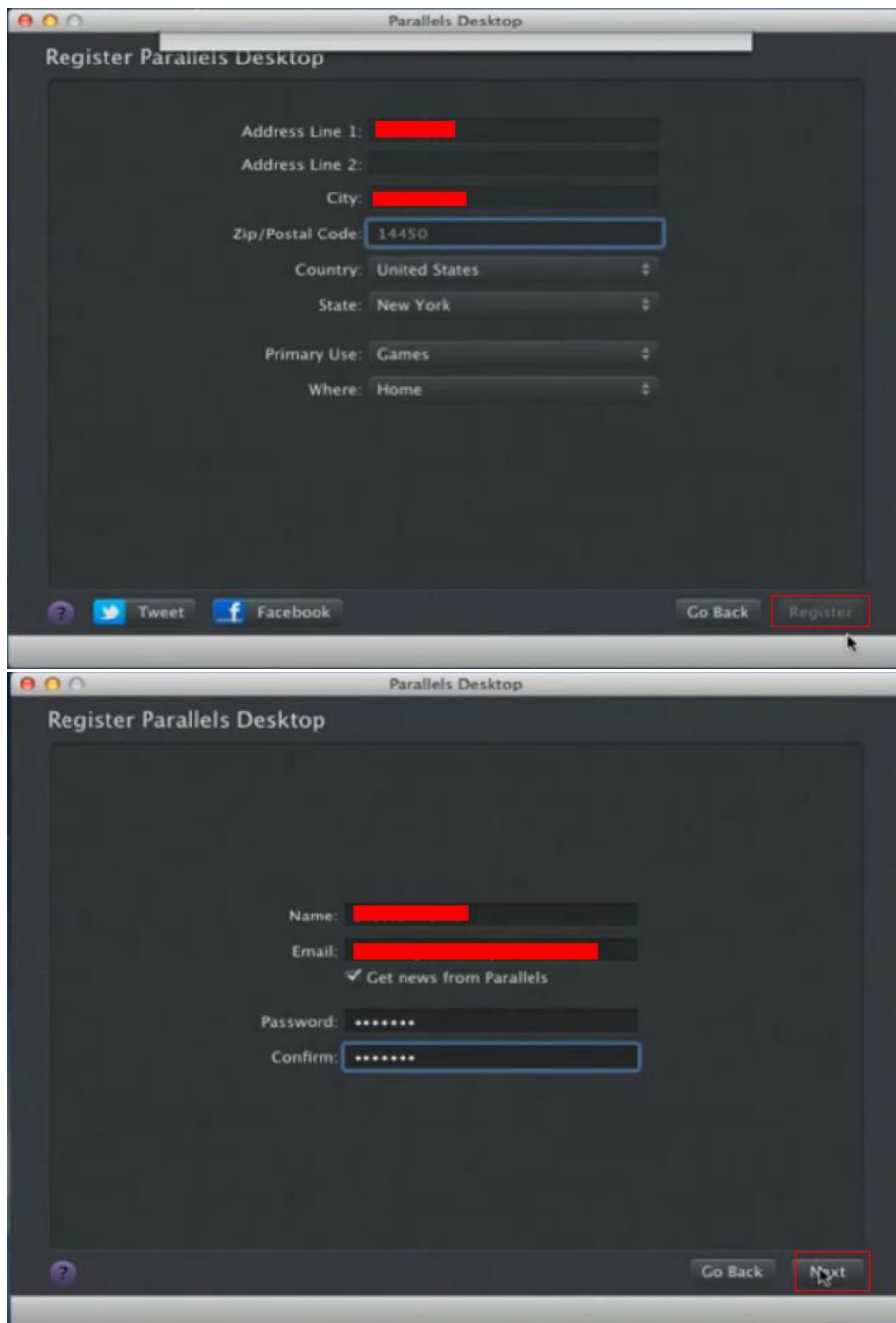
Step 5. Press “Active”



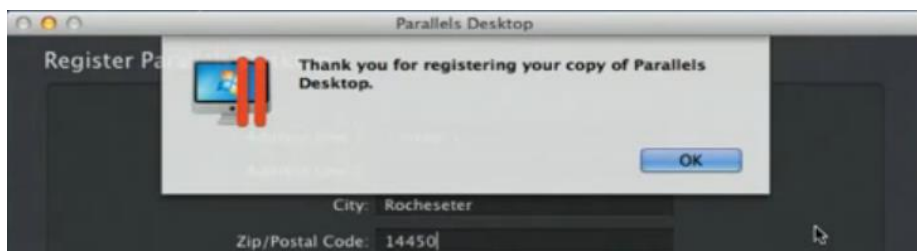
Step 6. Press “OK” when activation is complete.



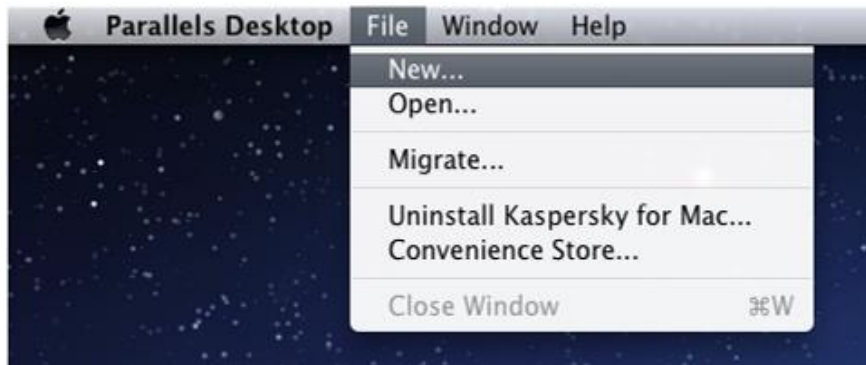
Step 7. Register Parallels Desktop



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**



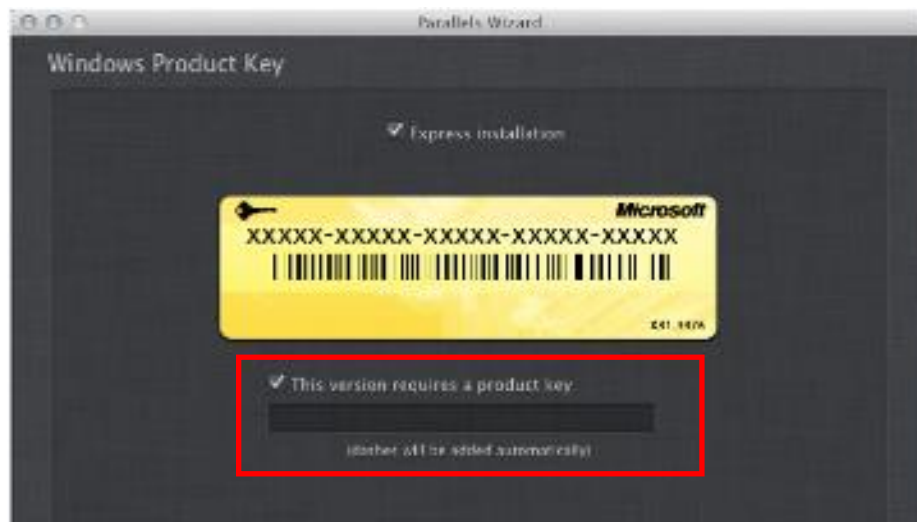
Step 10. Press “Install Windows from DVD or image file” then press “continue” to install windows OS



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



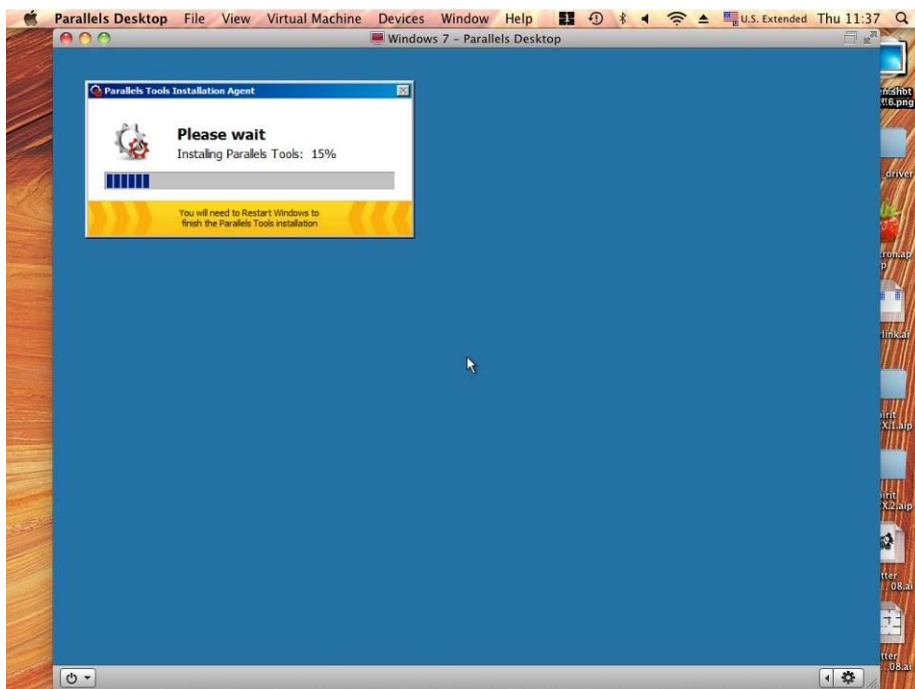
Step 12. Enter the Windows OS product key

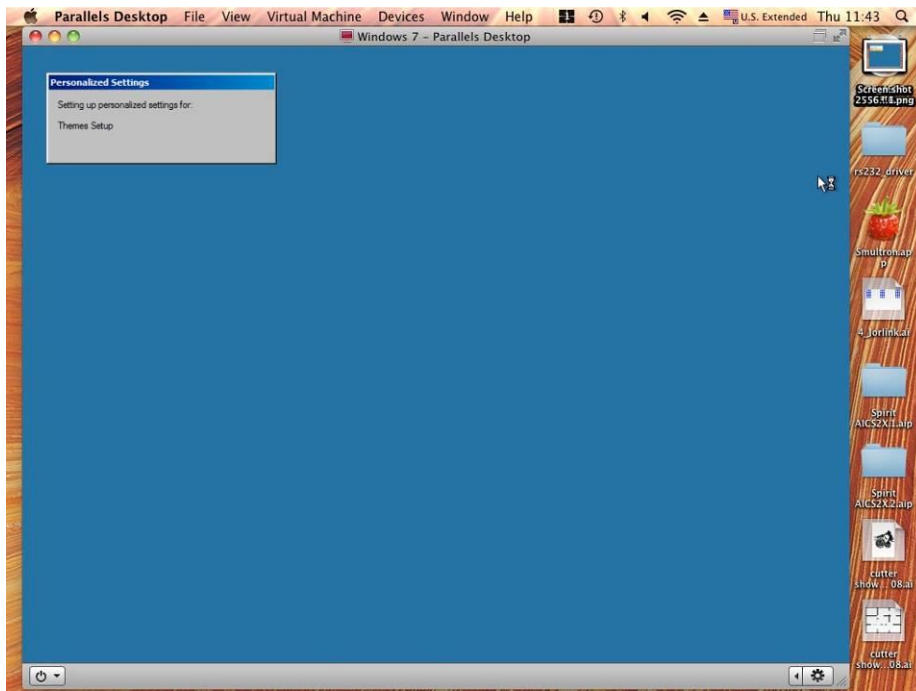


Step 13. Select how you would like to run your Windows program.



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





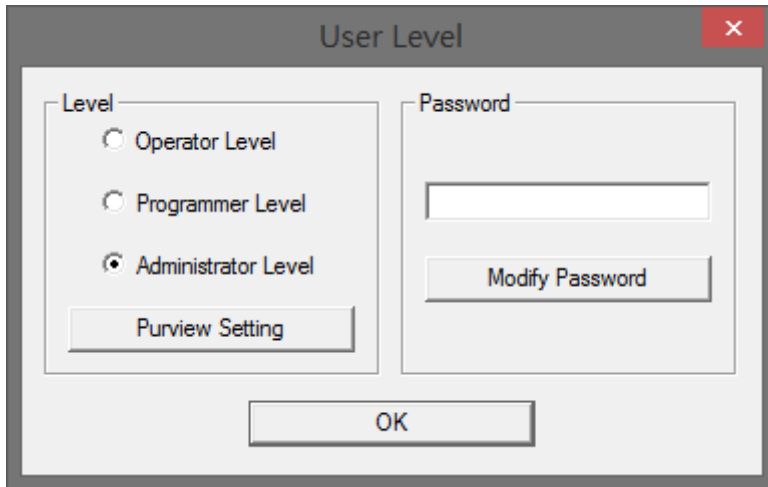
Step 15. Windows OS installation is complete then you can refer to “5.2 Software Installation for windows system” to install G-Mark / G-Mark Library.

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 manual” in the StellarMark CD from accessory box.

5.4 Setting User Level

There are three user levels of G-Mark, operator, programmer and administrator. Director has authority to enable/disable the software functions for each level.



Find the different definitions for each user levels:

Operator Level

Operator only can read and output files.

Programmer Level

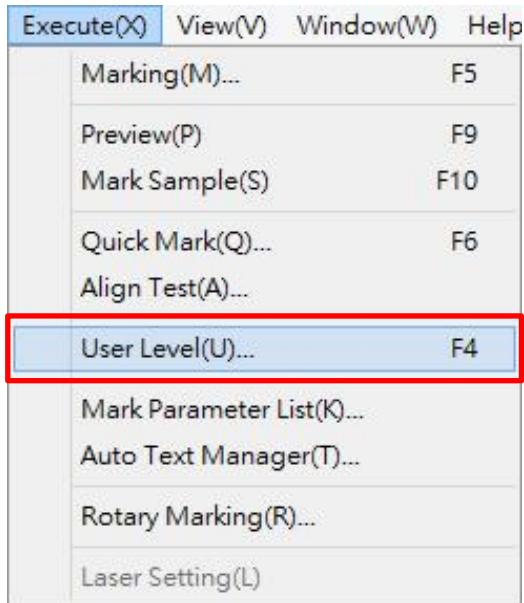
Programmer can edit objects and use some limited functions.

Administrator

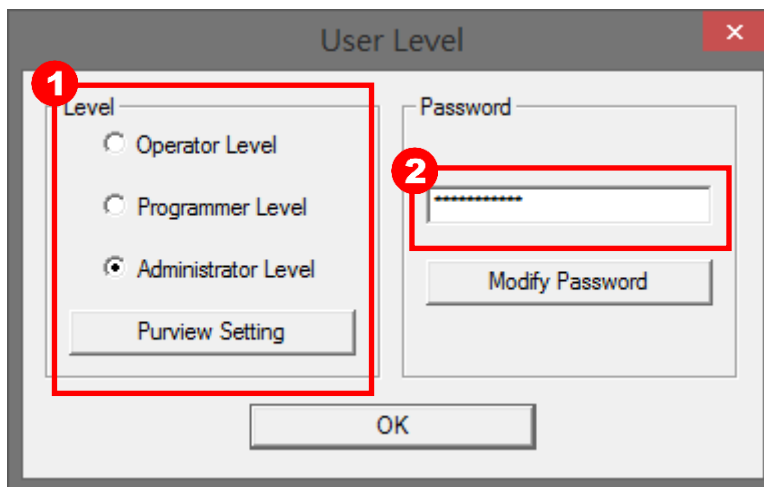
Administrator can use all G-Mark functions and has authority to change the system setting. Such as change password or authorize software function for each user level.

5.3.1 Switch User Level

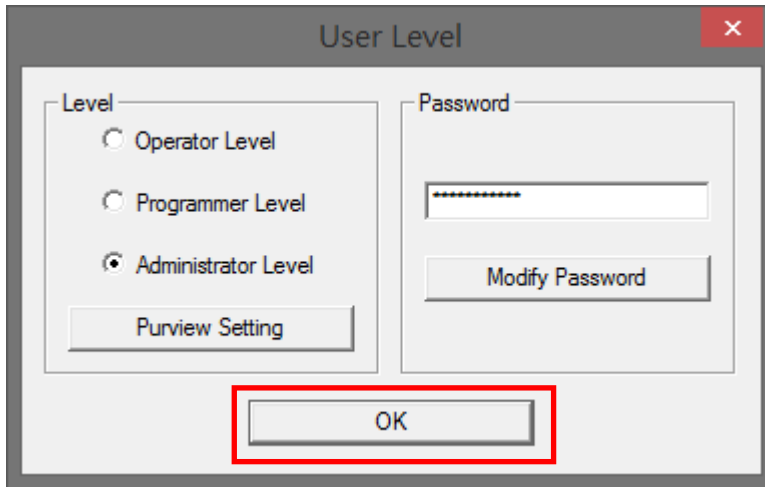
Step 1. Select “Execute” → “User Level” from menu bar



Step 2. Select user level and input password



Step 3. Click on “OK” to switch user level



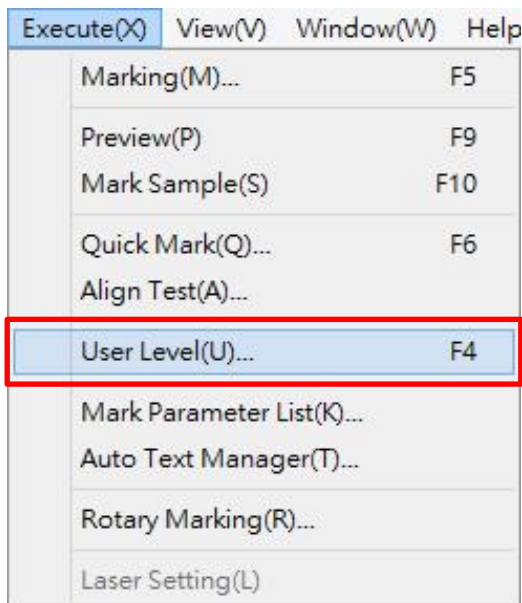
NOTE

- Password is protected in Programmer & Administrator user levels.
- Default password for Programmer & administrator levels is “stellarmark”.

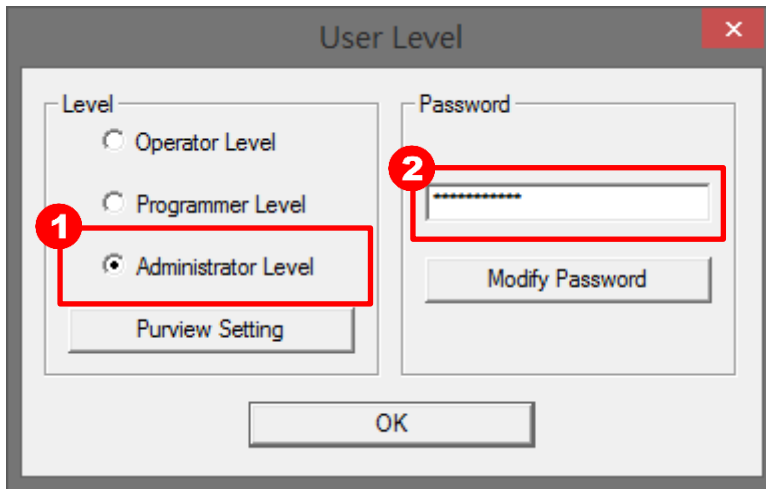
5.3.2 Modify Password

The following steps illustrate how to modify user level password

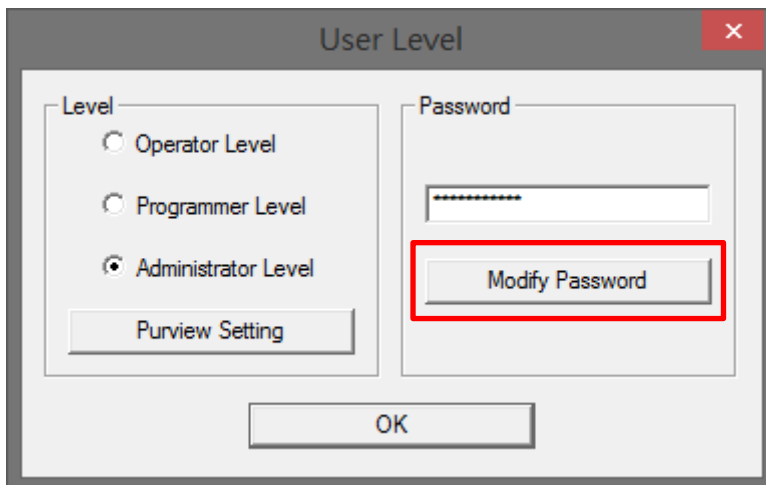
Step 1. Select “Execute” → “User Level” from menu bar



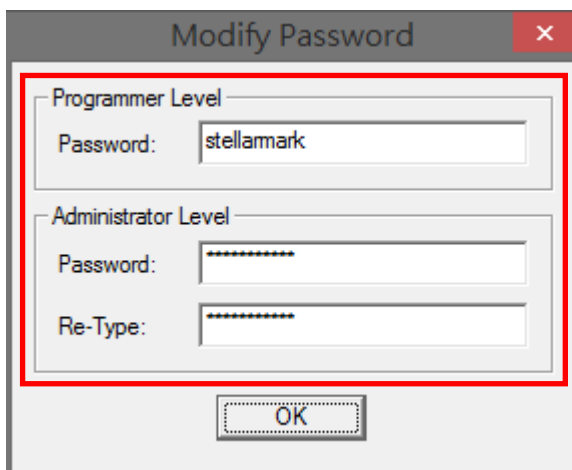
Step 2. Select “Administrator Level” and input password.



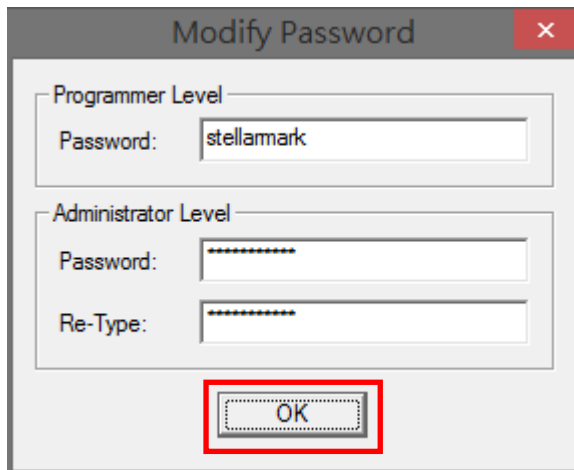
Step 3. Click on “Modify Password” and the modify password window will show up.



Step 4. Input the new password for programmer level or administrator level.



Step 5. Click on “OK” after the password modification is complete.



Warning

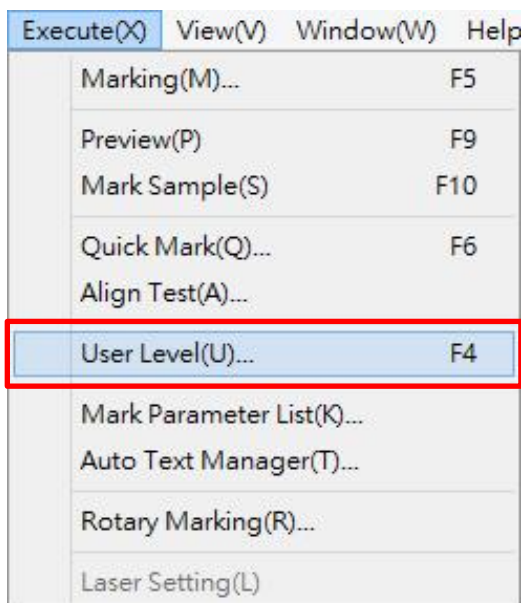
- If you forget your password or don't know it, you need to reinstall G-Mark to restore the default password. Therefore please remember your password.

5.3.3 Purview Setting

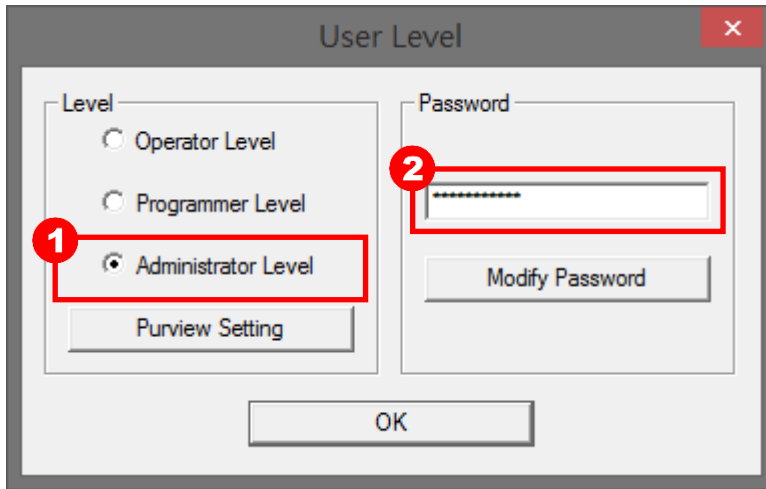
Purview setting only for administrator level, administrator can enable/disable software function for programmer and operator level.

The following steps illustrate how to setting the purview

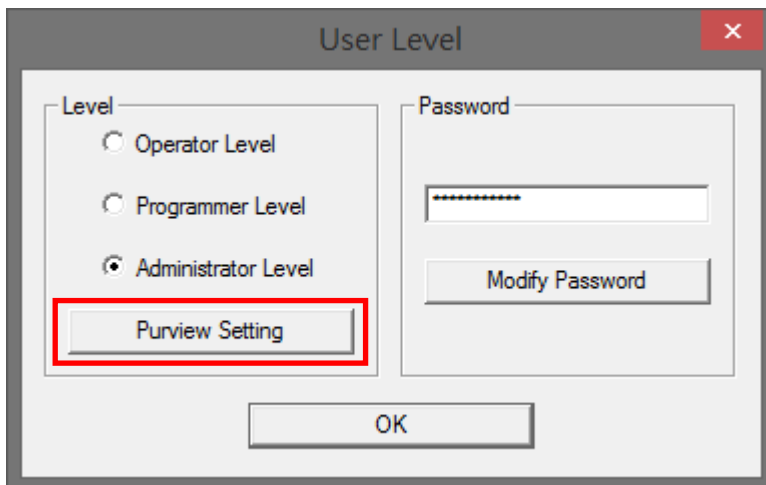
Step 1. Select “Execute” → “User Level” from menu bar



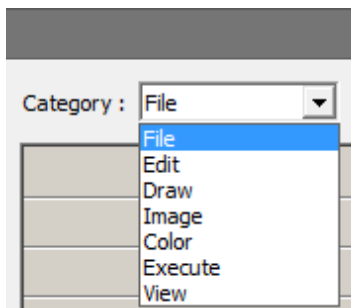
Step 2. Select “Administrator Level” and input password



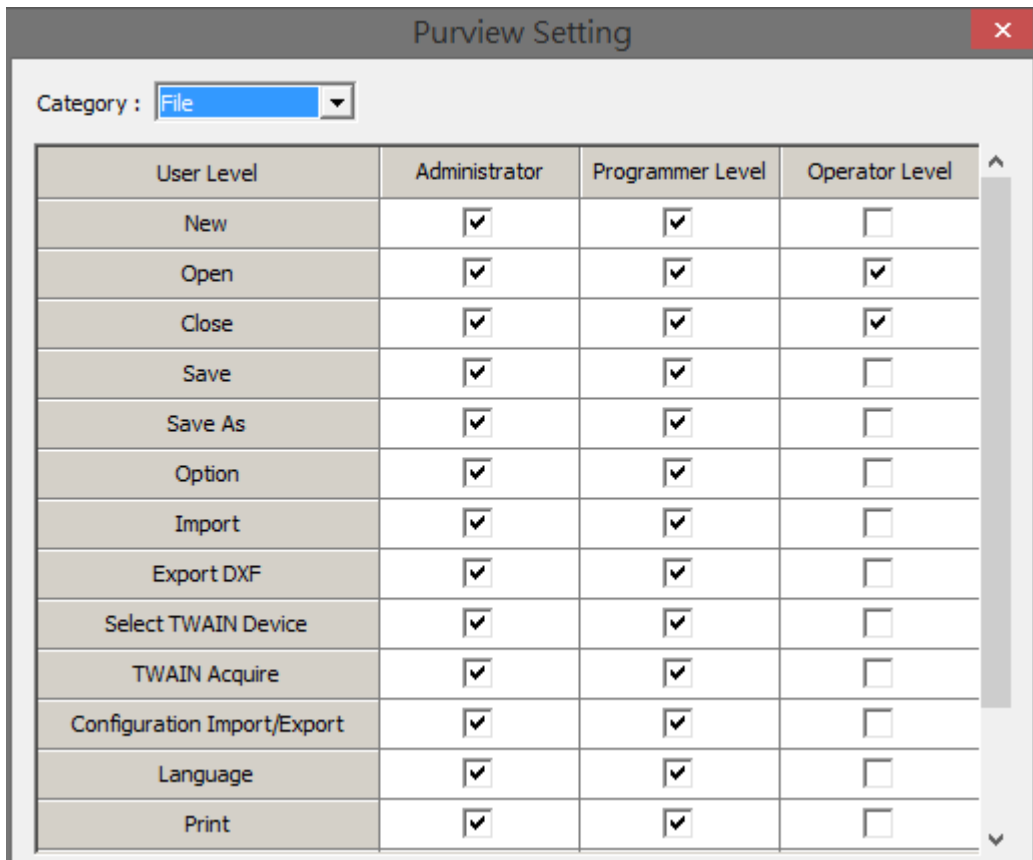
Step 3. Click on “Purview Setting” button and the Purview Setting window will pop up.



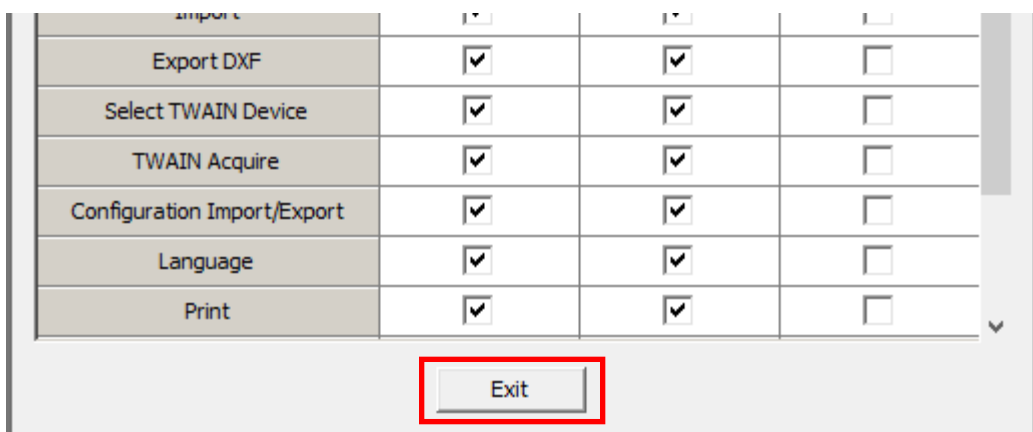
Step 4. Click “Category” list to set all the software function



Step 5. All the software function can be authorized or unauthorized in the purview setting; select checkboxes allow you to activate a function for different user level and vice versa.



Step 6. Click on “Exit” button after the setup is complete.



Chapter **6**

Operating the LFC Workstation

Operation Workflow

MultiFOCUS function instruction

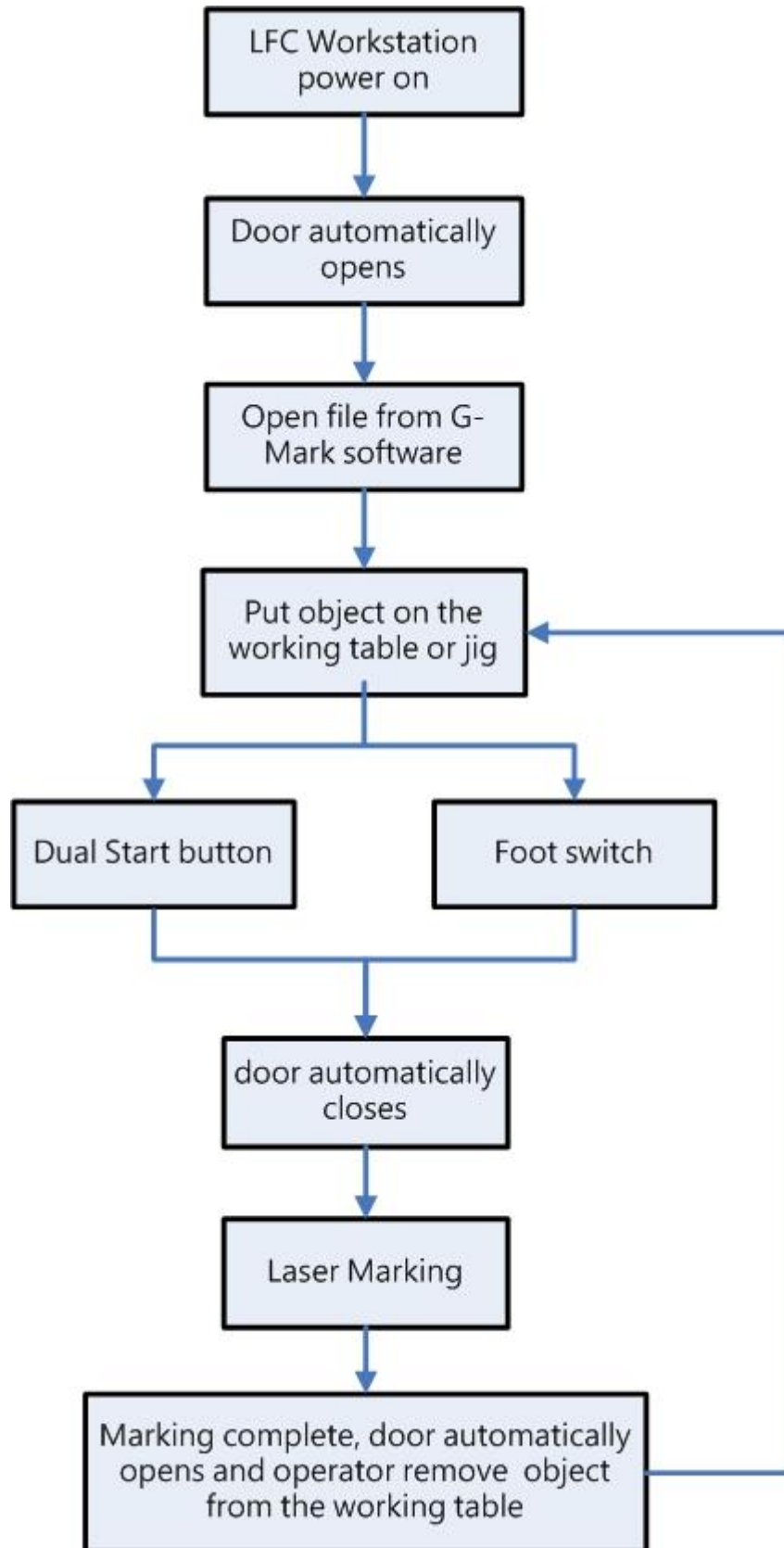
Power Up the LFC Workstation

Hardware Operation

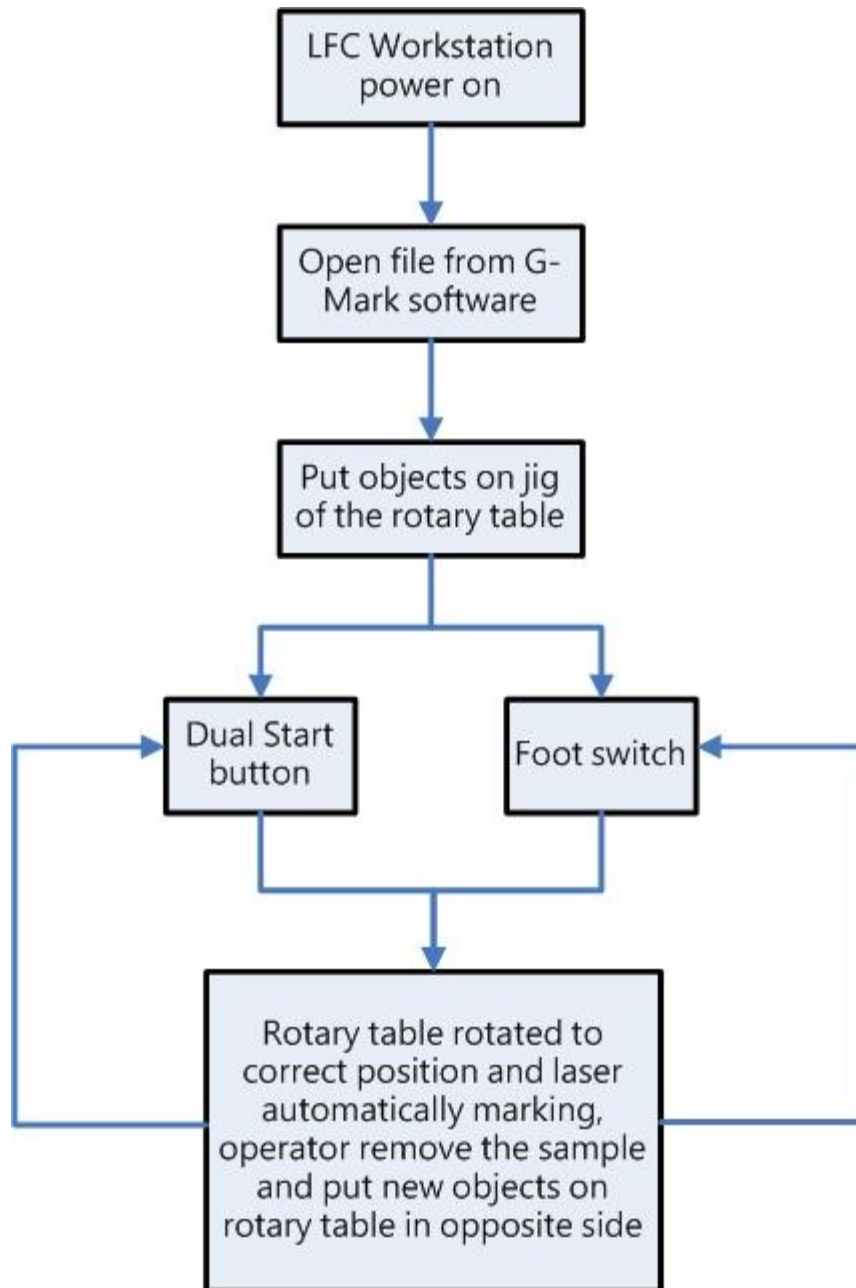
2 Point Focus Finder Operation

6.1 Operation Workflow

6.1.1 LFC Workstation Workflow



6.1.2 LFC Workstation with Rotary Table Workflow

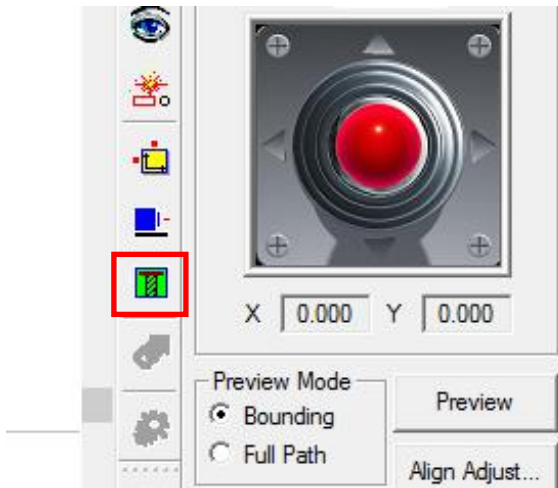


6.2 MultiFOCUS (optional) function instruction

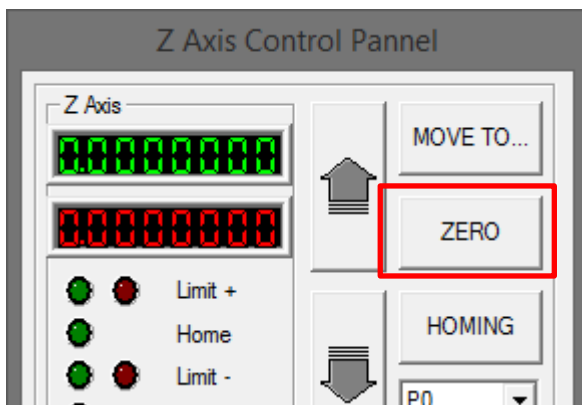
MultiFOCUS function allows user to set multiple focus distances setting at once according to the object height and Z-axis will automatically adjust correctly so users do not need to set focal distance several times.

The following steps illustrate how to use MultiFOCUS function

Step 1. Open “Z Axis Control Panel” from the right side tool bar of G-Mark software.



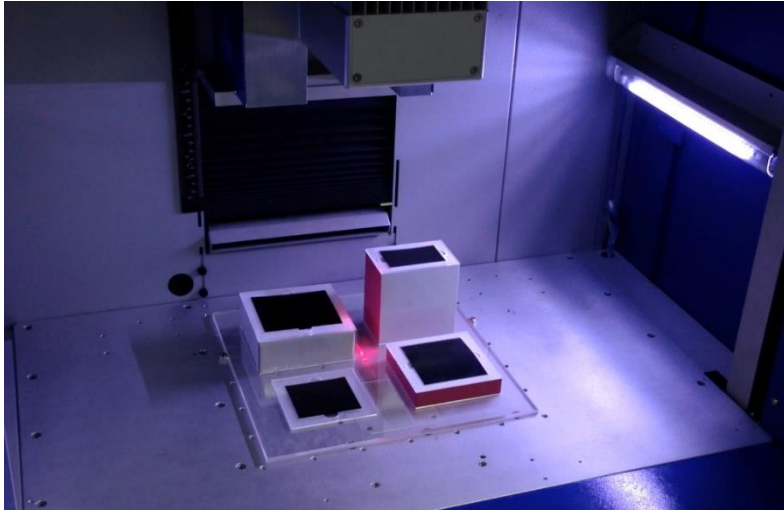
Step 2. Press the “ZERO” to set Z axis back to the origin.



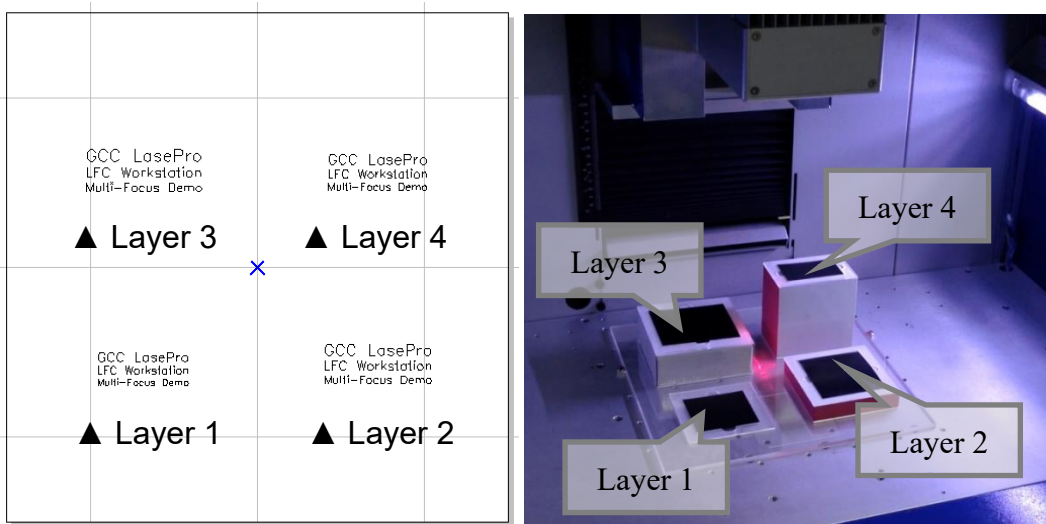
Warning

- To avoid crash of focal lens, please make sure there is no object on the LFC platform before you press “ZERO” to make Z axis down to LFC platform.

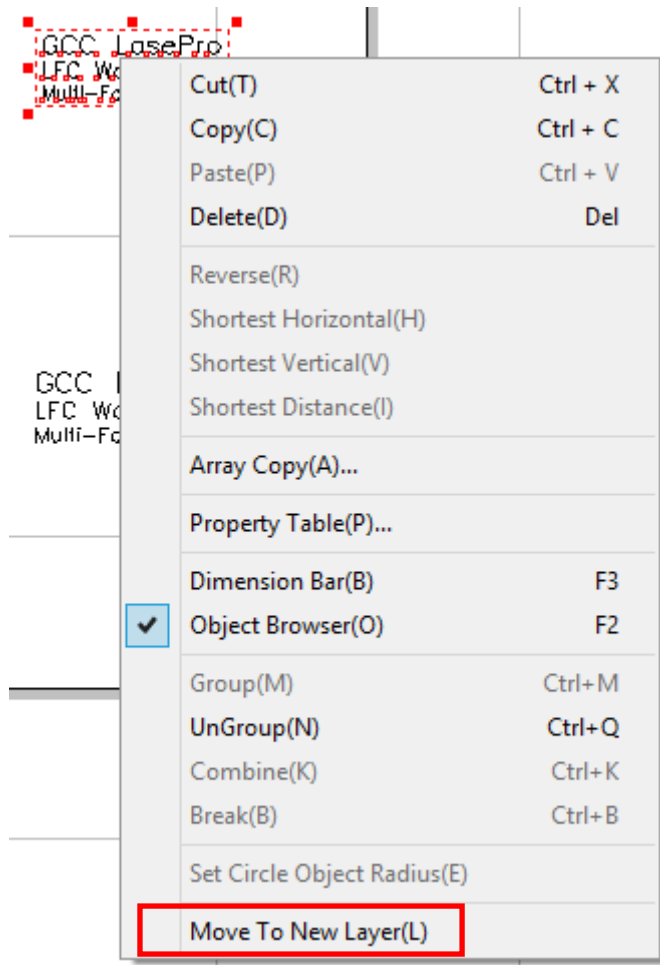
Step 3. Place objects on the LFC platform



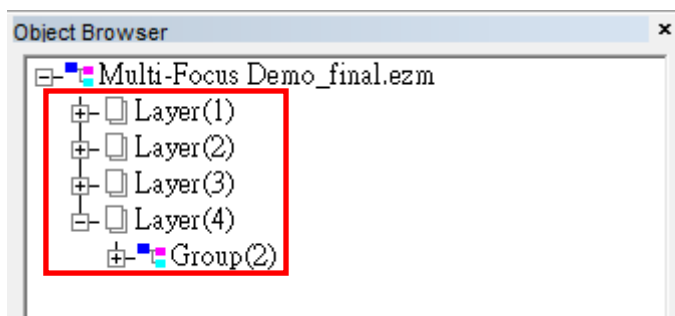
Step 4. Place different heights of marking objects in separated layers from G-Mark



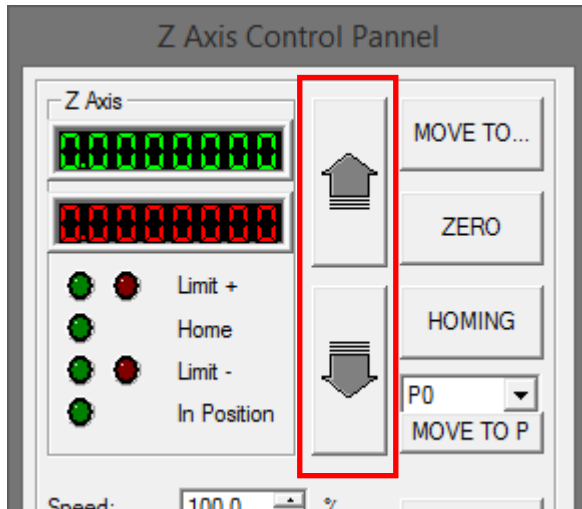
Step 5. Select object and click “Move To New Layer” from mouse right key then can place object in a new layer easily.



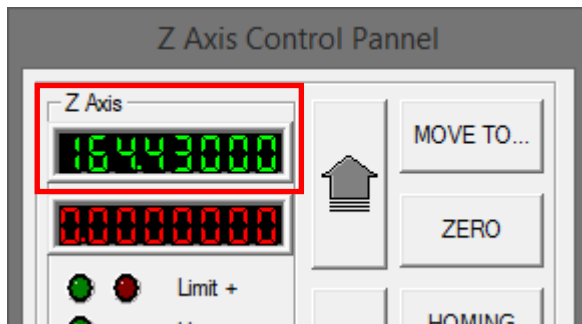
Step 6. Check objects are on correct layer or not through Object Browser.



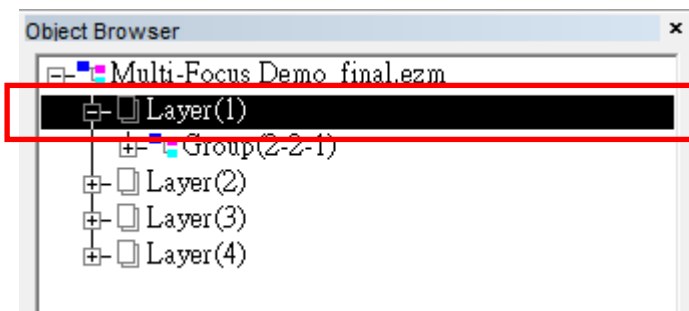
Step 7. Set focal distance on the surface of object on layer 1. Open the “Z Axis Control Panel” and press the “UP”, “Down” from G-Mark or LFC's Z-axis UP, Z-axis down button to adjust the focus distance.



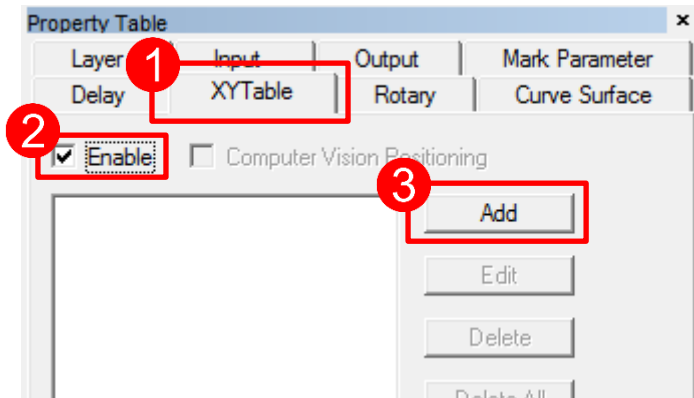
Step 8. Set the focal distance than Z axis control panel will get z axis height data (164.430)



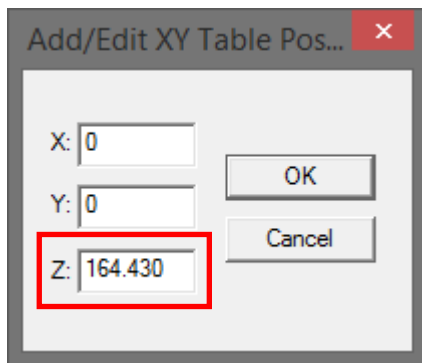
Step 9. Exit Z Axis Control Panel and Click Object Browser on the left side of G-Mark and choose Layer 1



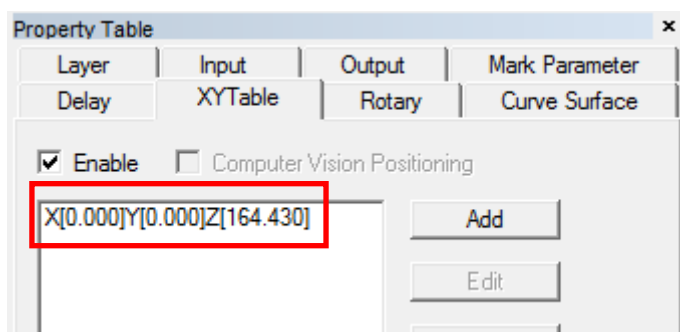
Step 10. Click XY Table label, check “Enable”, and then click the “Add”



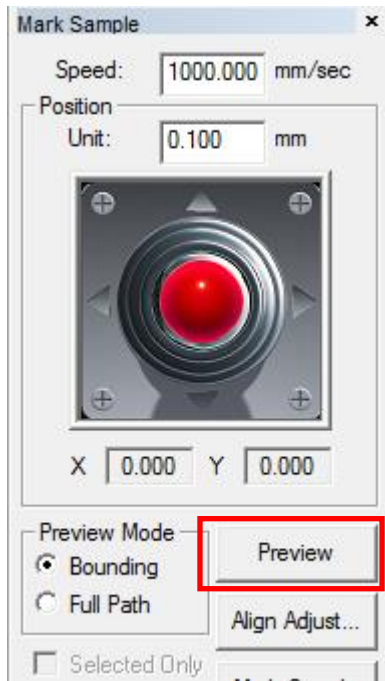
Step 11. Input the Z Axis Data (164.430) to “Add/Edit XY Table Position” in the Z-axis field, and press the OK button to complete the setting



Step 12. When setting is done, data will show up.

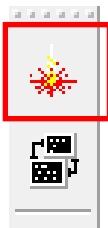


Step 13. After the setup is complete, press the “Preview” button to check marking position is correct or not.



Step 14. Repeat Step 5 to Step 12 to complete Z-axis setting on Layer2 ~ Layer 4 sequentially

Step 15. Click “Marking” button then press “Dual Start” button to process marking job. The making job will process sequentially from Layer 1 to Layer 4 and the Z axis will automatically adjust to correct focal distance.



Warning

- If you press emergency stop or shut down power during marking, please restart G-Mark and press “ZERO” to ensure the Z axis return to the correct position.
- If you restart G-Mark, please press “ZERO” again to ensure Z axis return to the correct position.

6.3 Power Up the Workstation

Step 1. Connect the male end of the power cord to a quality surge protector with connection to a properly grounded outlet.



Step 2. Connect the female end of the power cord to the workstation's power cable inlet located on the rear side of machine.



NOTE

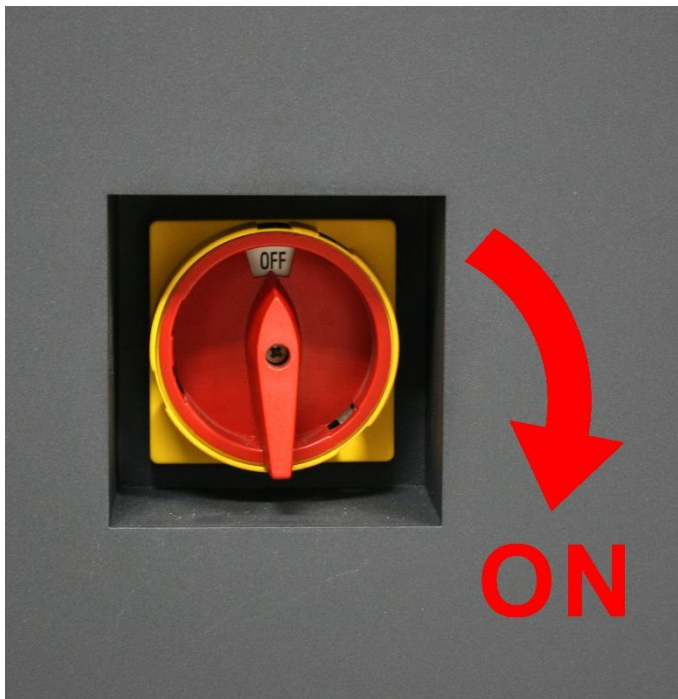
The LFC Series is designed to work with 230V, 50-60Hz / single phase



WARNING

Always connect the LFC workstation to AC power source AFTER all the cables are connected properly. Do not pull in or out the power cable while the workstation is being turned on.

Step 3. Turn on the master power of the LFC workstation.



NOTE

The connection between computer and laser marker Control Unit is disconnected when LFC workstation powering off, therefore, each time when powering on the LFC workstation, G-Mark marking software is required to re-start on PC.

6.4 Hardware Operation

6.4.1 Emergency Stop Button

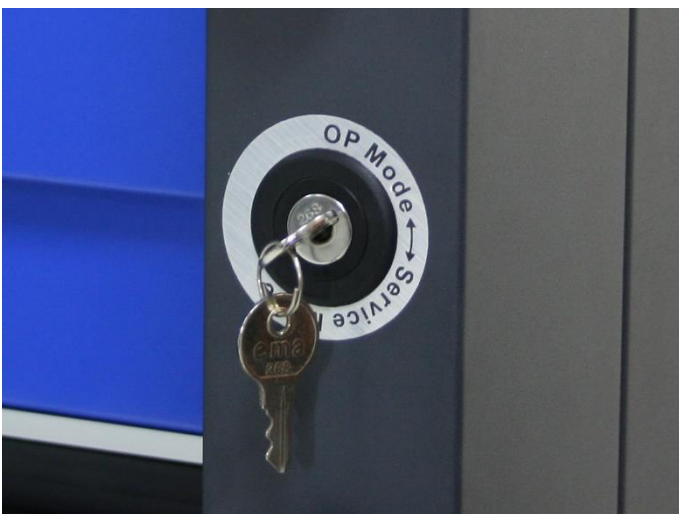


Press the Emergency Stop button to stop the AC power of the LFC workstation for emergency. To reset this button, rotate clockwise.

NOTE

Please turn off the mater power of machine and reset emergency stop button then re-start the machine and G-Mark software after pressing the emergency stop button.

6.4.2 Key Switch



It will allow LFC workstation to switch between Operator Mode and Service (repair) Mode.



WARNING

Service Mode only for administrator, always remove key when setup or service completed.

6.4.3 Z-axis Up & Down Button



Allow to move the laser marker Up or Down for focal distance adjustment.

6.4.4 LED Light Switch



Switch the LED light ON or OFF.

6.4.5 Fiber Laser ON Button



The fiber laser ON button only for StellarMark IF series, always turn ON to allow fiber laser firing.

6.4.6 Main Power ON/OFF Switch



Switch the AC Power ON/OFF of the LFC workstation.

6.4.7 Dual Start Button



Simultaneously press the Dual Start button to execute the laser firing job.

Chapter **7**

External Control

I/O Pin Assignments

Laser Working Flow Chart

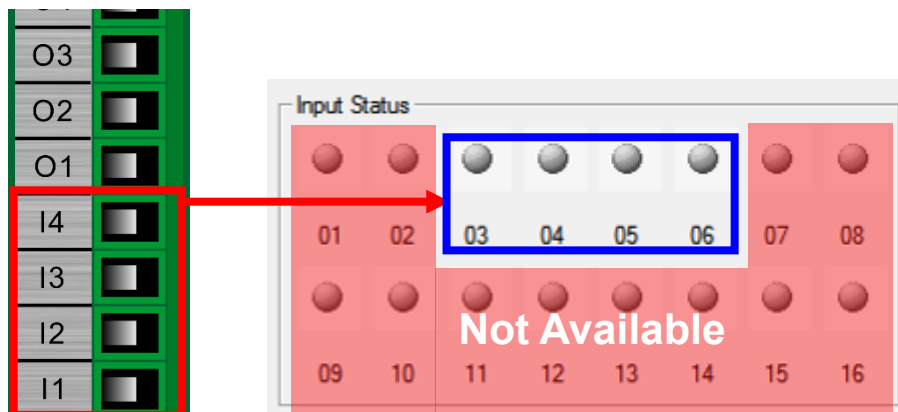
Laser Reaction Timing Diagram

7.1 I/O Pin Assignments

The I/O terminal connector is located on the bottom rear of LFC workstation, and the definition corresponding with the input and output signals on the G-Mark software as follows.

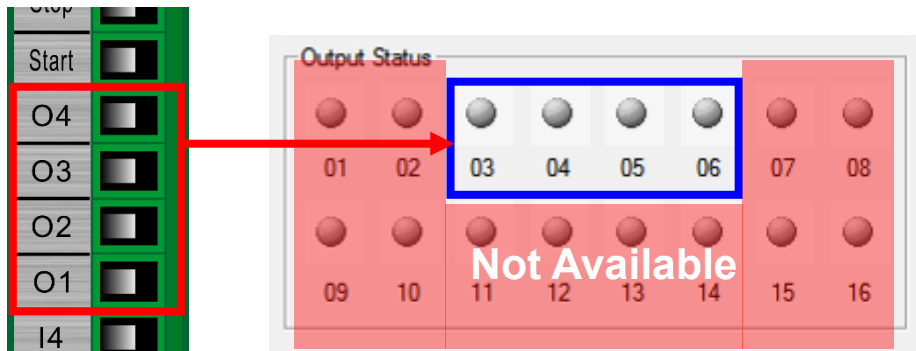
I/O		TYPE	DESCRIPTION
P12	Gnd	GND	Ground
P11	E-Stop	INPUT	This is terminal used to connect external emergency stop.
P10	Stop	INPUT	When Stop- pin and Ground pin are at short status, laser marker will stop working.
P9	Start	INPUT	When Start- pin and Ground pin are at short status, laser marker will trigger the fire.
P5~P8	O4 O3 O2 O1	OUTPUT	There are 4 output signals (LFC → External device) available to communicate with external devices.
P1~P4	I4 I3 I2 I1	INPUT	There are 4 input signals (External device → LFC) available to communicate with external devices

(1) Input pins



The pin 1~2 & pin 7~16 from Input status are not available to communicate with laser marker.

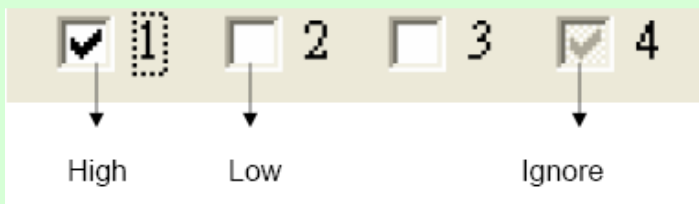
(2) **Output pins**



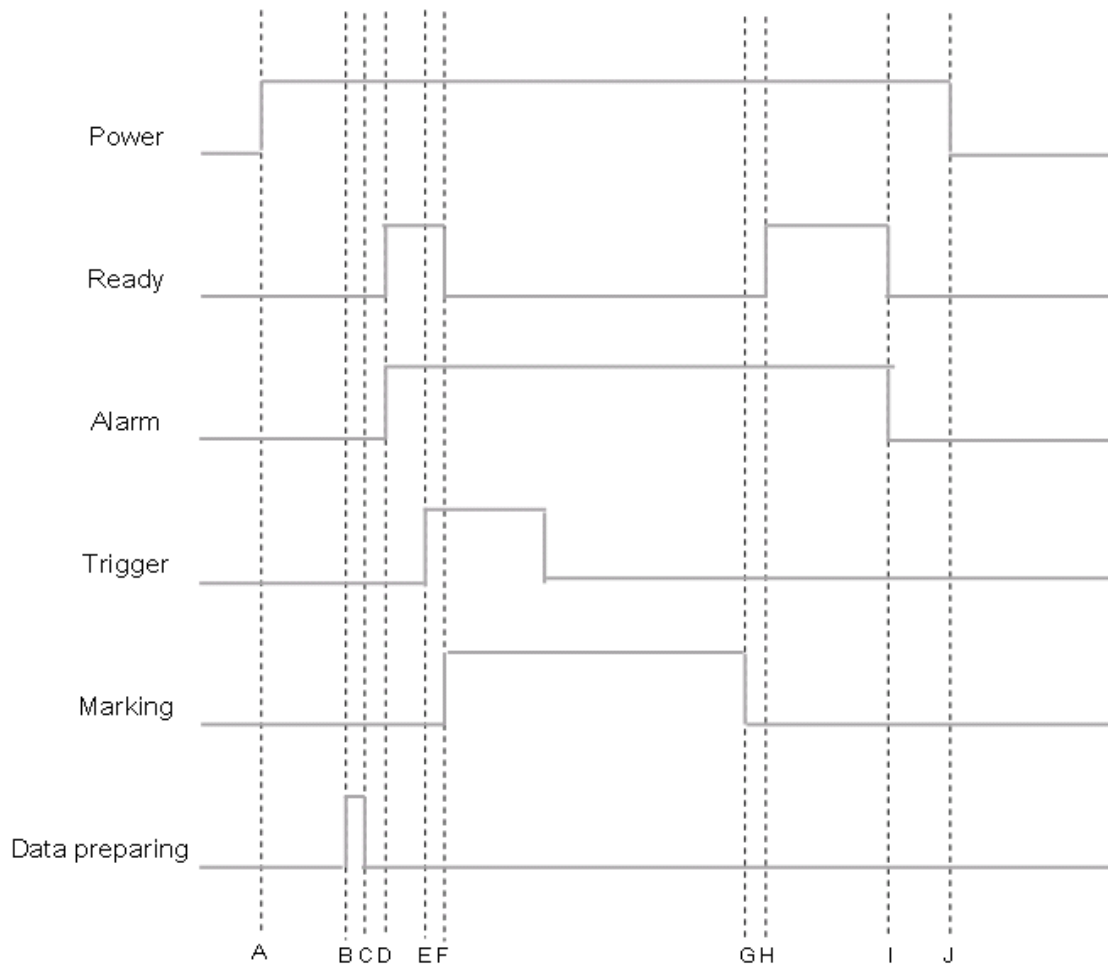
The pin 1~2 & pin 7~16 from Output status are not available to communicate with laser marker.

NOTE

High / Low definitions in G-Mark software



7.2 Laser Working Flow Chart



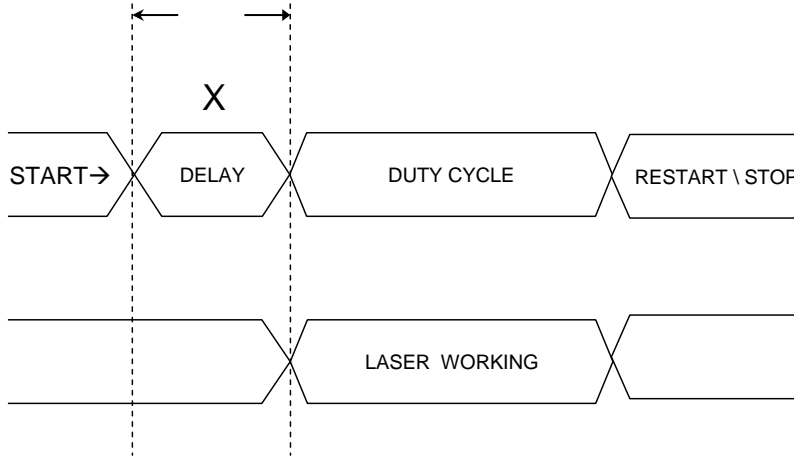
Definitions:

A	Power on
B	Time consuming between the “reading file” to the next step of “Ready to fire” depends 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 firing 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

7.3 Laser Reaction Timing Diagram

◆ Start → Laser Firing Delaying Time

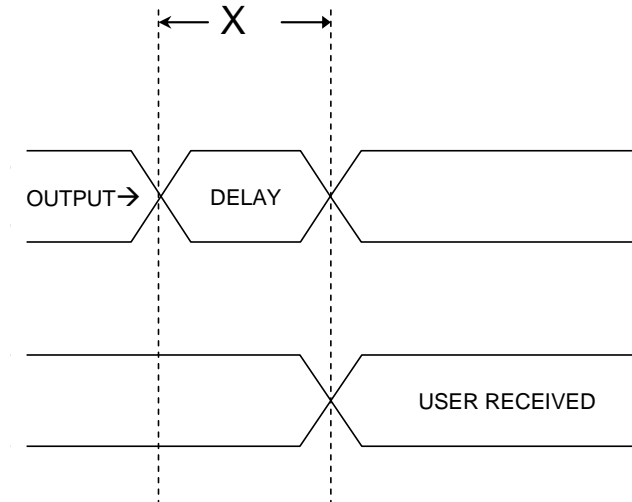
It takes about 0.1m sec $< X < 50$ m sec to fire laser after receive the command of “Start”.



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

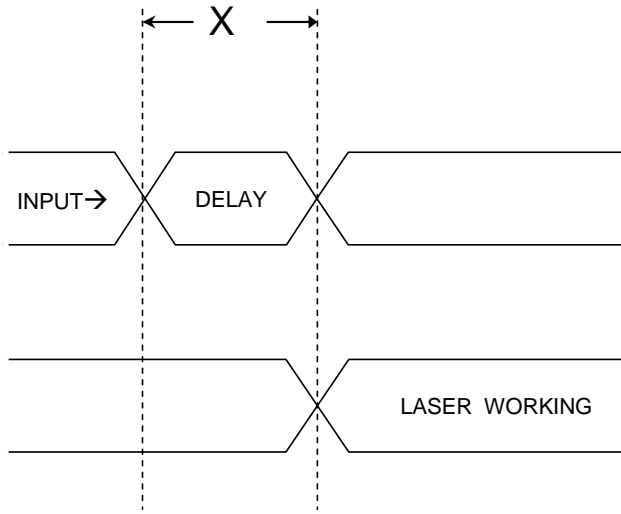
◆ Laser Signal Output → External Device Delaying Time

It takes about $X < 1 \mu$ sec for the external device to receive an output signal from the laser marker.



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

- ◆ External Device Output Signal → Laser Firing Delaying Time
It takes 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 **8**

Basic Maintenance

Regular Spot Check

Cleaning the Scan Lens

Keep the LFC Series Workstation clean and well maintained will ensure quality output, consistent reliability, and extended product life. Smoke, dust or residue built-up inside the laser system can cause 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 lens of LFC Series Workstation.

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



WARNING

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

8.1 Regular Spot Check

Before each use, inspect the machine, power cables, 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 the LFC Series Workstation 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.

8.2 Cleaning the Scan Lens

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

To clean the scan lens, simply remove the scan lens and inspect it for light and heavy residue marks.

To clean light residue marks, apply some lens cleaner on each side of the lens. Use a new, lint free cloth to remove the lens cleaner. Make sure that the cloth only travels in one direction to prevent scratching the scan lens. Let the lens dry before reattaching it to the StellarMark™. Be sure to clean only one side at a time.

To clean a heavy residue mark, apply some lens cleaner on each side of the lens. Use a cotton swab to remove the caked on residue mark. Be careful not to scratch the lens. Use acetone if the lens cleaner will not remove the mark. After the mark is removed, follow the steps used to clean light 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 cots or rubber gloves when cleaning.

Chapter **9**

Appendix

LFC Workstation Specification

Model No.	LFC II	
Available Laser Marker	CIIA / CIIP / IFII Series	
Scan Lens	CO2	70 x 70mm, 140 x 140mm, 200 x 200mm, 300 x 300mm
	Fiber	70 x 70mm, 110 x 110mm, 180 x 180mm
Front Door	Automatic door	
Max. Loading	50 kg	
Z-axis Travel	385mm	
Safety Class	Class 1 (EN60825-1)	
Software	G-Mark Basic / G-Mark Library	
Operating System	Microsoft Windows XP / Vista(32/64 bit) / 7(32/64 bit) / 8(32/64 bit) (Desktop or Laptop PCs)	
Interface	USB x 1, VGA x 1	
Power Supply	AC Auto Switching 110 - 240 VAC, 50-60Hz / Single Phase	
Power Consumption	1650W	
Operating Temperature	15°C ~35°C	
Operating Humidity	10 ~ 80% Non-condensing	
Dimension	1585(L) x 852(W) x 1745(H) mm 1854(L) x 1192(W) x 2050(H) mm (with package)	
N.W.	235 kg	
G.W.	580 kg	
Optional Item	Rotary Table (Ø 650mm, 2 or 4 stations)	
	Screen Frame Module	
	MultiFOCUS	
	Air Extraction System	