OmniDOC Gel Documentation System

Instruction Manual

Catalogue No:

OMNIDOC
OMNIDOCPRO
OMNIDOCSAFE
OMNIDOCPROSAFE

V1.1 May 26

Packing list

Standard Package	**OMNIDOC**	**OMNIDOCPRO**	**OMNIDOCSAFE**	**OMNIDOCPROSAFE**
OmniDOC Gel Documentation system	✓	✓	✓	✓
1 x 5.0MP CMOS scientific grade camera and lens	✓	✓	✓	✓
1 x EtBr filter or SYBR Green filter	✓	✓	✓	✓
1 x 312(302) nm UV trans-illuminator	✓	✓	✓	✓
1 x White light lamps module	✓	✓	✓	✓
1 x Viewing window amber filter	✓	✓	✓	✓
1 x Power Cord	✓	✓	✓	✓
1 x OmniDOC Gel Documentation System Software USB	✓	✓	✓	✓
1 x Instruction Manual	✓	✓	✓	✓
Optional Package				
Blue Light Module			✓	✓
2 x Blue lights (left and right)			✓	✓
2 x M7 nuts			✓	✓
White Light Table Module		✓		✓
1 x White light table		✓		✓
2 x M7 nuts		✓		✓

Thistle Scientific is liable for all missing or damaged parts / accessories within 7 days after customer received this instrument package. Please contact Thistle Scientific immediately regarding this issue. If no response within such time period from consignee party, that will be consignee party's whole responsibility.

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Warning

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

Notice:(1) Changes or modifications not expressly approved by the party responsible for could void the use is authority to operate the equipment.

Thistle Scientific OmniDOC Gel Documentation System series has been tested and found to comply with the limits for the CE regulation. Also, OmniDOC Gel Documentation System series is RoHS compliant to deliver confident product which meets the environmental directive. These limits are designed to provide reasonable protection against harmful interference when the instrument series is operated in a commercial environment. This instrument series used together with power supply unit generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this instrument series in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. It is strongly recommended for the user to read the following points carefully before operating this equipment.

1. Read and follow the manual instructions carefully.
2. Do not alter the equipment. Failure to follow these directions could result in personal and/or laboratory hazards, as well as invalidate equipment warranty.
3. Use a properly grounded electrical outlet with correct voltage and current handling capacity.
4. Disconnect from power supply before maintenance and servicing. Refer servicing to qualified personnel.
5. Never use this instrument series without having the safety cover correctly in position.
6. Do not use the unit if there is any sign of damage to the external tank or cover. Replace damaged parts.
7. Do not use in the presence of flammable or combustible material, fire or explosion may result. This device contains components which may ignite such materials.
8. Refer maintenance and servicing to qualified personnel.
9. Ensure that the system is connected to electrical service according to local and national electrical codes. Failure to make a proper connection may create fire or shock hazard.
10. Use appropriate materials and operate correctly to avoid possible hazards of explosion, implosion or release of toxic or flammable gases arising from overheated materials.
11. The unit shall be operated only by qualified personnel.

Safety Information

Use high level of precaution against any electrical device. Before connecting the electrical supply, check to see if the supply voltage is within the range stated at the rating label, and see to it that the device be seated firmly. Place the unit in a safe and dry location; it must NOT touch the surrounding. Follow the safety precautions for chemicals / dangerous materials. If needed, please contact qualified service representative.

Environmental Conditions

Ensure the instrument is installed and operated strictly in the following conditions:

1. Indoor use only
2. ≤95% RH (non-condensing)
3. 75 kPa – 106 kPa
4. Altitude must not exceed 2000 meters
5. Ambient to 40°C operating temperature
6. Pollution degree: 2
7. Mains supply voltage fluctuations up to ±10% of the normal voltage

Avoiding Electrical Shock

Follow the guidelines below to ensure safe operation of the unit.

OmniDOC Gel Documentation System series has been designed to be used with shielded wires thus minimizing any potential shock hazard to the user. Thistle Scientific recommends against the use of unshielded wires.

To avoid electrical shock:

1. In the event of a solution accidentally spilling on the instrument, it must be dried out for a period of time (at least 2 hours) and restored to NORMAL CONDITION before each operation.
2. Never connect or disconnect wires loading from the power jacks when the red indicator light of power switch is on.
3. WAIT at least 5 seconds after stopping a run before handling output leads or any connected apparatus.
4. ALWAYS make sure that your hands, work area, and instruments are **clean** and **dry** before making any connections or operating the power supply.
5. ONLY connect the power cord to a properly grounded AC outlet.

Avoiding Damage to the Instrument

1. Do not attempt to operate the device if damage is suspected.
2. Protect this unit from physical damage, corrosive agents and extreme temperatures (direct sunlight, etc.).
3. For proper ventilation and safety concerns, keep at least 10 cm of space behind the instrument, and at least 5 cm of space on each side.
4. Use a high level of precaution against the damage on the unit.
5. Do not operate the unit out of the environmental conditions addressed above.
6. Prior to applying any cleaning or decontamination methods other than manufacturer's recommendation, users should check with the manufacturer's instruction to see if the proposed method will damage the equipment.

Equipment Operation

Follow the guidelines below to ensure safe operation of the unit:

1. Check the displayed figures to see if the unit is functioning correctly before using this unit.
2. NEVER access dangerous chemicals or other materials to prevent possible hazard of explosion and damage.
3. Temporary conductivity caused by condensation might occur even though this series is rated Pollution Degree 2 in accordance with IEC 664.

Disposal of UV tubes

The UV tubes contain mercury; please dispose of the tubes in accordance with local laws. It is important to handle the waste tubes with care to ensure public health and the environment. For further information about recycle waste tubes, please see www.lamprecycle.org.

Equipment Handling

Follow the guidelines below to ensure safe move of the device:

1. The device should be carried by at least two people.
2. Do not raise the device over the knuckle height while moving the device.
3. Move the device by cart and assist the device do not drop.

Symbols

The symbols used on OmniDOC Gel Documentation System are explained below.

Indicates an area where a potential shock hazard may exist. Consult the manual to avoid possible personal injury or instrument damage.

Indicate a warning of UV radiation.

While using the UV Transilluminator, be sure the operating personnel is properly protected.

Indicates disposal instruction.
DO NOT throw this unit into a municipal trash bin when this unit has reached the end of its lifetime. To ensure utmost protection of the global environment and minimize pollution, please recycle this unit.

Potential Risk and Preventive Measure

1. Risk assessment table

Potential Risk / Frequency	Frequent	Likely	Possible	Rare	Unlikely
Bruise			✓		
Pinch			✓		
Slash					✓
UV radiation dangerous					✓
Wrong power cord plug				✓	

2. Preventative measures of risk

Potential Risk	**Preventive measures**
Bruise	Do not put the machine near the table edge. Move the machine by cart.
Pinch	Do not put your hands on the open door.
Slash	Prevent hard impact on the acrylic panel.
UV radiation dangerous	Do not open the darkroom door while you turn on the UV light.
Wrong Power cord plug	Observe correct adapter plug.

Section 1 Introduction

1.1 Overview

OmniDOC Gel Documentation System is the next generation of gel documentation instrument. It is specifically designed for ease of use for any lab experiment with gel imaging. OmniDOC Gel Documentation System is packed with 5.0 megapixels high sensitivity and resolution scientific grade camera for outstanding imaging quality. The system provides you convenience such as 312(302) nm pull out UV transilluminator for easy gel cutting, pre-focused lens for one touch image capture and user-friendly software interface. The expendable accessories such as epi-blue module and white light table are also available for environment safe nucleic acid stains or western blot analysis.

1.2 Feature

- Fluorescent imaging
- 5.0 megapixels CMOS scientific grade camera
- Mounted USB port for saving images and analysing samples
- Maximum field of view 21 x 26 cm (8.3 x 10.3 inch)
- Compact configuration and size
- Inner 6 x 1Wwhite light LED for uniform white light illumination
- Safety door switch
- Two kinds of light source options (safety blue light and white light table)
- High camera resolution
- Easy to use software for image analysis

SKU	OMNIDOC	OMNIDOCPRO	OMNIDOCPROSAFE	OMNIDOCSAFE
Weight (Kg)	25	25	25	25
Resolution	5 mega pixels (2592x1944 pixels maximum)	5 mega pixels (2592x1944 pixels maximum)	5 mega pixels (2592x1944 pixels maximum)	5 mega pixels (2592x1944 pixels maximum)
Transilluminator Wavelength	312nm	312nm	312nm	312nm
Camera Type	CMOS, 1/2.5", Monochrome	CMOS, 1/2.5", Monochrome	CMOS, 1/2.5", Monochrome	CMOS, 1/2.5", Monochrome
Epi White Light	6x1W LED (standard)	6x1W LED (standard)	6x1W LED (standard)	6x1W LED (standard)
Transilluminator Size	21x26cm	21x26cm	21x26cm	21x26cm
Lens	5mm focal length; aperture F1.2	5mm focal length; aperture F1.2	5mm focal length; aperture F1.2	5mm focal length; aperture F1.2
Sensor Bit-Depth	12-bit (0-4095 grey levels)	12-bit (0-4095 grey levels)	12-bit (0-4095 grey levels)	12-bit (0-4095 grey levels)
Emission Filters	620nm EtBr (standard); optional 520, 560, 580nm filters	620nm EtBr (standard); optional 520, 560, 580nm filters	620nm EtBr (standard); optional 520, 560, 580nm filters	620nm EtBr (standard); optional 520, 560, 580nm filters
Image Storage	PC or Laptop	PC or Laptop	PC or Laptop	PC or Laptop
Dark Room Dimensions	410 x 405 x 570mm (W x D x H)	410 x 405 x 570mm (W x D x H)	410 x 405 x 570mm (W x D x H)	410 x 405 x 570mm (W x D x H)
Viewing Window	560nm universal orange filter	560nm universal orange filter	560nm universal orange filter	560nm universal orange filter
White Light Table	None	Included	Included	None
Blue Light	None	None	Included	Included
Sensor Dynamic Range	3.6	3.6	3.6	3.6
Detection Dynamic Range	> 4 orders of magnitude (ng to ug)	> 4 orders of magnitude (ng to ug)	> 4 orders of magnitude (ng to ug)	> 4 orders of magnitude (ng to ug)
Control Interface	USB to PC	USB to PC	USB to PC	USB to PC
Operating System Requirements	Windows 7, 8, 10,11	Windows 7, 8, 10,11	Windows 7, 8, 10,11	Windows 7, 8, 10,11
Input Voltage	110-230V	110-230V	110-230V	110-230V
Display	LED	LED	LED	LED
Safety Features	Safety interlock switch on front door panel; disconnects UV transilluminator on opening; complies with CE, FCC standards	Safety interlock switch on front door panel; disconnects UV transilluminator on opening; complies with CE, FCC standards	Safety interlock switch on front door panel; disconnects UV transilluminator on opening; complies with CE, FCC standards	Safety interlock switch on front door panel; disconnects UV transilluminator on opening; complies with CE, FCC standards

1.3 Components guide

Front View

Scientific grade camera and lens

Viewing window

Darkroom door with UV safety switch

LED indicator light

A-type USB port (For service use only)

Main power

Power socket & Fuse holder

Rear View **Side View**

Section 2 Technical Specification

CMOS scientific grade camera	
Camera Type	CMOS scientific grade camera
Sensor	5.0M Pixels Monochrome sensor
Max. CMOS Resolution	2592 x 1944 pixels
Pixel Density	RAW 8 bit/10bit/12bit
Power	DC5V / 250mA
Lens	
Focal Length	6mm
Aperture	F1.2 - Close
Filter	
Type	EtBr filter or SYBR Green filter
Computer/laptop recommended specification	
Processor	1.8GHz Pentium® IV or equivalent AMD Athlon® processor
Memory	1GB
Storage	1GB available HD space
Media	CD-ROM drive
Connectivity	1 port USB 2.0
Display	1280x800 resolutions
Operating System	Windows® 7 SP1/ Windows® Vista SP1 / Windows® XP SP3/ Windows® 8/ Windows® 10/ Windows® 11 and Windows® Vista
Darkroom	
Inner White Light	White light lamps module (6 x 1W)
Safety Device	Automatic UV light shut off when door open
Unit Dimension	410 x 405 x 570mm (W x D x H) (16.1 x 15.9 x 22.4 inch)
Rated Voltages	100V- 240 V AC, 50/60 Hz, 2A
Unit Weight	Approx. 24.5kg (54 lbs.)
Transilluminator	
UV Transilluminator	312(302) nm (Single wavelength)
Filter Size	21 x 26 cm (8.3 x 10.3 inch)
Light Source	6 x 8W UV tubes

Section 3 Installation Instructions

OmniDOC Gel Documentation System comes with epi white light and trans-UV as standard. Optional blue light module or white light table is offered for expansion to offer higher flexibility. There are few procedures to install the optional devices. Place the unit on a sturdy, level, safe and dry place, then follow the instruction below for installation:

Note: Please skip ahead to section 3.3 if no optional lighting modules are included with your purchase.

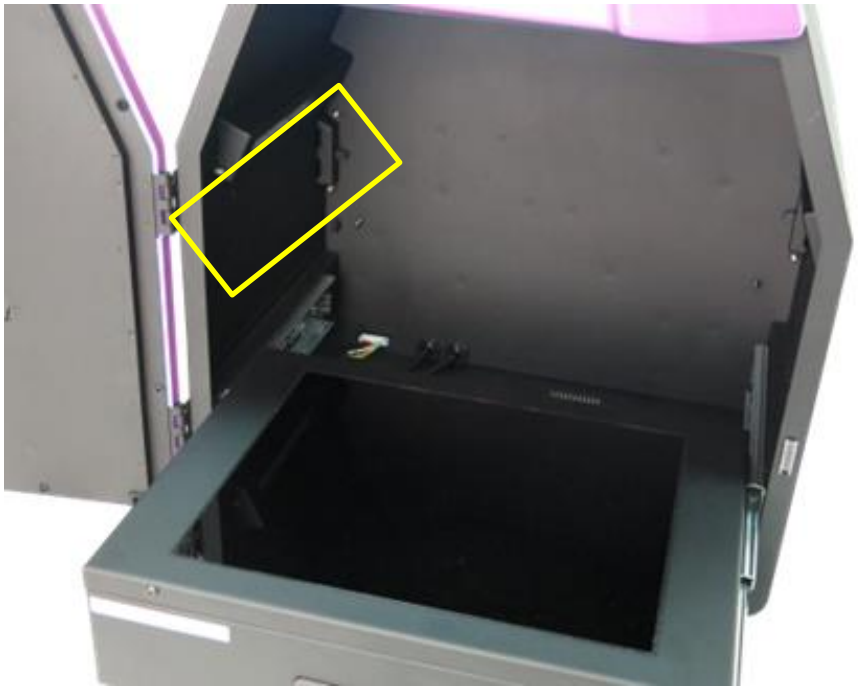
Tool required: 7M/M Socket wrench (not provided)

3.1Installing Blue Light Module (Optional)

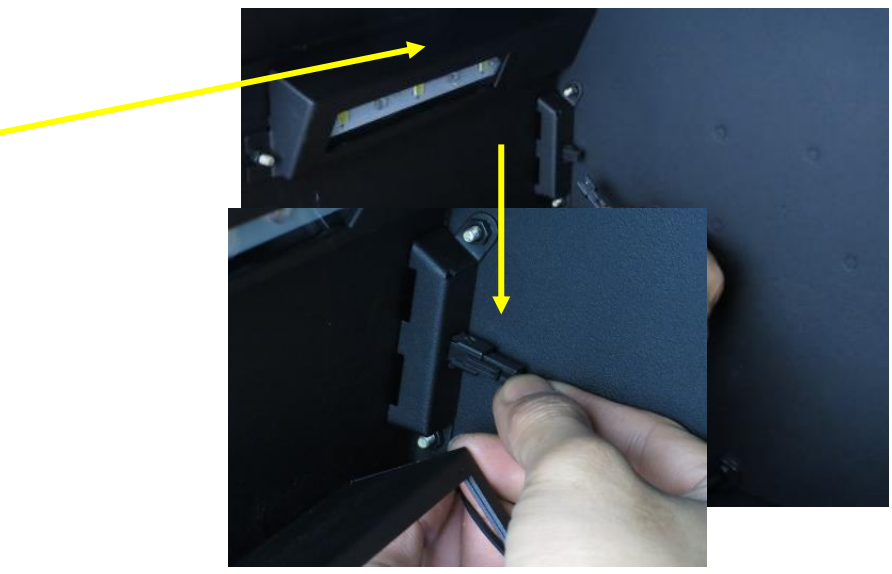
Step1 Get the blue light module ready. There are two blue lights (left and right) and 2 pieces of M7 nuts in the package.

M7 nuts

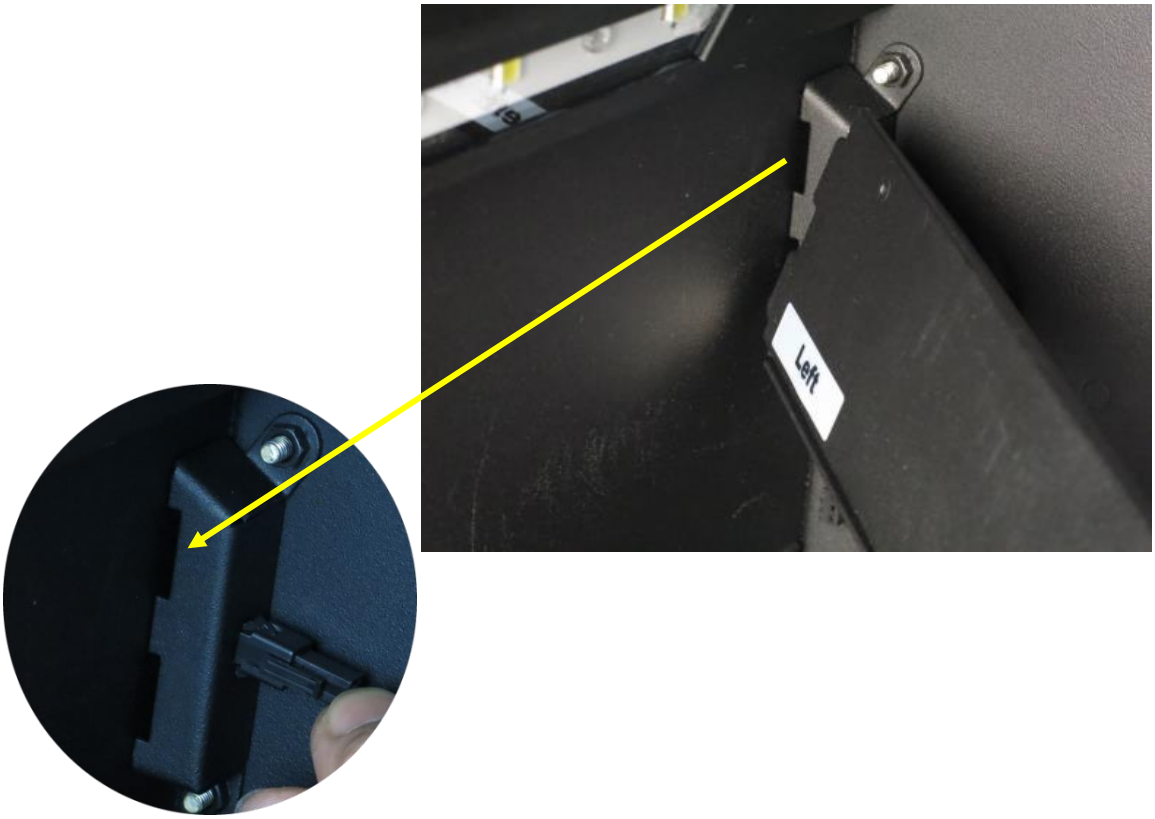
Step2 Open the darkroom door and hold the left blue light on left inner wall.



Step3 Connect the blue light quick connector with darkroom inner socket.



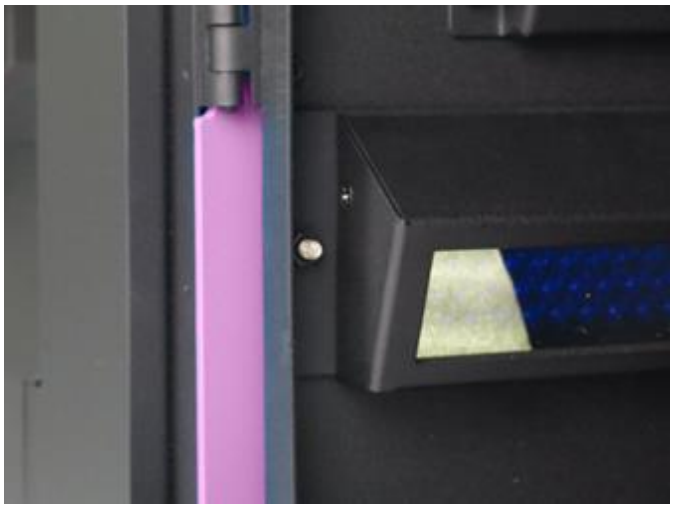
Step4 Insert the blue light into the inner lining of darkroom.

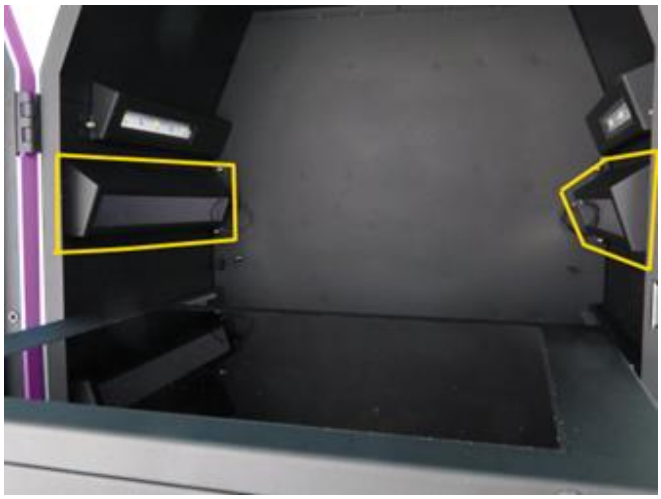


Step5 Put the other side of blue light into the stud of darkroom inner wall.

Step6 Take a nut from parts kit. Use 7M/M socket wrench to tighten the nut on the stud.

Step7 The blue light is fixed as shown below. Please repeat steps 2~6 for right side blue light to install it in the darkroom.

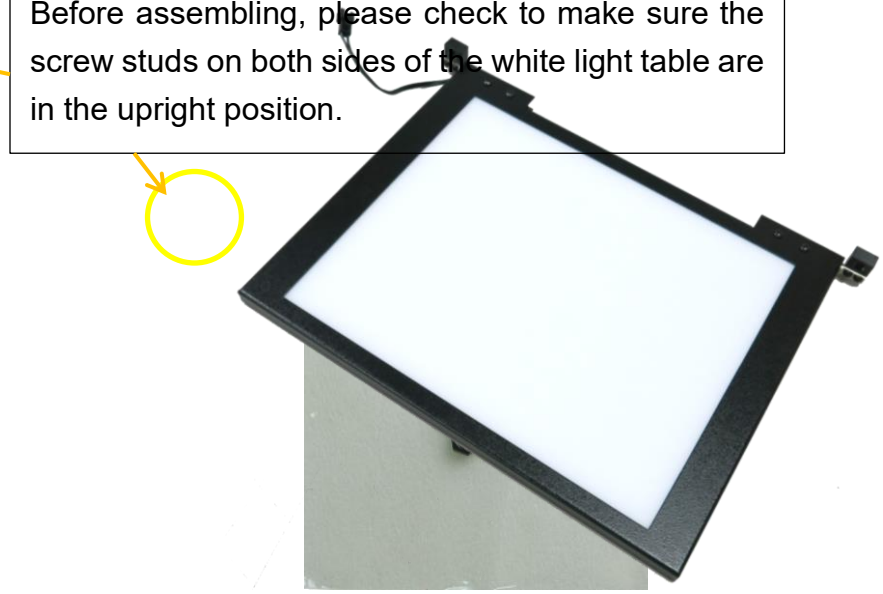




3.2Installing White Light Table Module (Optional)

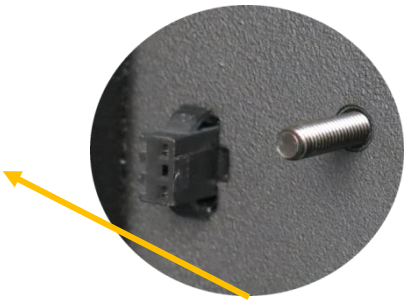
Step1 Get the white light table module ready. There is one white light tableand 2 pieces of M7 nuts in the package.

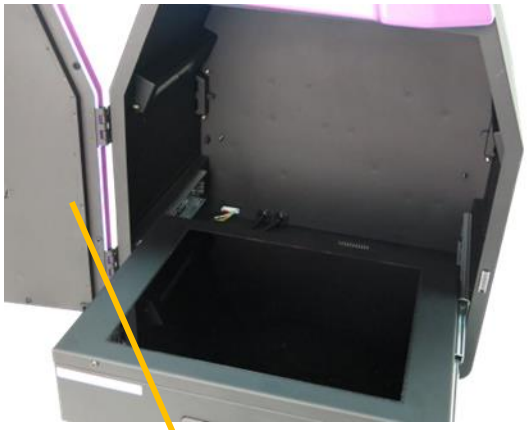
Before assembling, please check to make sure the screw studs on both sides of the white light table are in the upright position.



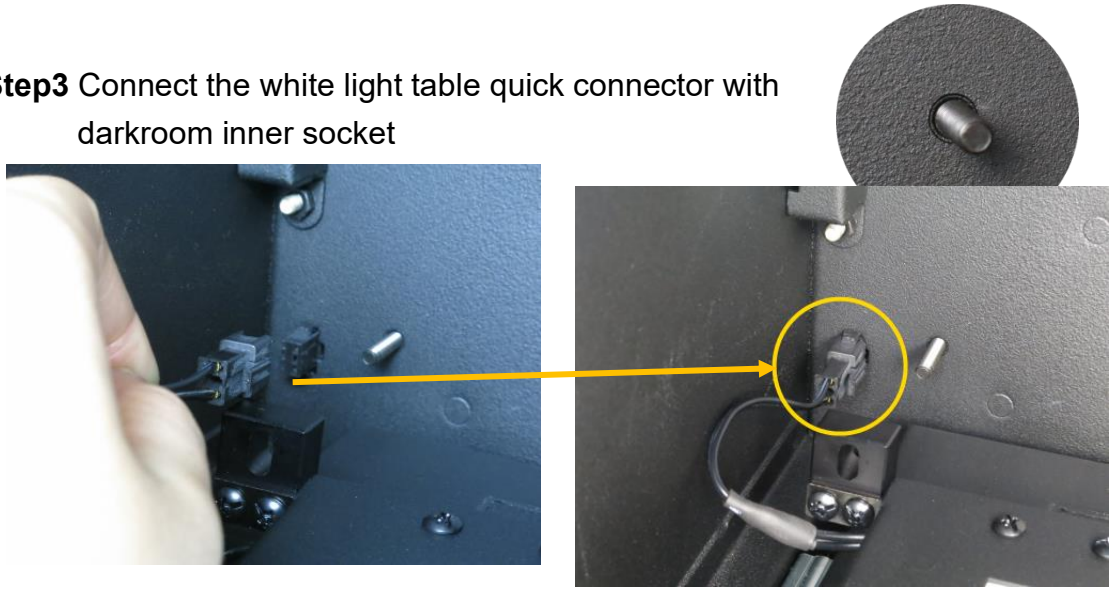
Step2 Open the darkroom door and place the white light table on the UV transilluminator. There are two studs and a socket on the back wall.

M7 nuts

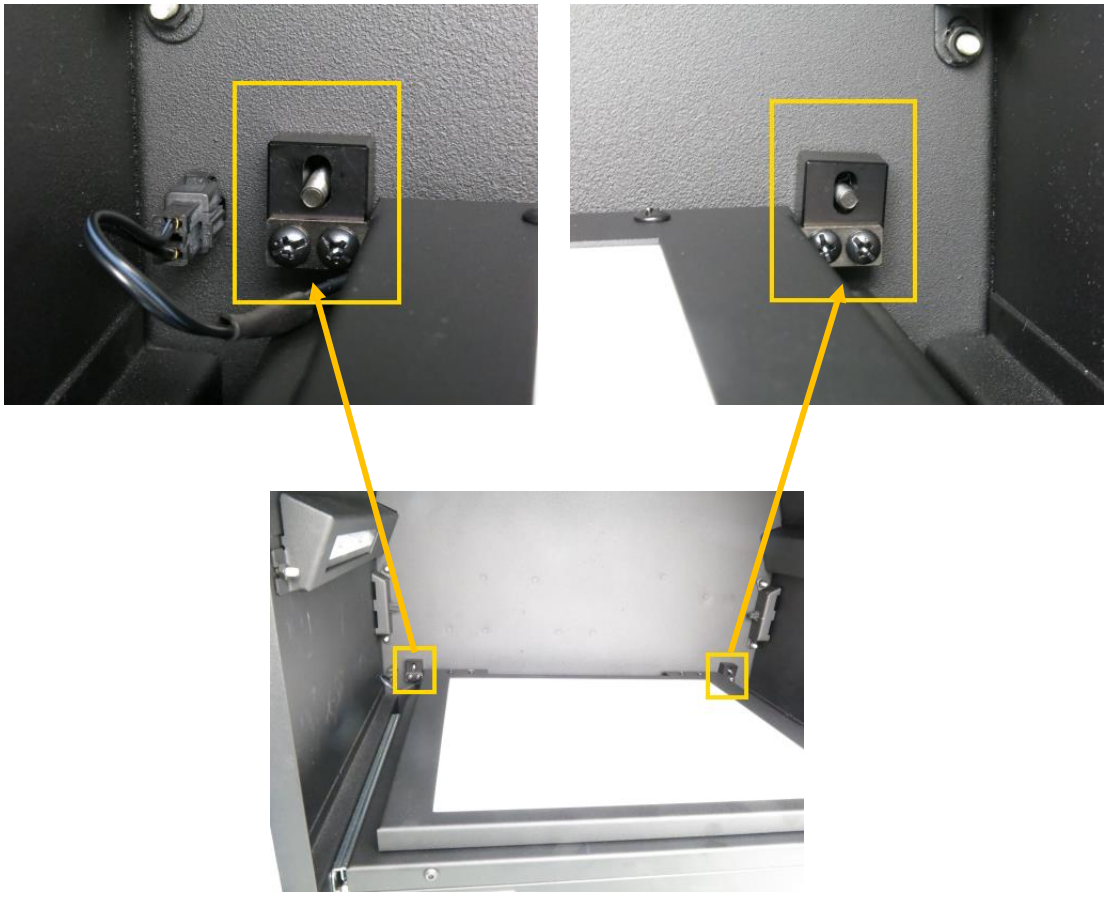




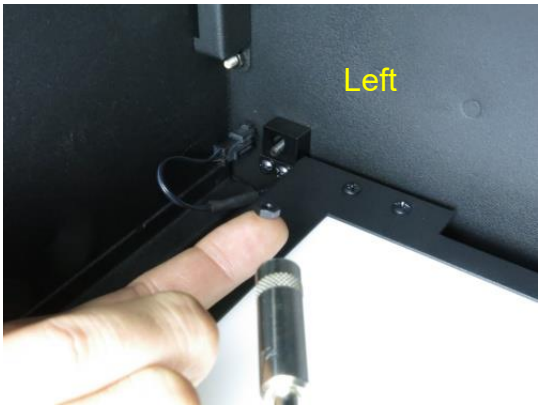
Step3 Connect the white light table quick connector with darkroom inner socket

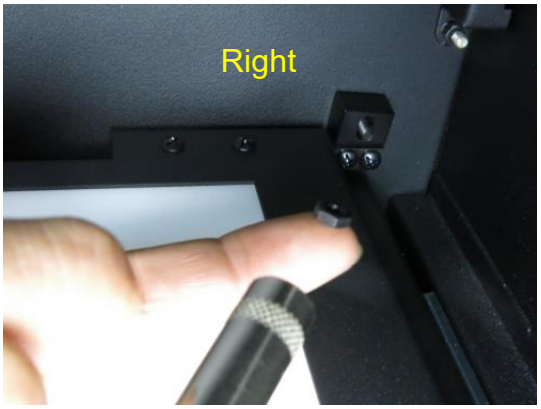


Step4 Make sure the stud holders on the white light table align with the studs of darkroom.

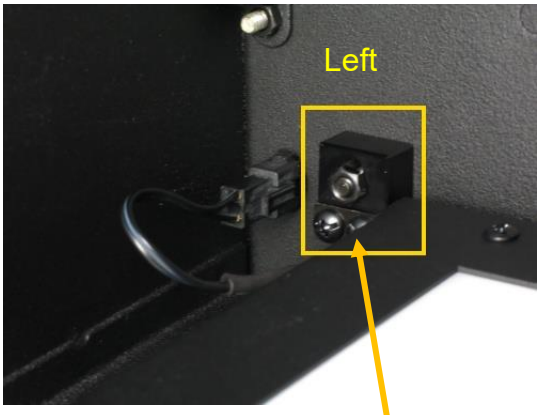


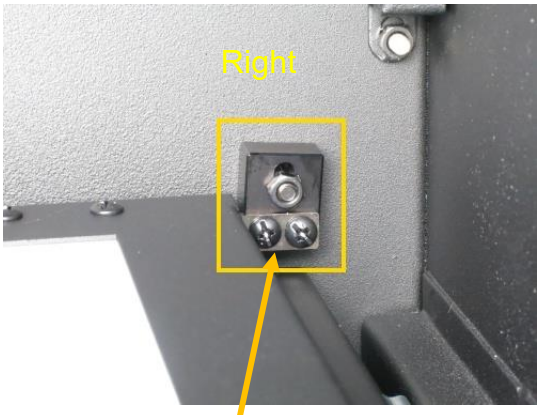
Step5 Take the nuts from parts kit. Use 7M/M socket wrench to tighten nuts on the studs.



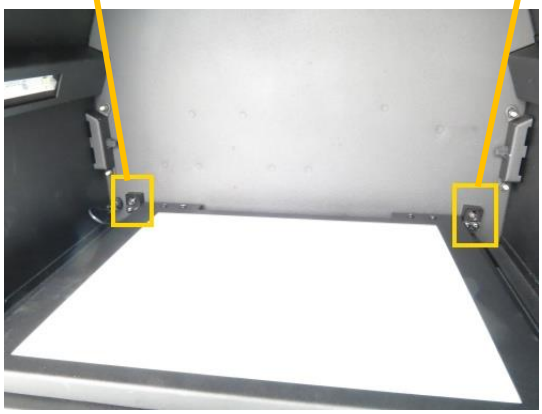


Step6 The white light table is fixed as shown below.





Step7 All accessories are installed as shown below.



Note: If necessary, please manually adjust the aperture to have the best performance while working with White Light Table.

Aperture ring

F1.2 - Close

For more details, please refer to the operation instructions on 4.2.6.

3.3 Install the OMNIDOC GEL DOCUMENTATION analysis software

***To install the program, please log in as an administrator on the computer and plug in the USB stick provided.**
Please refer to the Web link to change the account of computer:

a. For Windows® XP
http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/windows_security_runas.mspx?mfr=true

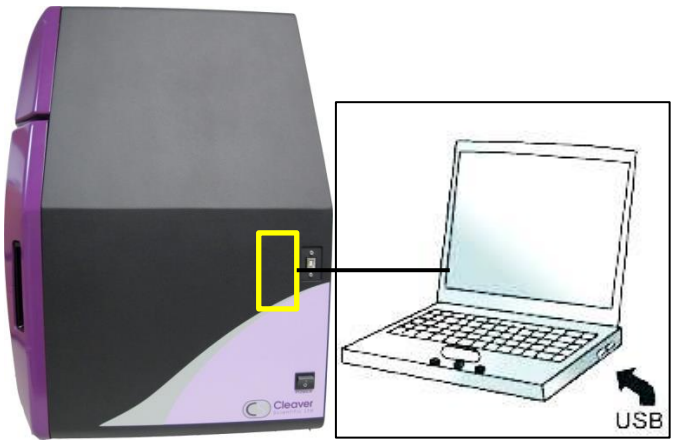
b. For Windows®7
http://windows.microsoft.com/en-hk/windows7/installing-programs-frequently-asked-questions

c. For Windows® 8, 10, 11 and Windows® Vista

1. Go to the Search and type "Change User Account Settings" or Go to Control Panel > User Accounts and Family Safety > User Accounts.
2. Do one of the following:
   - To turn off UAC, move the slider to the Never Notify position, and then click OK. If you're prompted for an administrator with a password or confirmation, type the password or provide confirmation. You will need to restart your computer for UAC to be turned off.
   - To turn on UAC, move the slider to choose when you want to be notified, and then click OK. If you're prompted for an administrator password or confirmation, type the password or provide confirmation

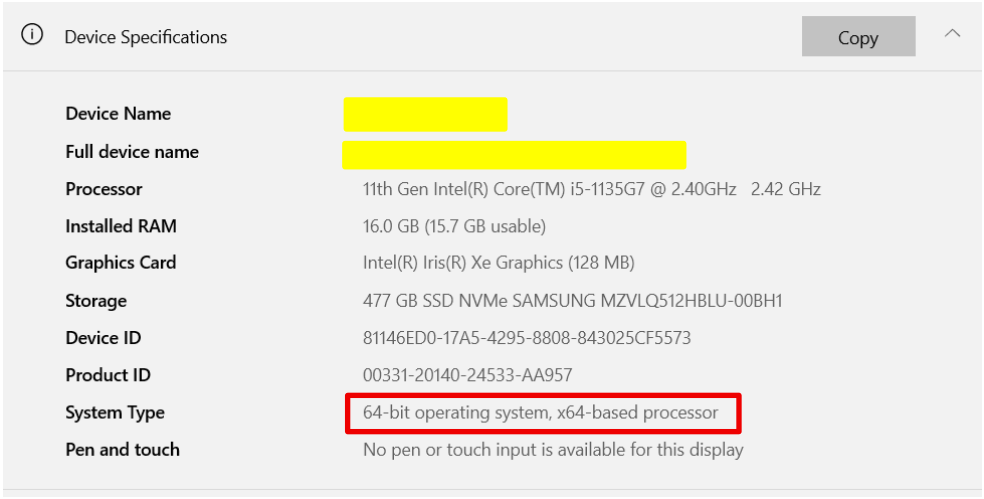
3.3.1 Install scientific grade camera software

Step1 Turn on the OmniDOC Gel Documentation System and connect the OmniDOC Gel Documentation System with the computer by USB wire.



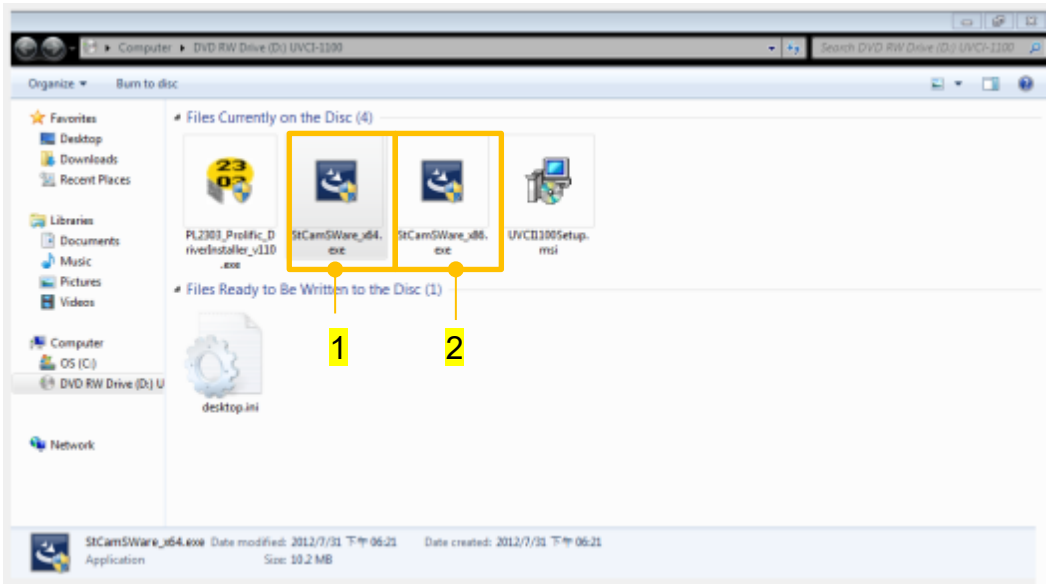
Step2 Check the computer system type by following the steps below:

Control Panel → All Control Panel Items → System → About

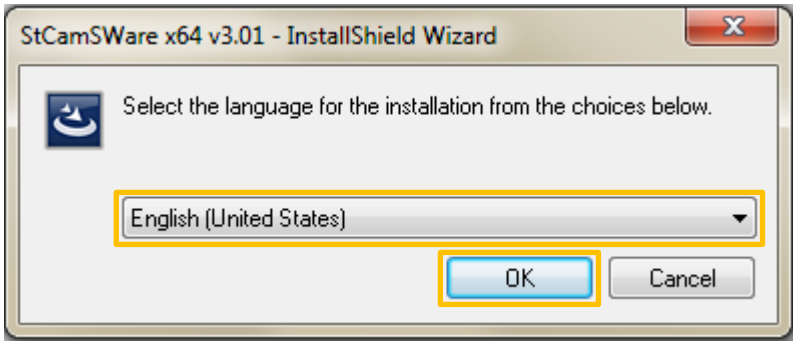


Step3 Install scientific grade camera setup software by USB stick provided.

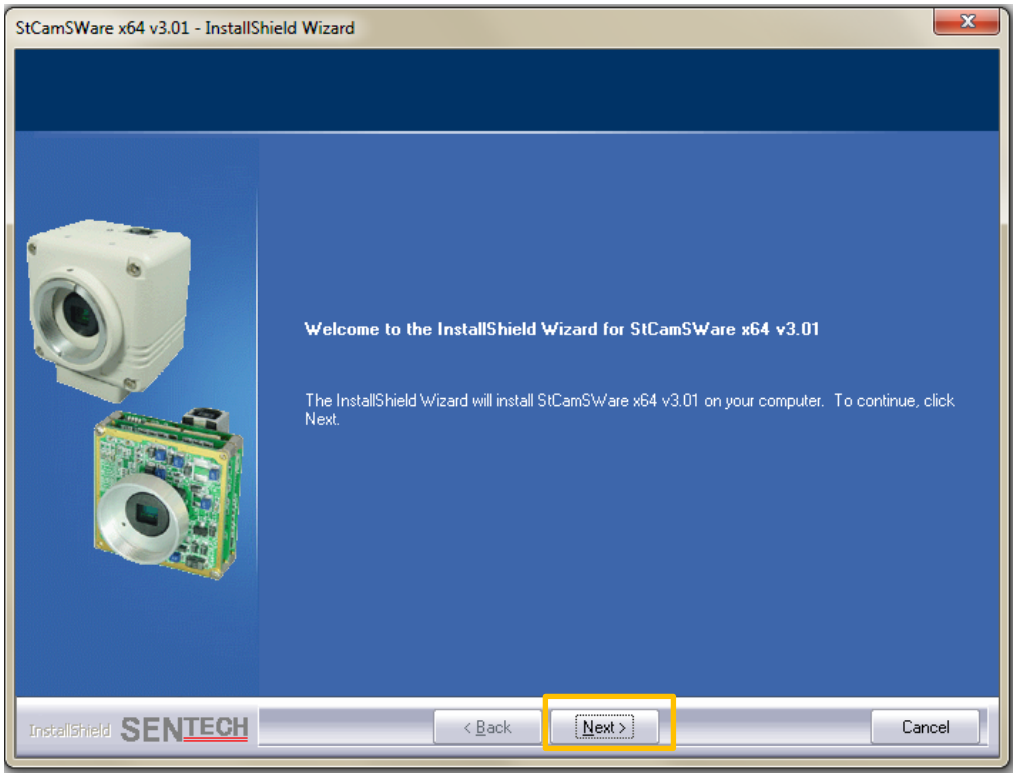
Note: Five files are included in the software USB. Please use according to your system type to install camera setup software.
System type A. 32 bit: use "StCamSWare_x86" (as box 1)
System type B. 64 bit: use "StCamSWare_x64" (as box 2)



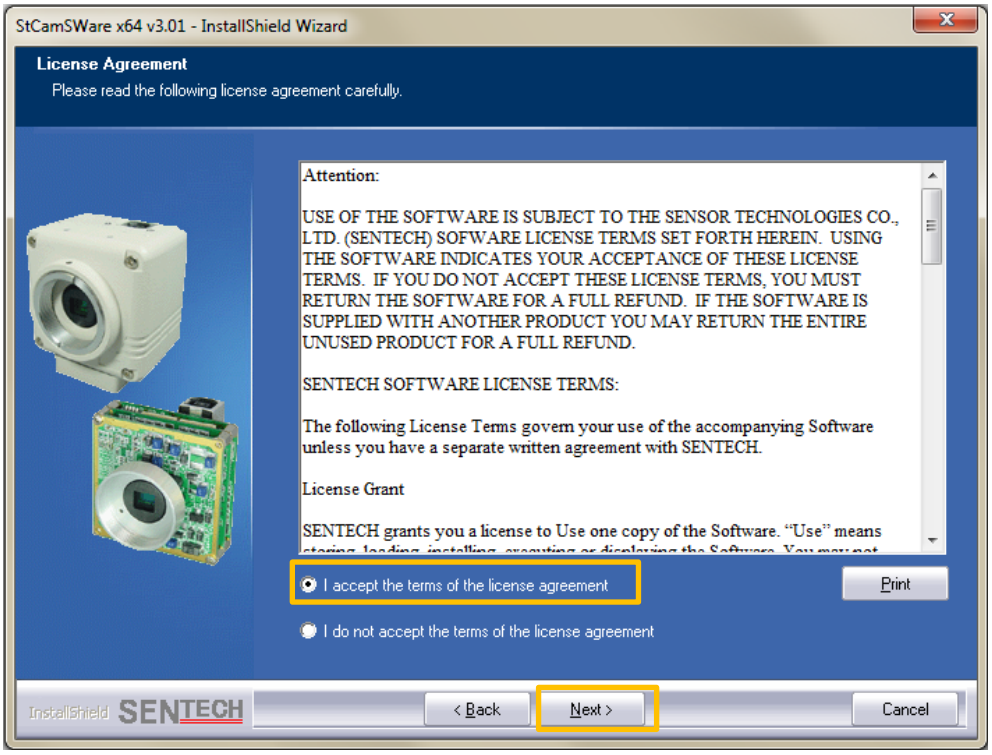
Step4 Select the language for your location.



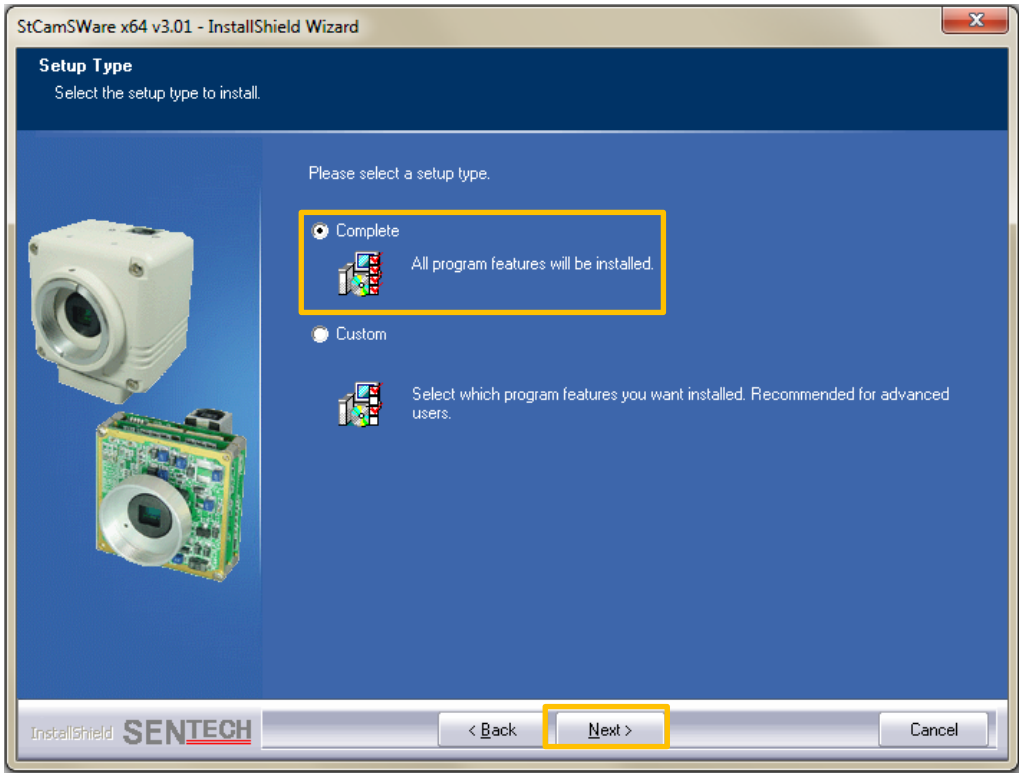
Step5 Click “Next” to start installing the program.



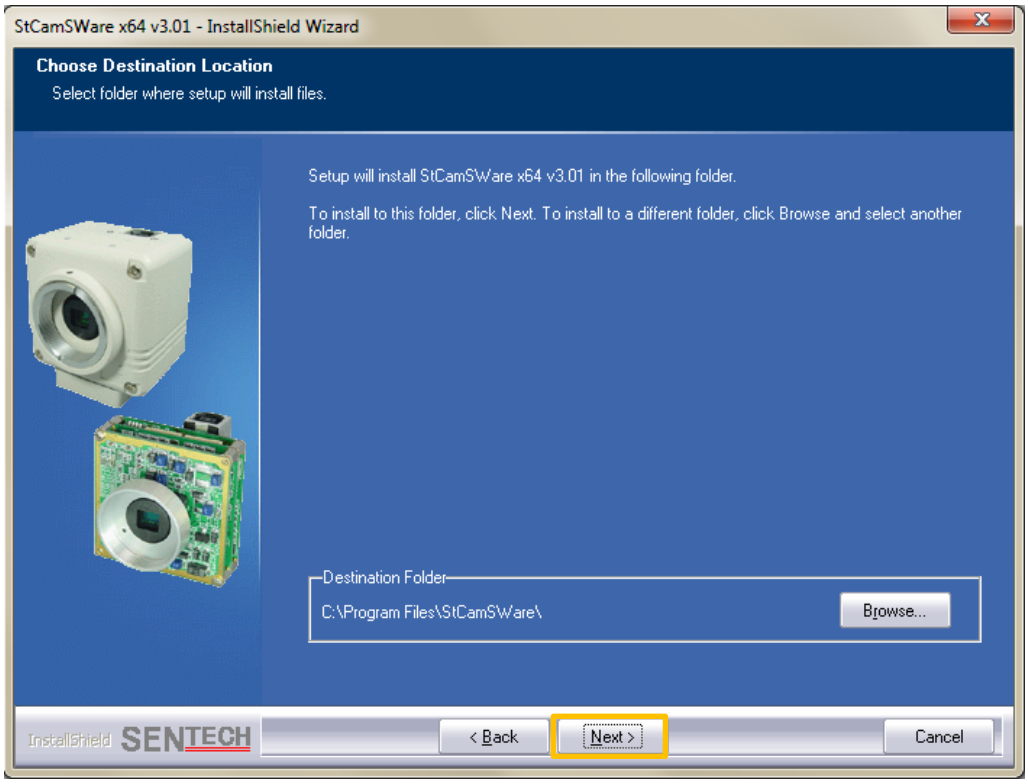
Step6 Check the license agreement then press the “Next” button.



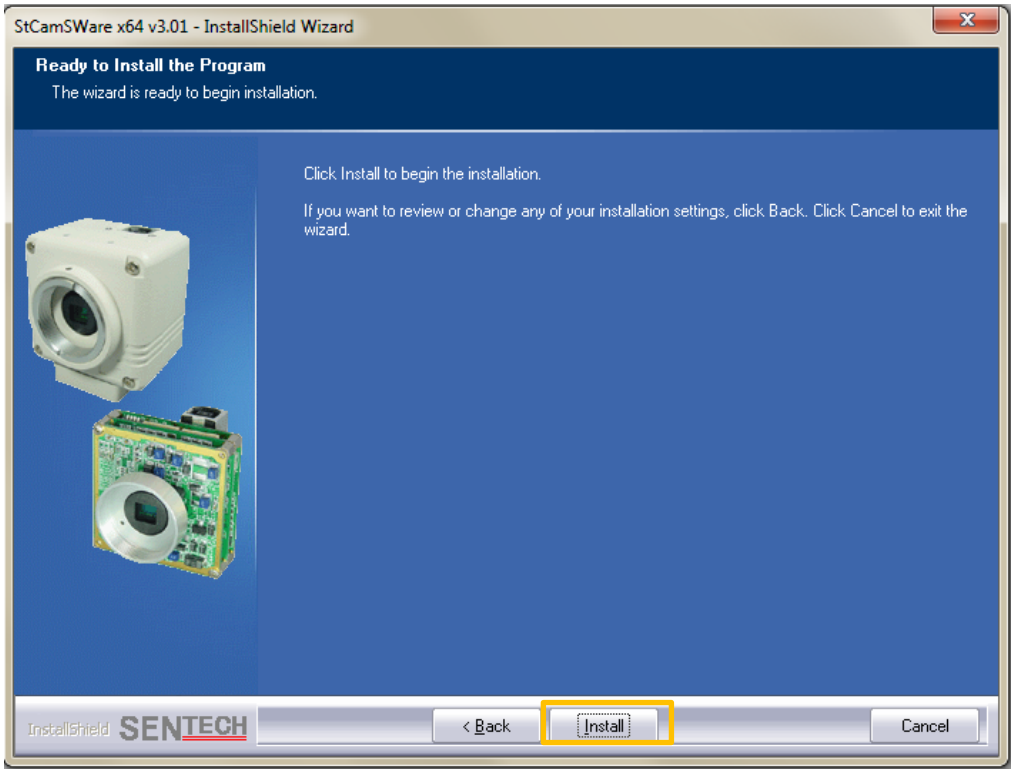
Step7 Select the “Complete” type to setup and then press the “Next” button.



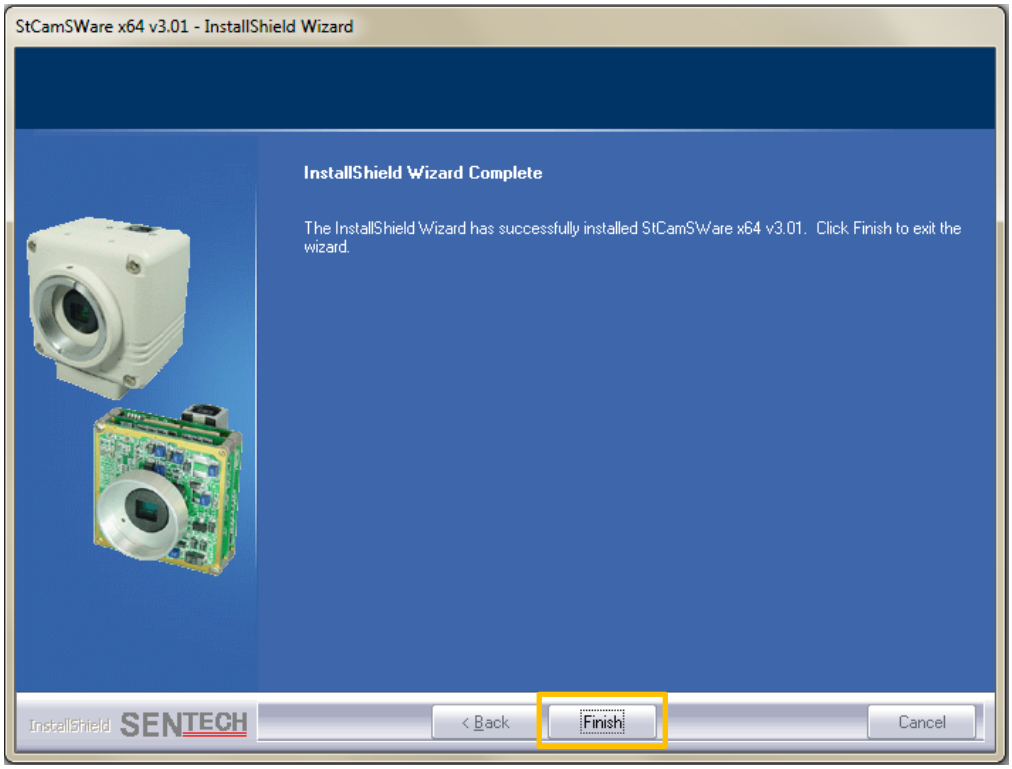
Step8 Save this program in the preferred destination folder.



Step9 Click install to begin the installation.

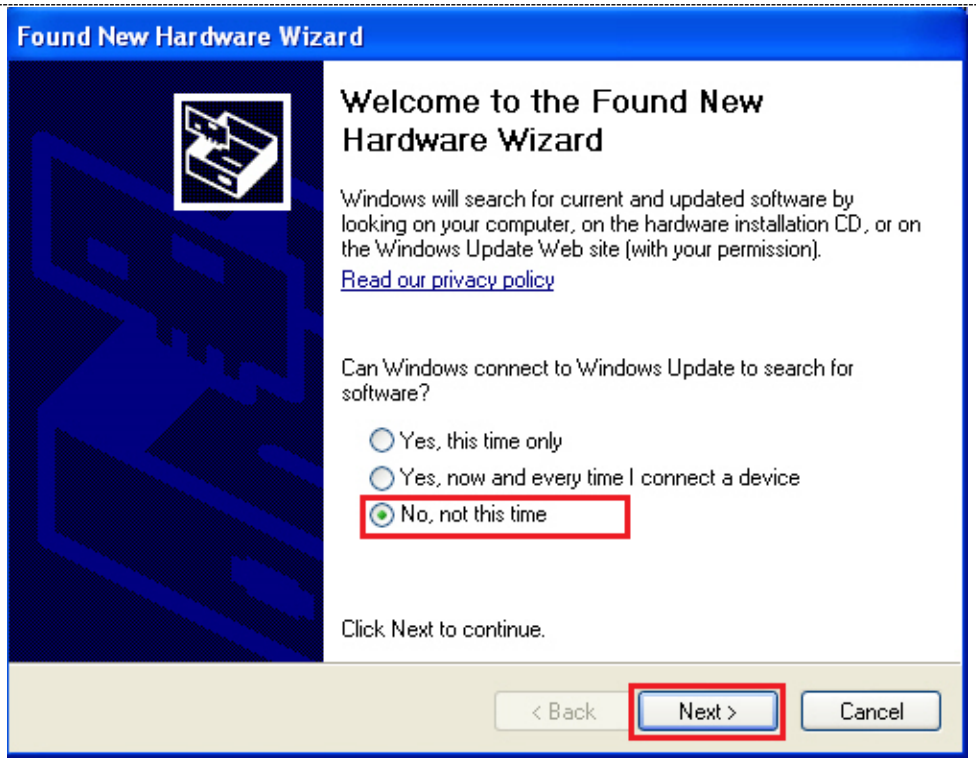


Step10 Complete the installation program.

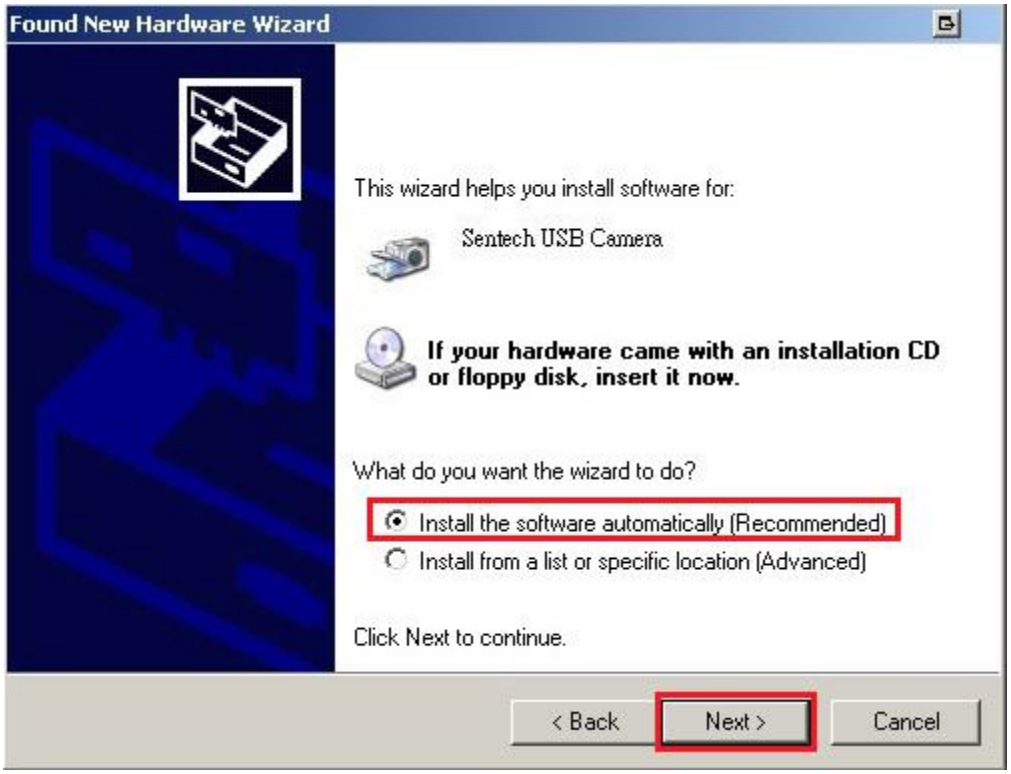


Note: Under Windows XP system, if you want to change the USB port from computer/laptop with scientific grade camera, a "found new hardware" dialog of the system will pop up. Please install the hardware as following to proceed.

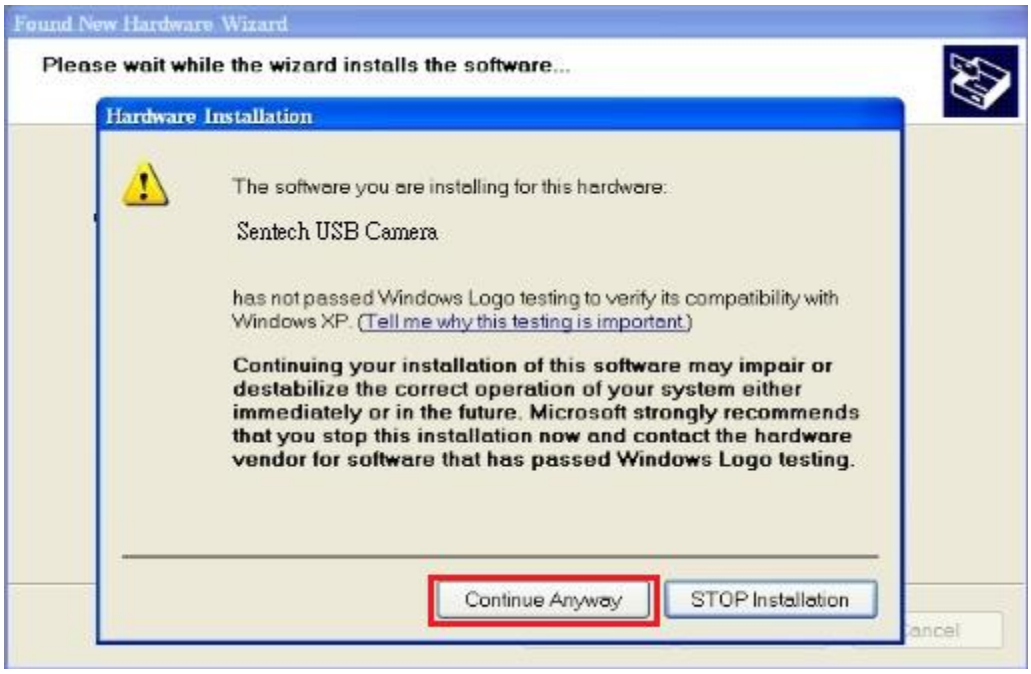
1. Select "No, not this time" then press "Next" button.



2. Select "Install the software automatically" then click "Next" button.

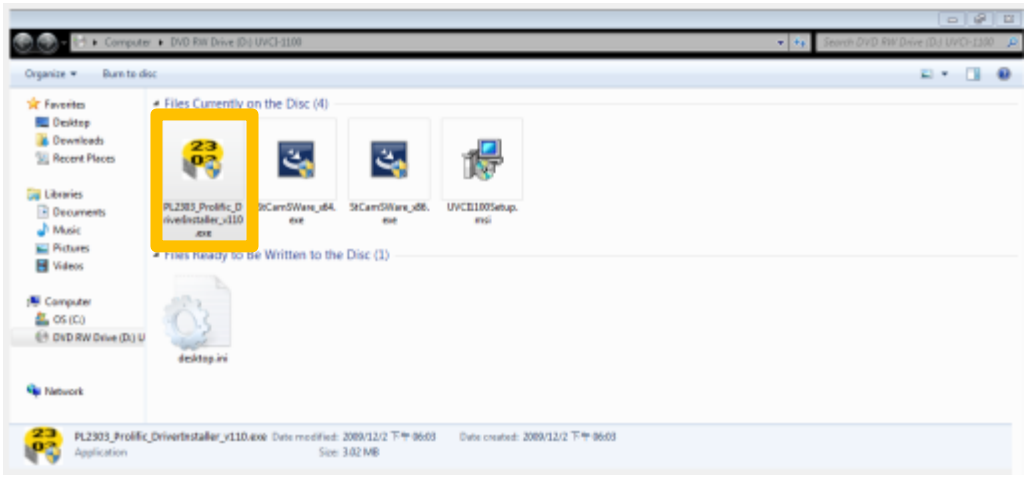


3. Press "Continue Anyway" to finish the hardware wizard.

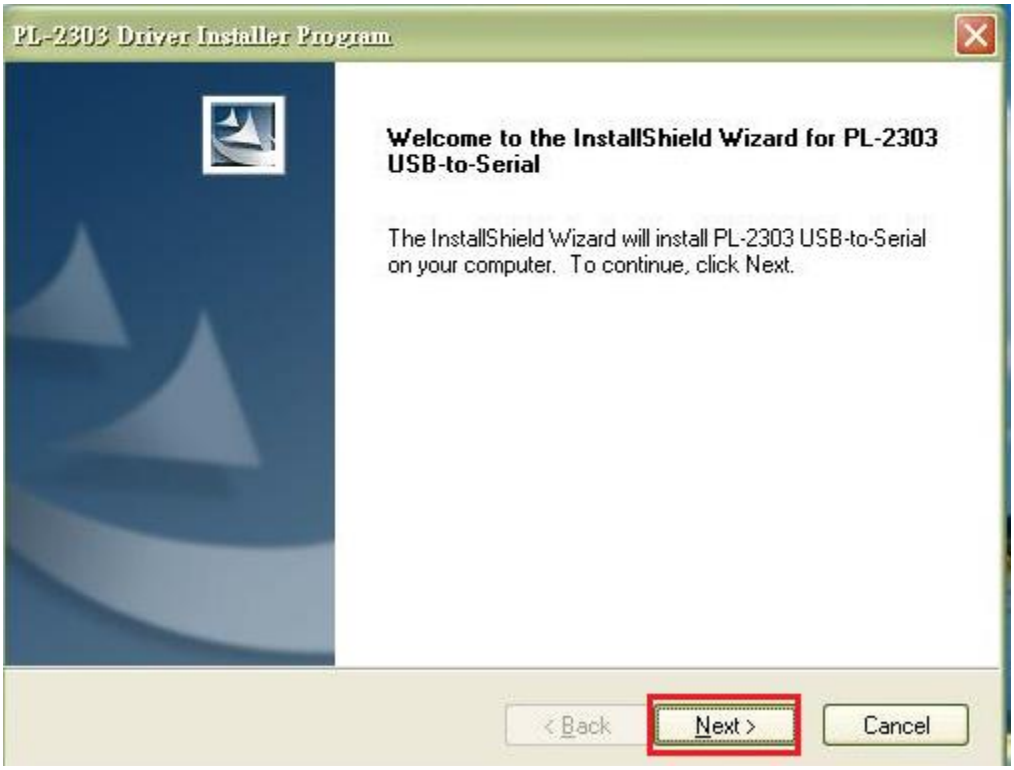


3.3.2 Install light signal software

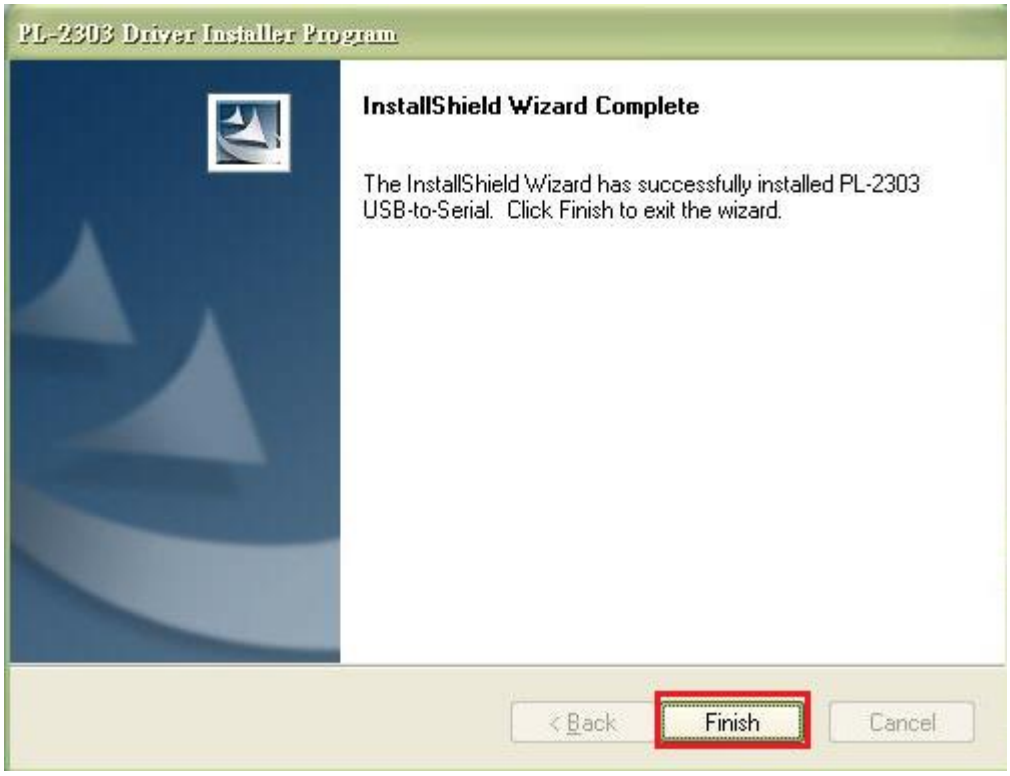
Step1 Select PL2303 setup program from the USB stick.



Step2 Install PL2303 setup program.

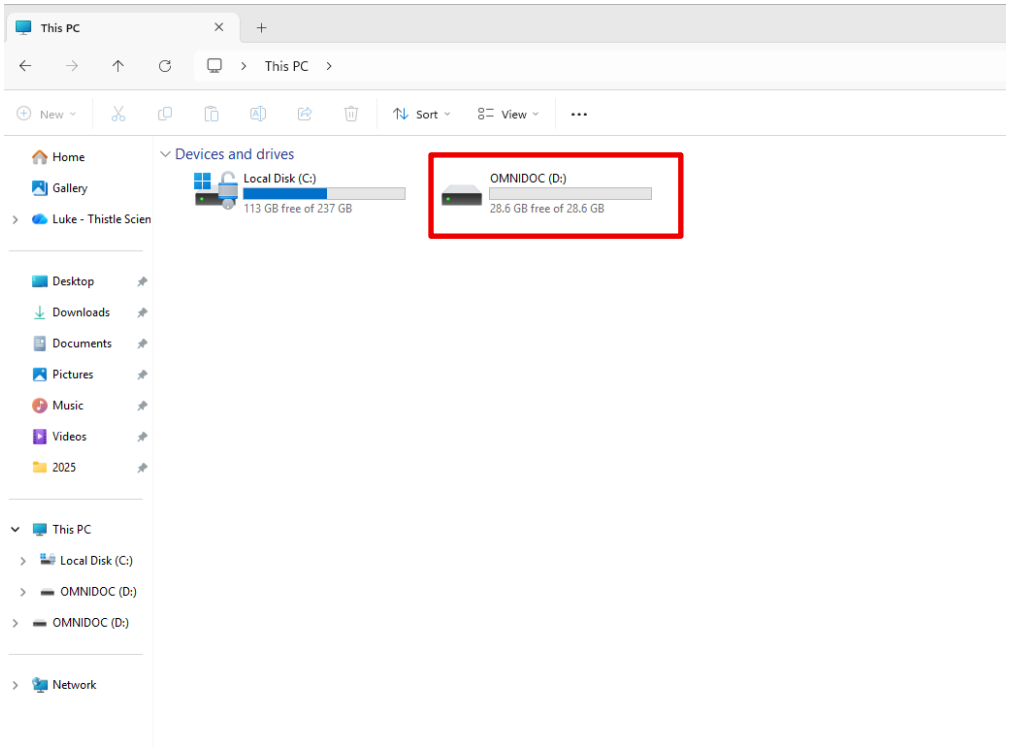


Step3 Complete the installation program.

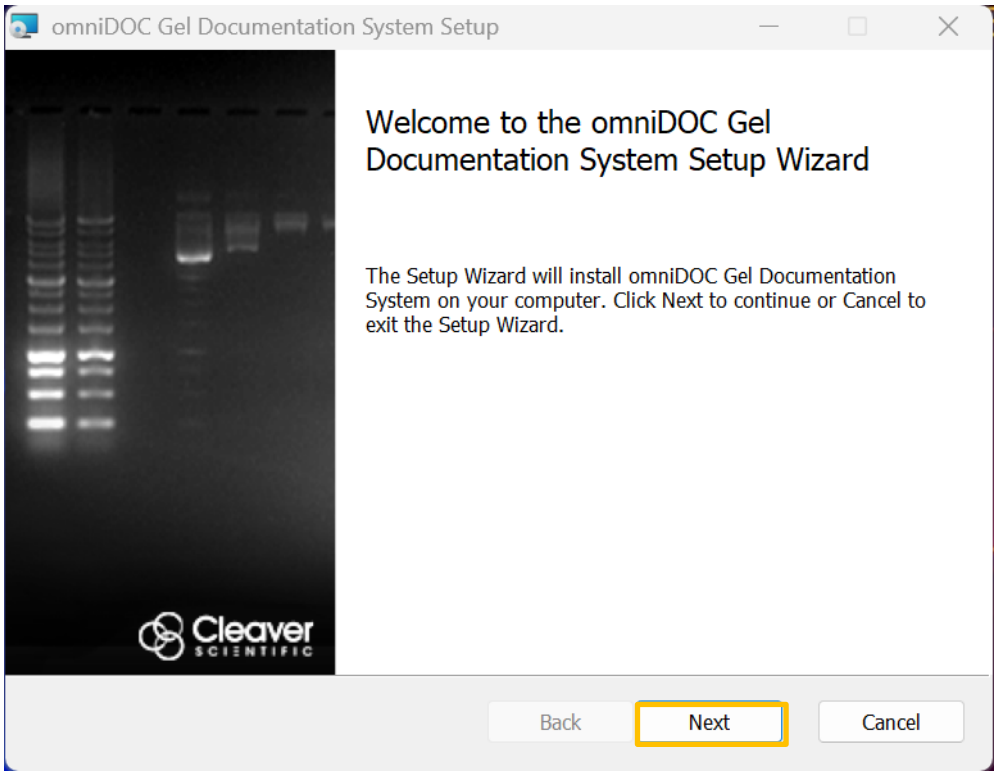


3.3.3 Install OmniDOC Gel Documentation software

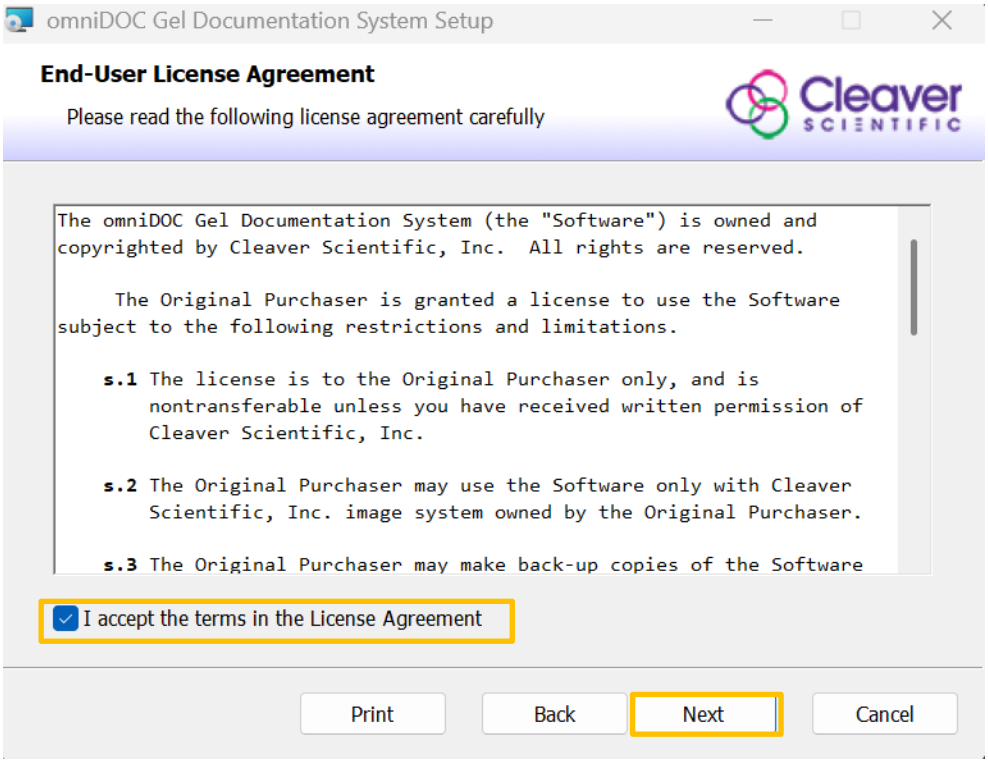
Step1: With the USB stick supplied inserted into the PC. Navigate to “This PC” then select OMNIDOC setup program.



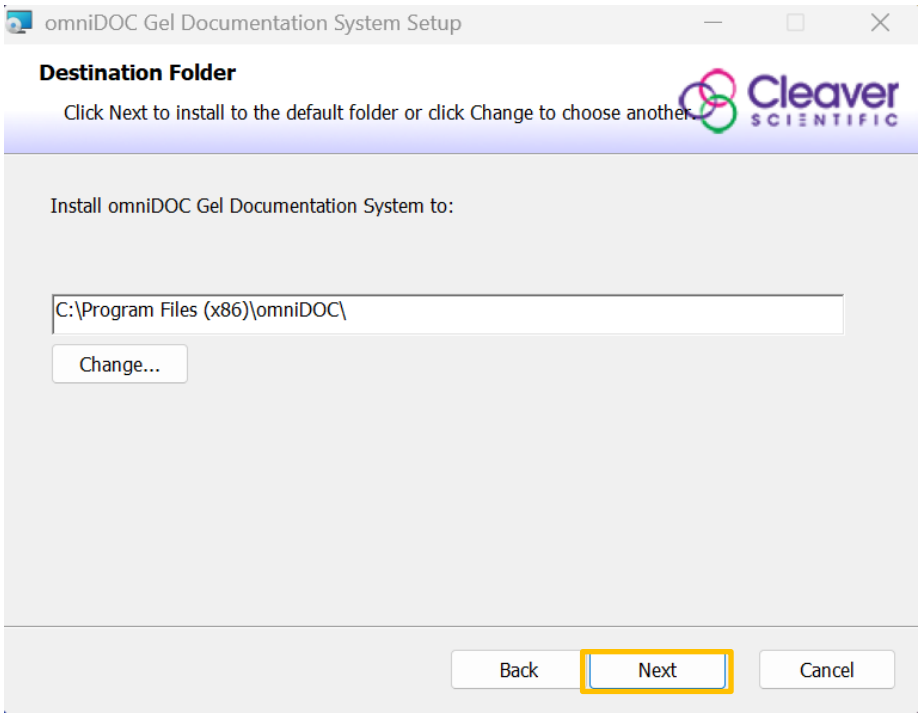
Step2 Install OmniDOC Gel Documentation setup program.



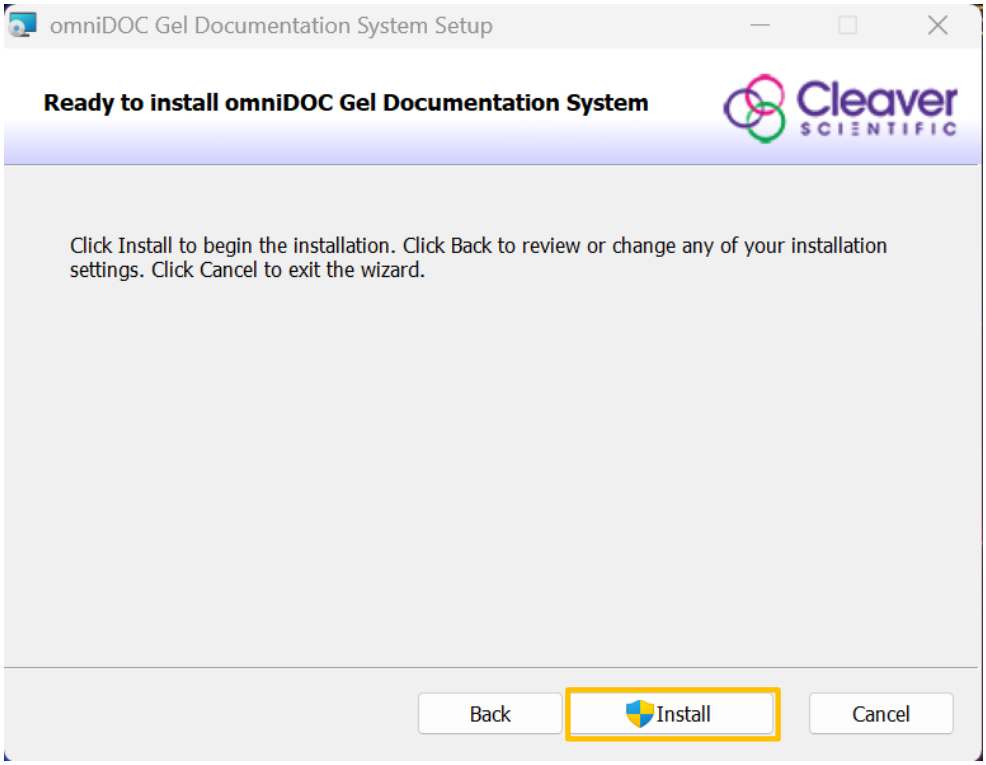
Step3 Accept the license agreement and then press the “next” to proceed.



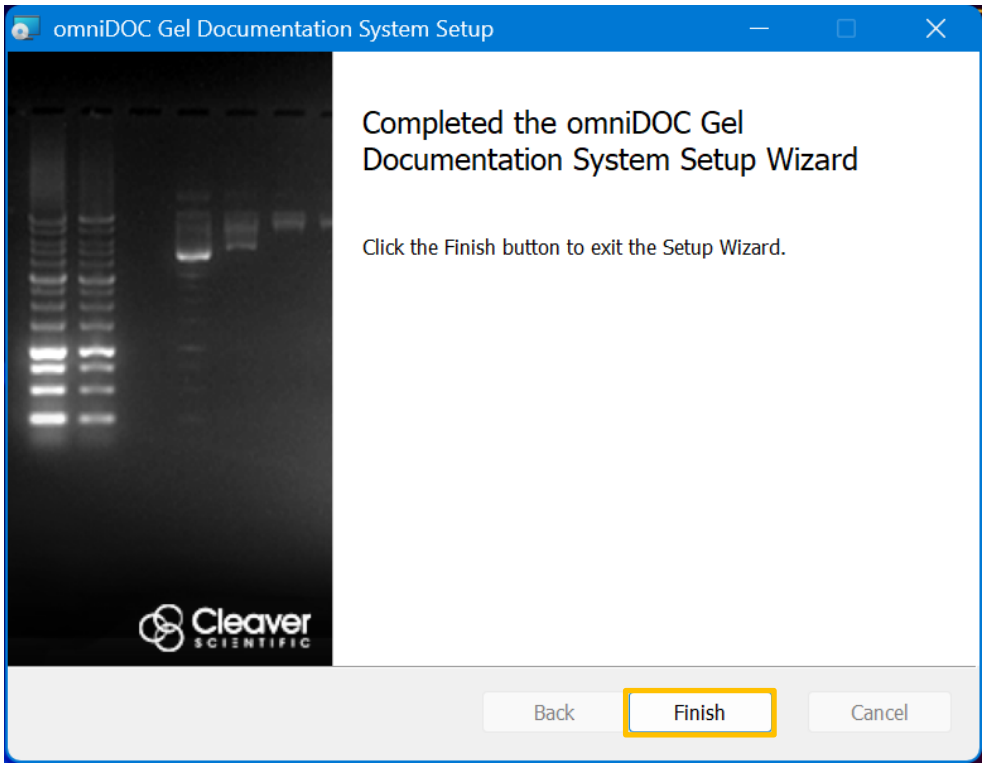
Step4 Save this program in your specifying location then press “Next” to proceed.



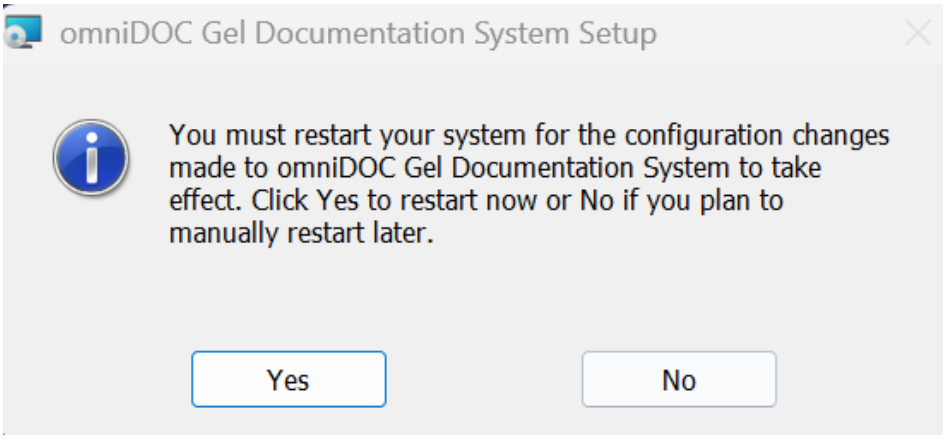
Step5 Click install to begin the installation.



Step6 Press "Finish" to complete the program installation.



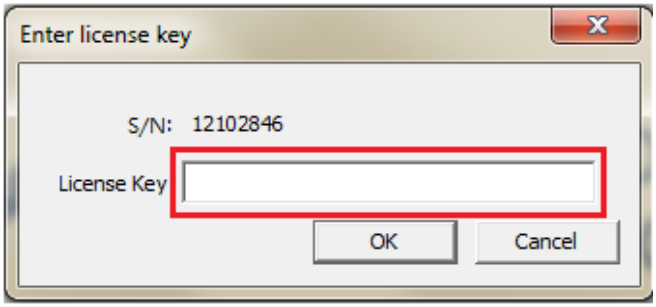
Step7 A dialog will pop up to ask you restart your system, press “Yes” to restart now or “No” if you plan to manually restart later.

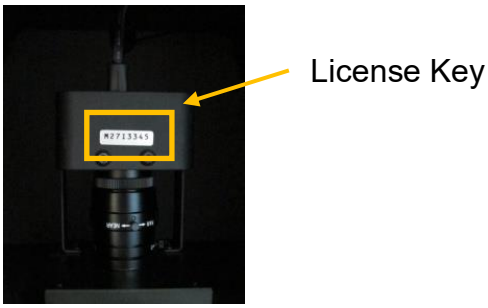


Note: Please restart the computer when you install all software well down.

Step8 The short paths will be shown on desktop.

Step9 Double click the “OmniDOC Gel Documentation System” icon in order to key in the license key (on the camera and CD box cover).





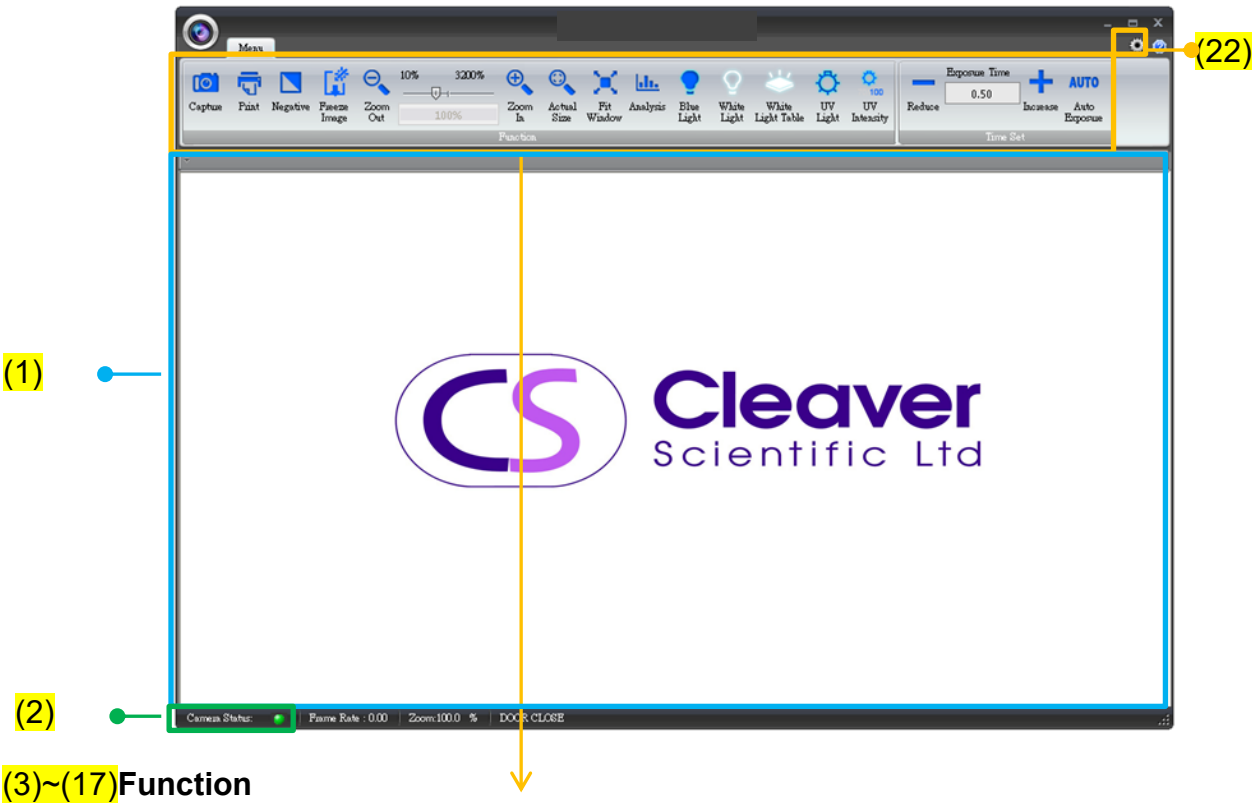
Note: The license key must match the camera serial number

Note: Do not unplug the USB wire of OmniDOC Gel Documentation System when you operate the analysis software. If you need to disconnect the OmniDOC Gel Documentation System with your computer, please close the analysis software first.

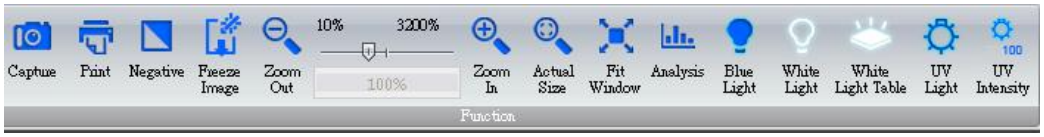
Section 4 Operation Instructions

4.1 Capture/Analysis Control interface

4.1.1 Capture Screen Interface



(3)~(17)**Function**



(18)~(21)**Function**

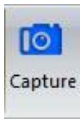
1. **Display screen**: This area shows the real-time or captured image.

Camera Status : Connect

2.

Camera Status : Disconnect

Function:

3. 

Capture: This button allows you to acquire the current image and save it

4. 

Print: Print out the image using the printer.

5. 

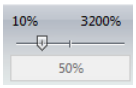
Negative: To reverse the image between black and white (not applicable to colour images).

6. 

Freeze Image: This button freezes your image. UV can be turned off immediately to prevent damage of DNA. And the image can be printed out and/or be captured.

7. 

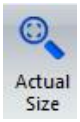
Zoom Out: To show a larger area of image.

8. 

Displays the percentage of zoom level. Use the scroll bar to zoom in or out.

9. 

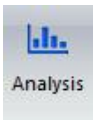
Zoom In: To examine the smallest details of an image.

10. 

Actual Size: Adjust the picture to original size.

11. 

Fit Window: Adjust the image size to fit your display window.

12. 

Analysis: Process to the gel analysis software.

13. 

Blue Light: ON/OFF switch for the Blue light.

14. 

White Light: ON/OFF switch for the White light.

15. 

White Light Table: ON/OFF switch for the White light table.

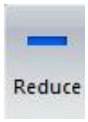
16. 

UV: ON/OFF switch for the UV transilluminator

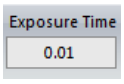
17. 

UV Intensity: Change the UV light intensity between 70% and 100% illumination.

Time Set:

18. 

Reduce: Decrease the exposure time of scientific grade camera.

19. 

Exposure Time: Manually input the exposure time (range: 0.01-30 sec) to adjust.

20. 

Increase: Increase the exposure time of scientific grade camera.

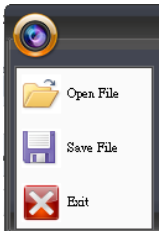
21. 

Auto Exposure: Adjust the exposure time of scientific grade camera automatically. Press **Auto Exposure** to disable the function first if you want to manually adjust the exposure time.

22. 
Default setting: To select default setting (see 4.2.7 Default setting).

4.1.2 Analysis: Image Process Interface

In the capture screen interface, press Analysis to enter the gel analysis interface.

1. 

a. Open the data file.
b. Save the file.
c. Exit the program.

Step:

2. 

Next Step: Go to next step to select analysis mode: gel positive/ gel negative/ dot positive/ dot negative.

Process:

3. 

Crop: Select the cropping area of the image.

4. 

Rotate: Rotate the image.

5. 

Flip: Flip the image according to the orientation you desired.

6. 

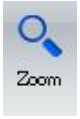
Brightness: Adjust the brightness of the image.

7. 

Contrast: Adjust the contrast level of image.

8. 

Negative: To reverse the image between black and white (not applicable to colour images).

9. 

Zoom: To show a larger area or to examine more closely of the image.

10. 

Text: Add text on the image.

11. 

Original: Return back to original image without any editing.

12. 

Undo: Return to previous step.

13. 

Redo: Repeat last action.

4.1.3 Analysis: Image Edit Interface

(1)~(4)

Step:

1. 

Previous Step: Return to previous step, current setting will be deleted.

2. 

Next Step: Go to next step.

Editor:

3. 

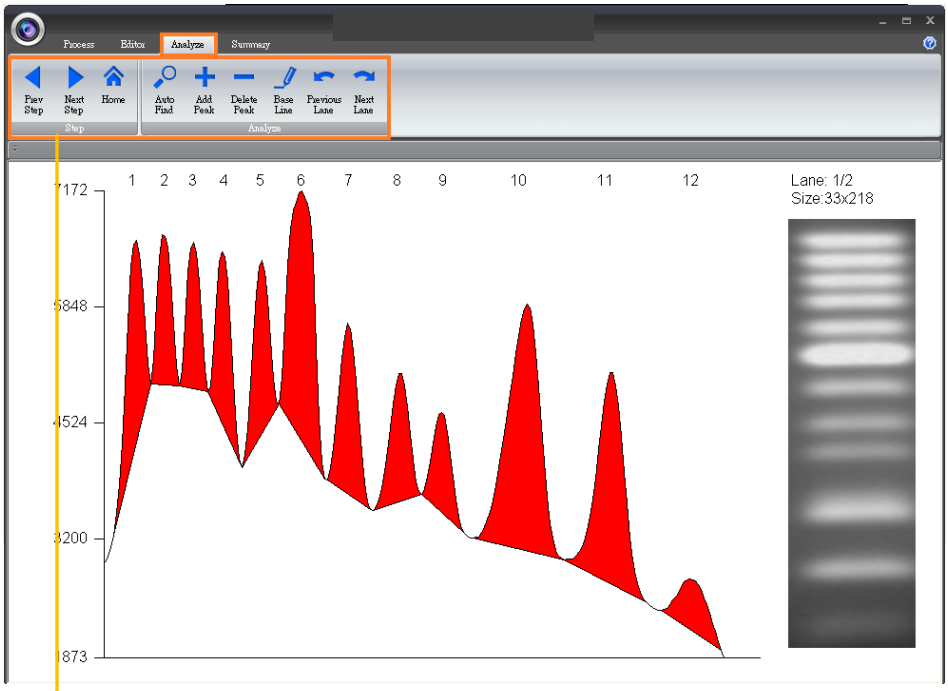
Add Lane: Add a lane to analysis.

4. 

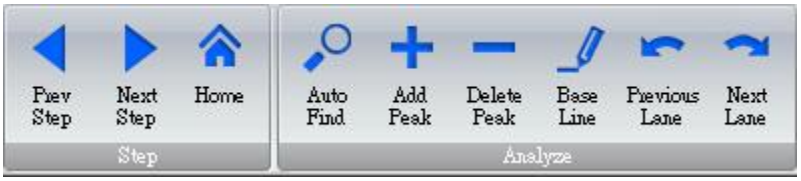
Delete Lane: To cancel the lane.

Note: Be sure to add all lanes you wish to analyse before you proceed to the next step

4.1.4 Analysis: Image Analyse Interface



(1)~(9)



Step:

1. 

Previous Step: Return to previous step, current setting will be deleted.

2. 

Next Step: Go to the next step.

3. 

Home: Return to **Image Process Interface**.

Analyze:

4. 

Auto Find: Find the peaks automatically.

5. 

Add Peak: Add the peak manually.

6. 

Delete Peak: Delete the peak manually.

7. 

Base Line: Set the base line manually for selecting peaks.

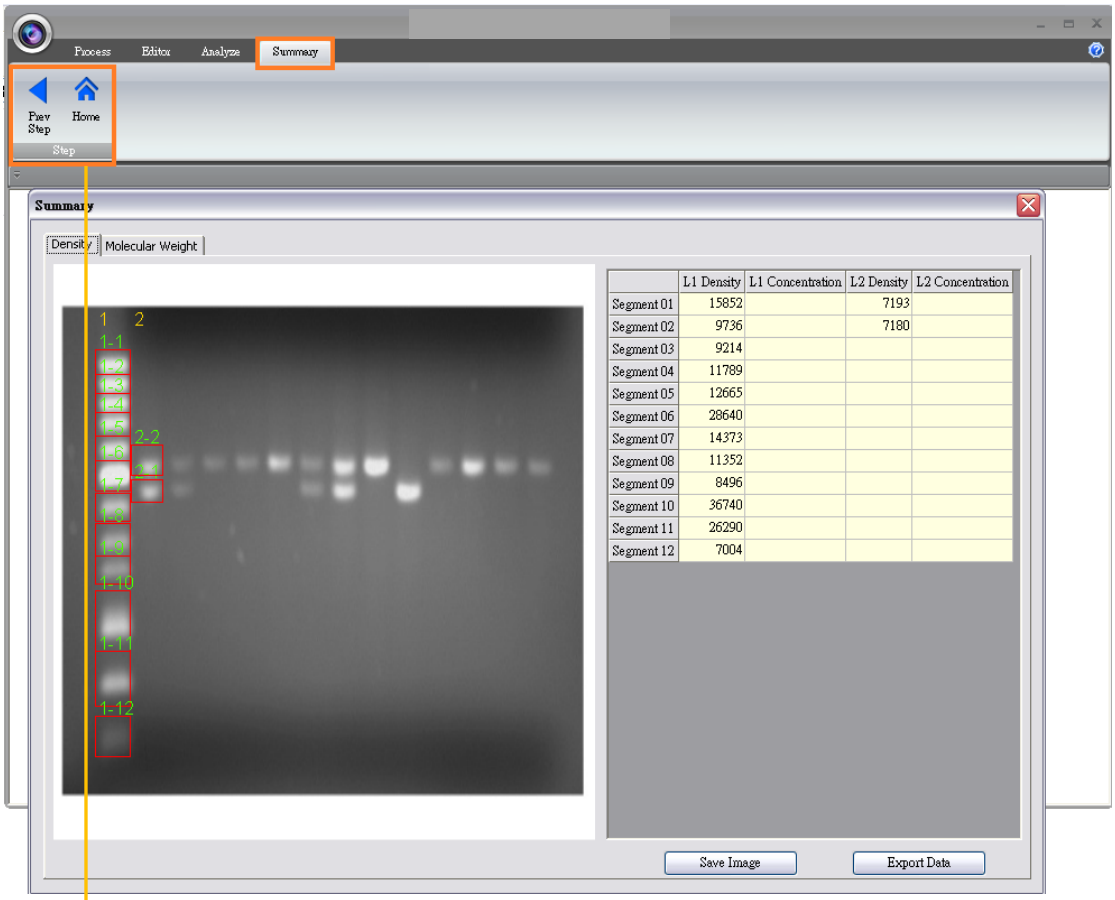
8. 

Previous Lane: Go back to last lane.

9. 

Next Lane: Go to next lane.

4.1.5 Analysis: Image summary Interface



1~ 2

Step:

1. 

Previous Step: Return to previous step, current setting will be deleted.

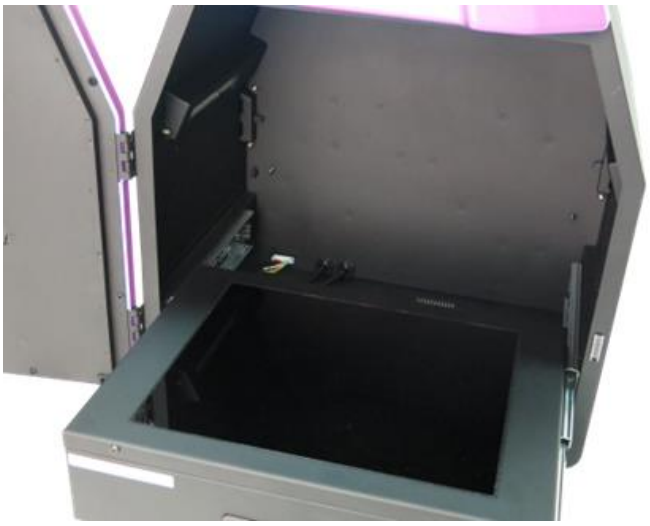
2. 

Home: Return to Image Process Interface.

4.2 Start the Operation

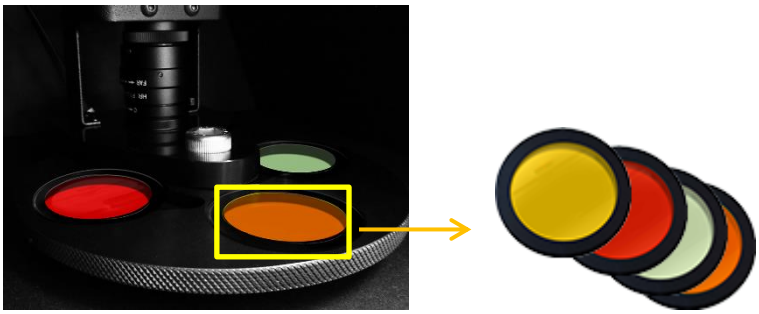
4.2.1Positioningyour gel

Place the gel onto the center of the UV Transilluminator.

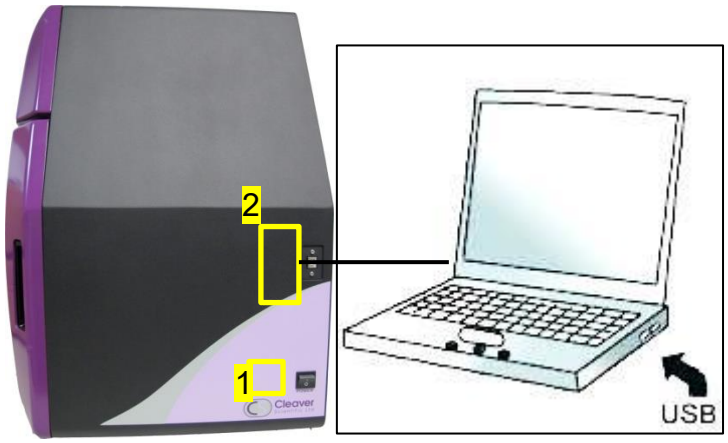


4.2.2 Select the appropriate filter

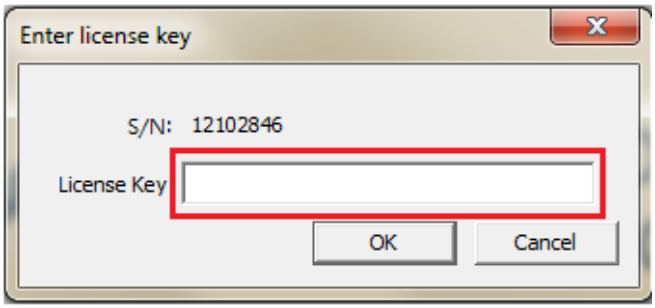
Make sure you use the appropriate filter; the default type is optical EtBr filter. For different applications, please contact Thistle Scientific or your regional distributor for suitable filters.

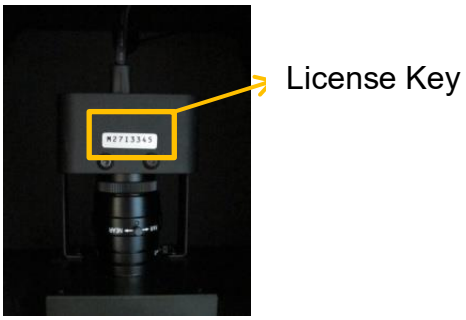


4.2.3 Turn on the power and connect the system with PC



1. Turn on the OmniDOC Gel Documentation System
2. Connect the OmniDOC Gel Documentation System with the computer by USB wire.
3. With the system turned on, double click the “OmniDOC Gel Documentation system” icon in order to key in the license key.

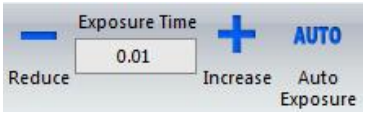




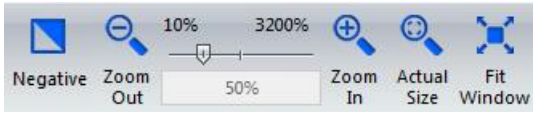
Note: The license key must match the camera serial number

4.2.4 Adjust the setting for best imaging

1. For adjusting exposure time, refer to section 4.1.1: Time set.



2. For other screen interface description, refer to section 4.1.1: Function.



3. Select the most suitable light source for your application, please refer to section 4.2.5.
4. Adjust the lens Iris, please refer to section 4.2.6.
5. To adjust default setting, please refer to section 4.2.7.
6. To freeze Image view for capture / print, refer to section 4.2.8.
7. Acquire and save the image, refer to section 4.2.9.

4.2.5 Select the light source

1. Nucleic acid samples imaging (Agarose gel)

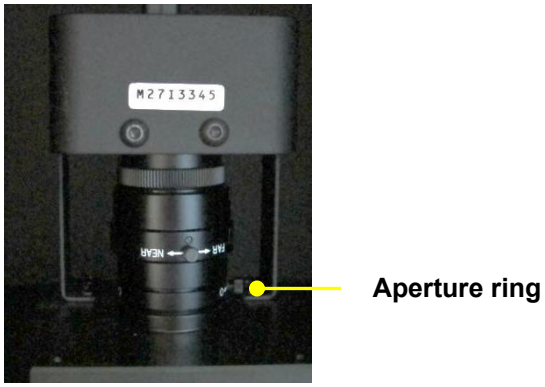
	You may use UV light for Nucleic acid DNA sample imaging.
	You can switch between **UV high (100%)** and **UV low (70%)** to get better signals.
	With environmentally safe dye (such as runSAFE and Midori Green Direct), you may use optional blue light module for less invasion to your DNA sample

2. Protein samples imaging (Protein gels such as Coomassie blue or silver stain; X-ray film)

	- You may use White Light or White Light Table for Protein sample imaging. - Turn the UV light off. - Turn the white light or optional white light table on. Your sample shall be observed under visible light.
	

4.2.6 Adjust the lens Iris

You may manually adjust the lens Iris to get the best saturation of image against exposure setting by looking at the display screen; however, this has been done in factory, only adjust the lens if necessary.

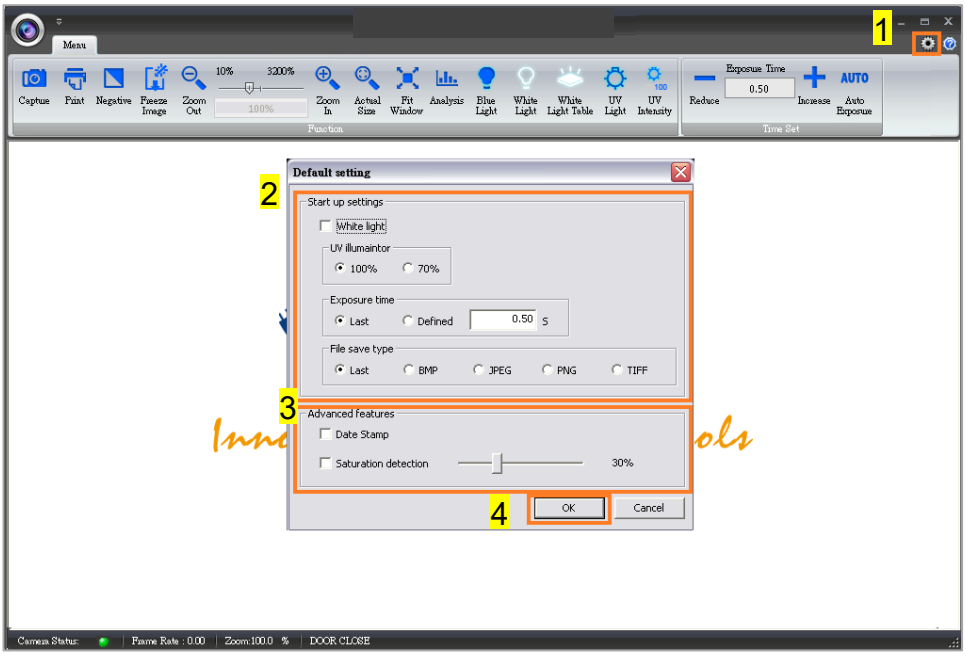


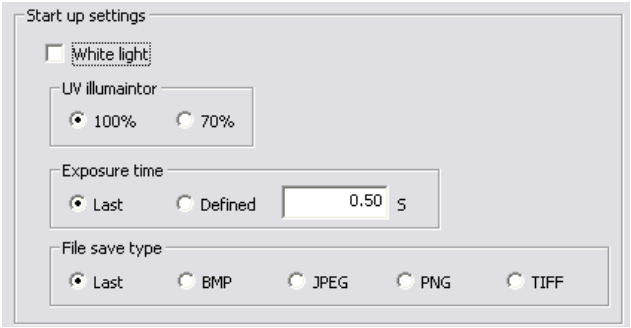
F1.2 – Close

Aperture Ring: A device that controls the amount of light admitted. Use the top ring for aperture adjustment, you may open up or close down to let in more or less light.

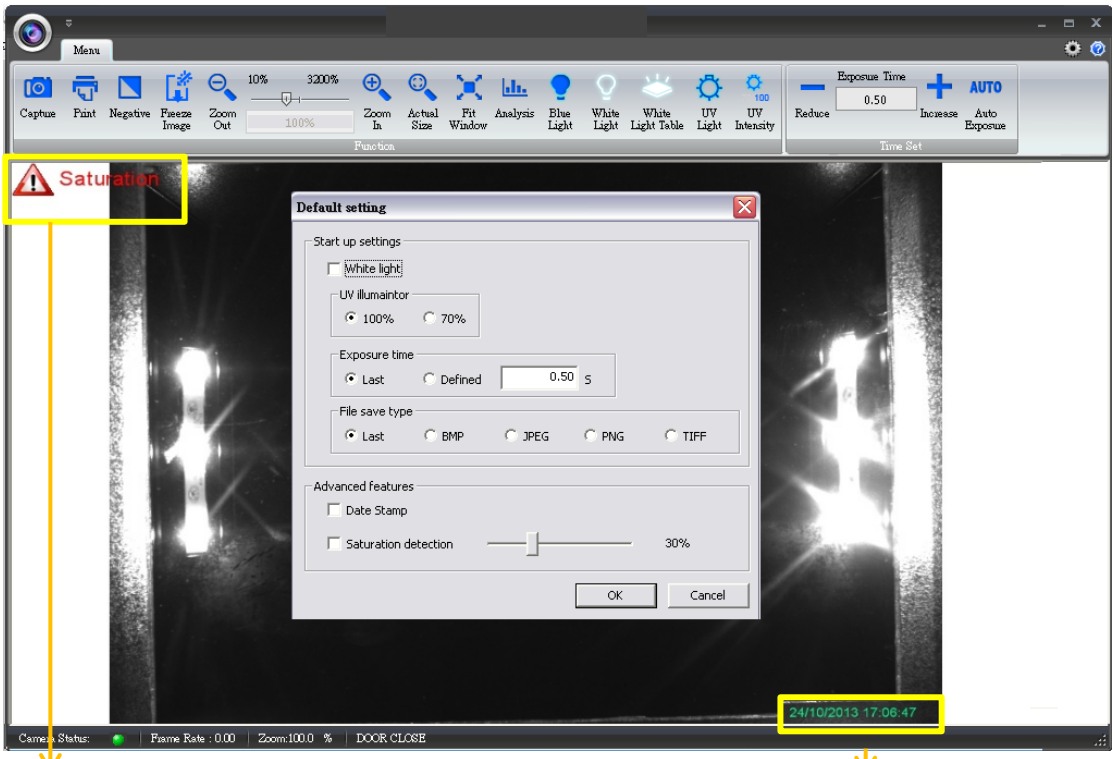
4.2.7 Default setting

The system allows the user to change the default settings by pressing the button (as box1). After setting up the parameters, "Start up settings" (as box2) will come into effect once you restart the system and act as default permanently until you change it next time. However, "Advanced features" (as box3) will only come into effect once you press the “OK” (as box4) button, you will need to check on these features each time you need time.



Start up settings (box 2) : 1. White light 2. UV transilluminator 3. Exposure time 4. File save type	
Advanced features (box 3) : 1. Date stamp 2. Saturation detection	

Advanced features:



The display will show the Saturation warning if you enable the "saturation detection" from **Advanced features.** The image will adjust to saturation detect level you set.

The display will show the date stamp if you enable the "Date stamp" from **Advanced features.**

*** Please note that the Saturation Detect function uses a considerable amount of memory. Depending on the specification of your computer, enabling this function may significantly reduce the smoothness of operation.**

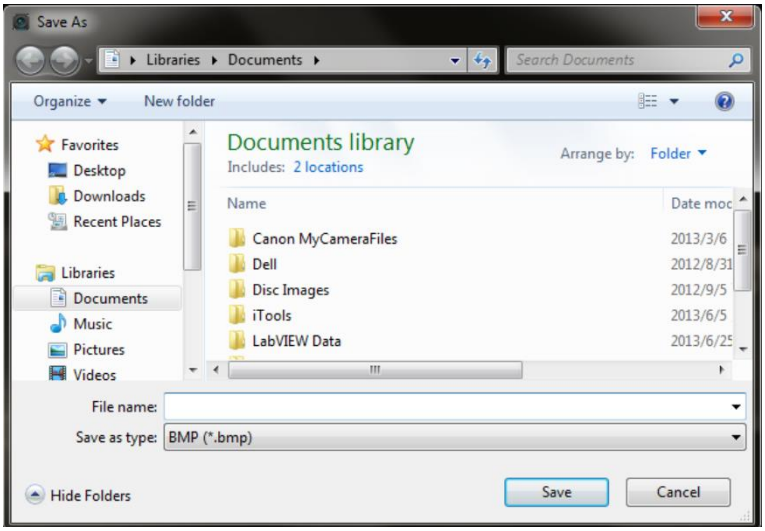
4.2.8 Freeze Image

This button freezes your image. UV can be turned off immediately to prevent damage of DNA. And the image can be printed out and/or be captured/ saved.

4.2.9 Acquire and save the image

To capture the image, click on the “Capture” button, then a dialog will pop up to save the image. Select the image file format you desire and choose the data location and give a file name.

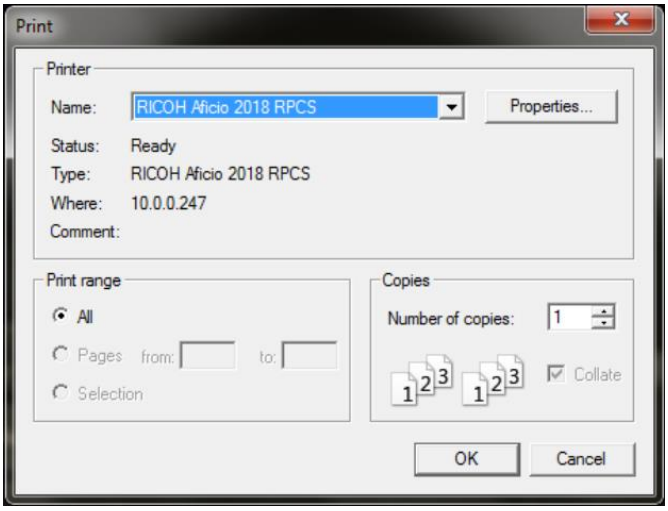
Image format: bmp / jpeg / png / tiff



Note: Default format of saved images can be changed according to your preference in the "Default setting". (refer to 4.2.7 for more details)

4.2.10 Print the image

You can use the printer to print your image. Simply press the “Print” button then your image will be printed out.

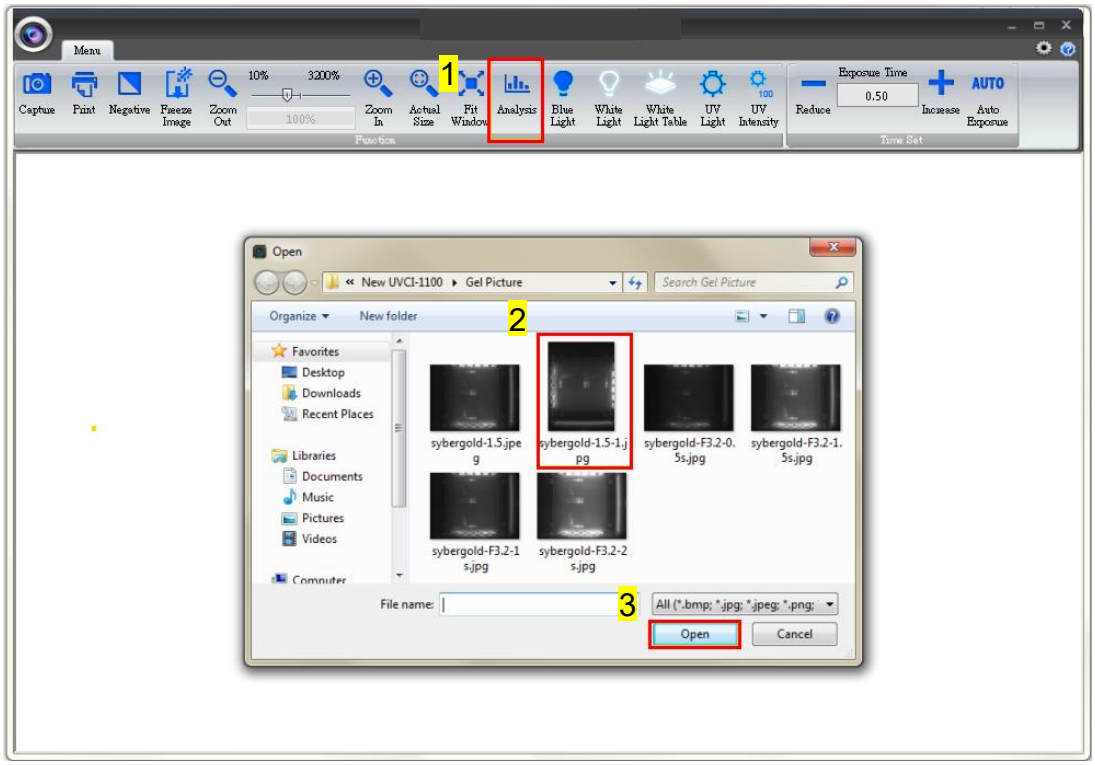


4.3 Image Analysis: Using “Gel Positive/Gel Negative ”to analyse the sample

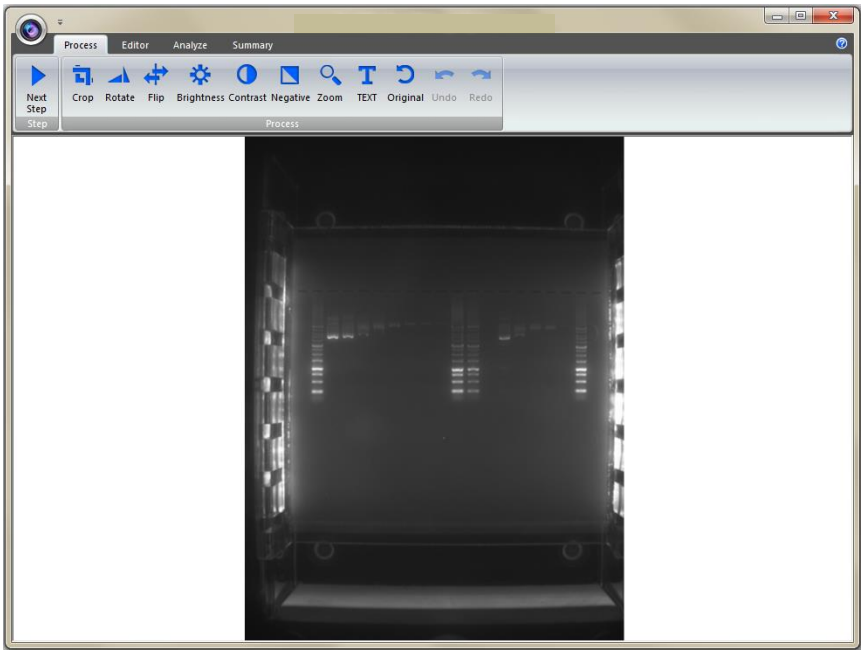
4.3.1 Load the image

To start the image analysis, first you will have to choose your image from the data file.

Step1 Press “Analysis” (as box 1) to select your image. You can download the image file from the hard drive or the USB drive. Select an image from the folder (as box 2). Press “Open” (as box 3) to load.



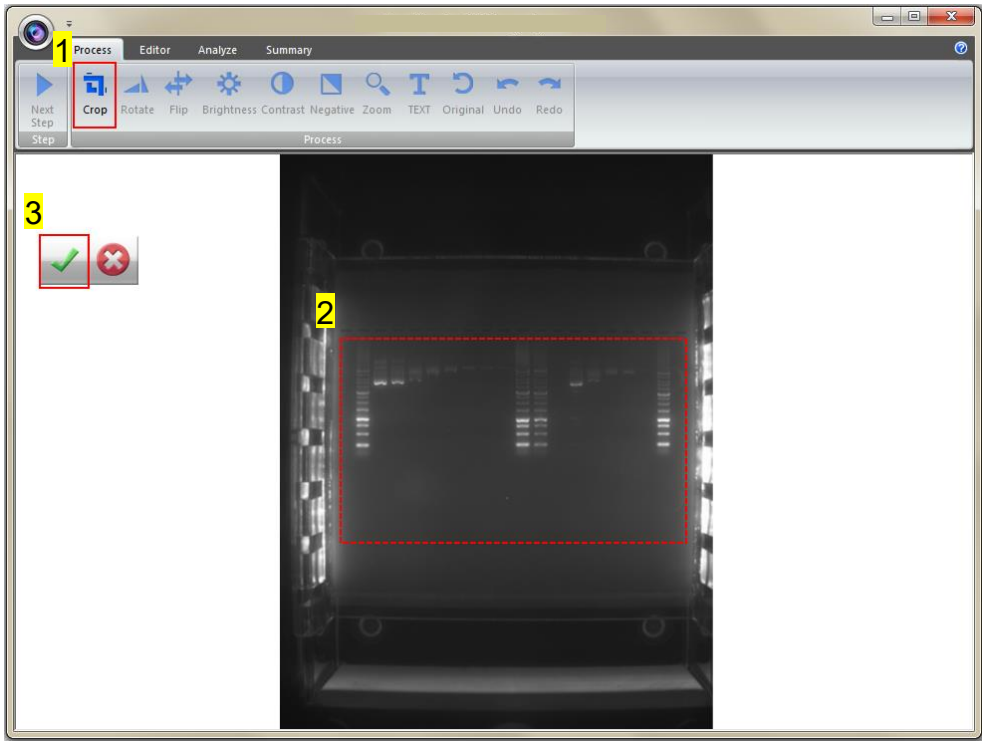
Step2 The image will be shown on the center of a new window.



4.3.2 Processing the Image File

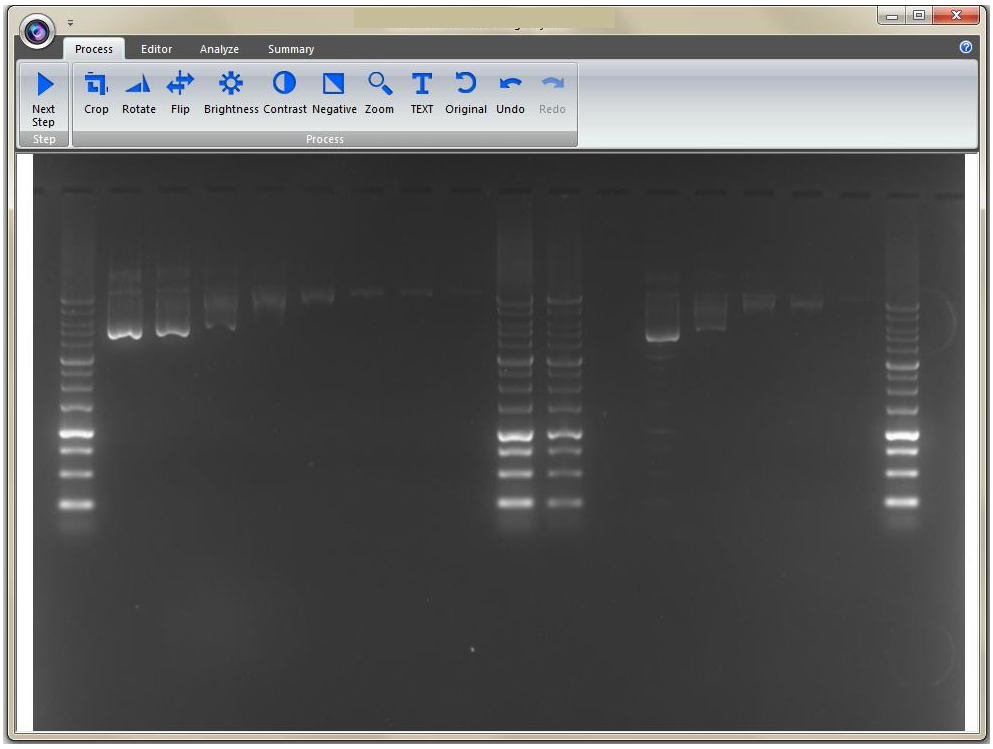
You will be directed to the image processing tool box as shown below.

Step1Crop: Crop the image by press the "Crop" button (as box 1). In order to select the cropping area of the image, hold and drag the cursor to select the area you want (as box 2). Once you are done. Press "✓" (as box 3) button to confirm or press "x" to cancel.



Step1-1 The image will be shown below as you selected.

***Remember: Always rotate the image before you crop!"**



Step2Rotate: To rotate the image, first select the "Rotate" button (as box1) then the toolbar (as box2) will pop up.

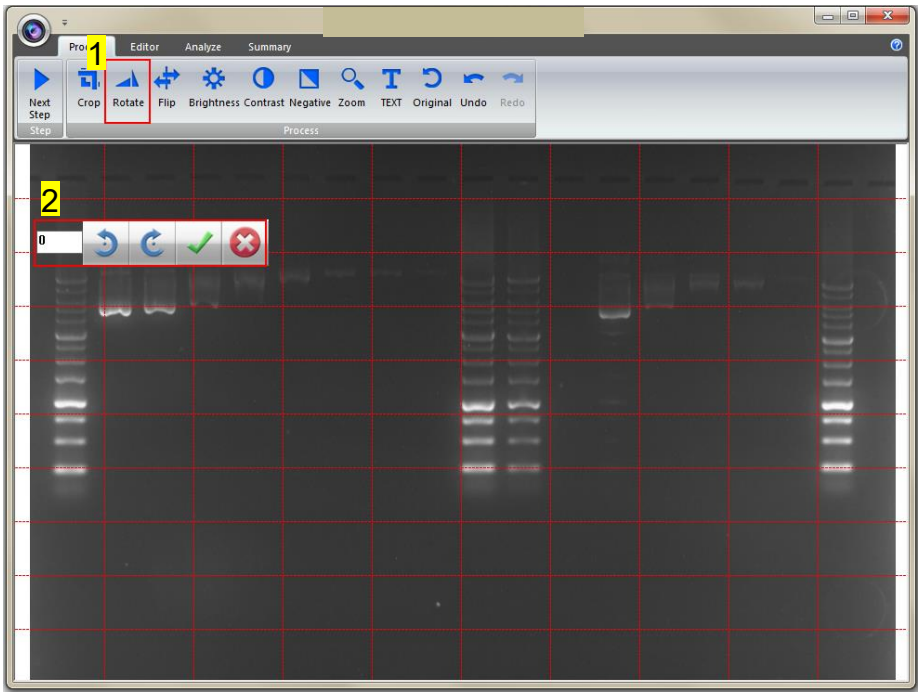
Toolbar:

a.  : Rotate counter-clock wise

b.  : Rotate clock wise

c.  : Confirm action

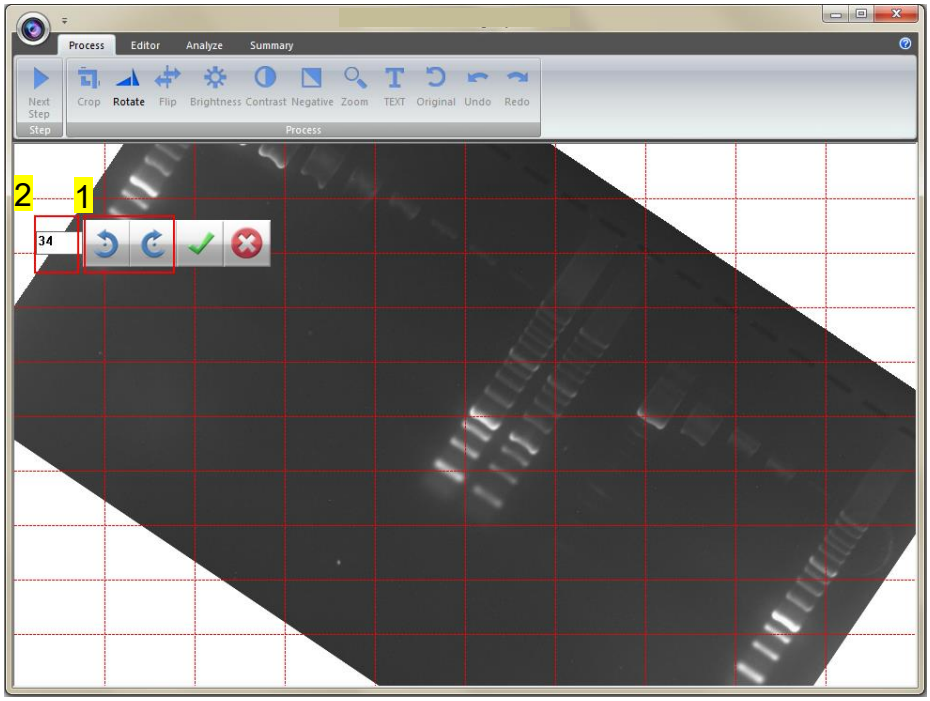
d.  : Cancel



Step2-1 You may rotate the image counterclockwise or clockwise in two ways:

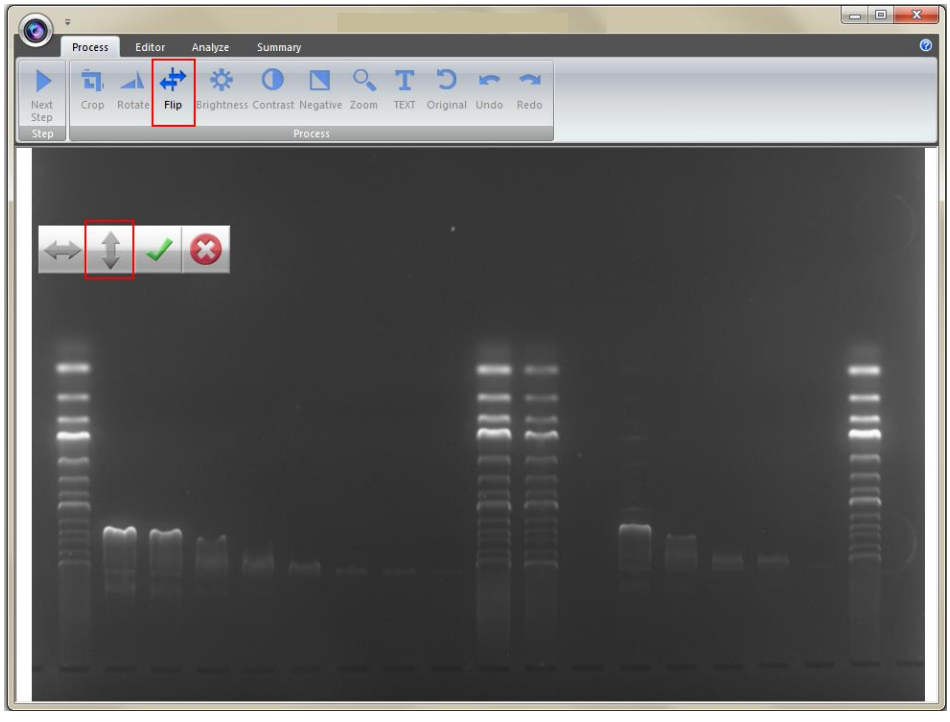
a. Using the toolbar labeled as box 1, press "✓" to confirm action.

b. Input the desired angle (0~359) directly in the blank space labeled as box 2, press **ENTER** first before pressing "✓" to confirm action.



Step3Flip: To flip the image according to the orientation you desired.

a.  : Invert the image upside down.



b.  : Invert the image from left to right.

c.  : Confirm action d.  : Cancel

Step4Brightness: Adjusting the brightness of the image by pressing on the "Brightness" button (as box1), then use the scrollbar (as box 2) to adjust the brightness level.

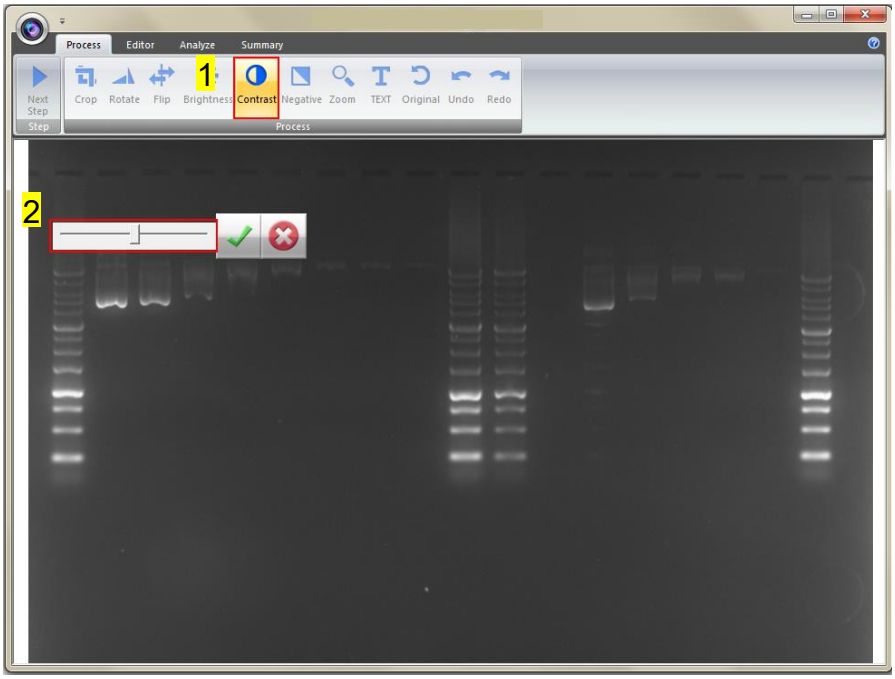
a.  : Low – High

Step4-1 The result of Brightness is shown below. Press "✓" to proceed or press "X" to cancel.

b.  : Confirm action c.  : Cancel

Step5Contrast: Adjusting the contrast level of the image by pressing the "Contrast" button (as box1), then use the scrollbar (as box 2) to adjust the contrast level.

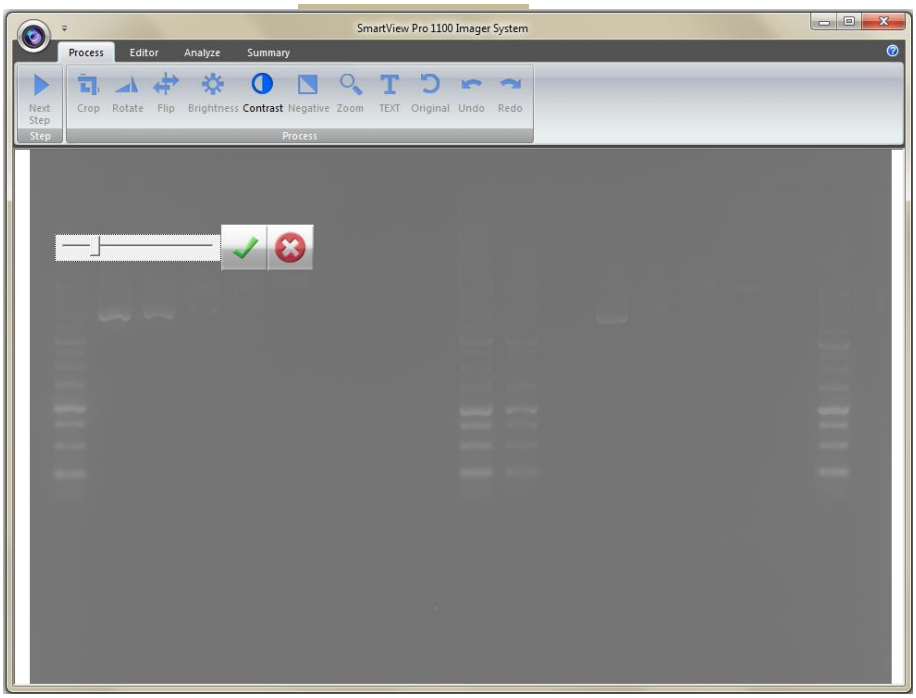
a.  : Low – High



Step5-1 The result of Contrast is shown below. Press "✓" to proceed or press "X" to cancel.

b. : Confirm action c. : Cancel

Step6Negative: To reverse the image between black and white by pressing

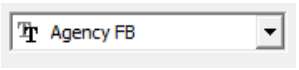


on the "Negative" button (as box 1). If you don't want to negative the image, you can press the "Negative" button again or you can press the "Undo" button (as box 2) to recover the image.

Step7 Zoom: Adjust the zoom of the image by pressing on the "Zoom" button (as box1) and then a toolbar will pop out. If you want to zoom in the image, press the"+" button (as box2). If you want to zoom out of the image, press the "-"button (as box2). Press "EXIT" to finish. This feature simply lets you zoom in and zoom out of the image but will not make any changes to the image file.

Step8Text: You could add any text onto the image. Click on the "Text" button (as box1) and then the toolbar (as box 2) will show up. The sample text (as box 3) will show in the middle of the screen.

Step8-1 Click on the input box, type in your text here. You could adjust your text using this toolbar. The toolbar functions are explained as below.

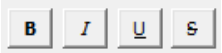
a. 

: Change the font type

b. 

: Change the font size.

c.  : Move the text to the desired location by moving the mouse cursor to the desired location on the image and click the left button of the mouse.

d. 

: Change the font properties.

e. 
: Change the color of the font.

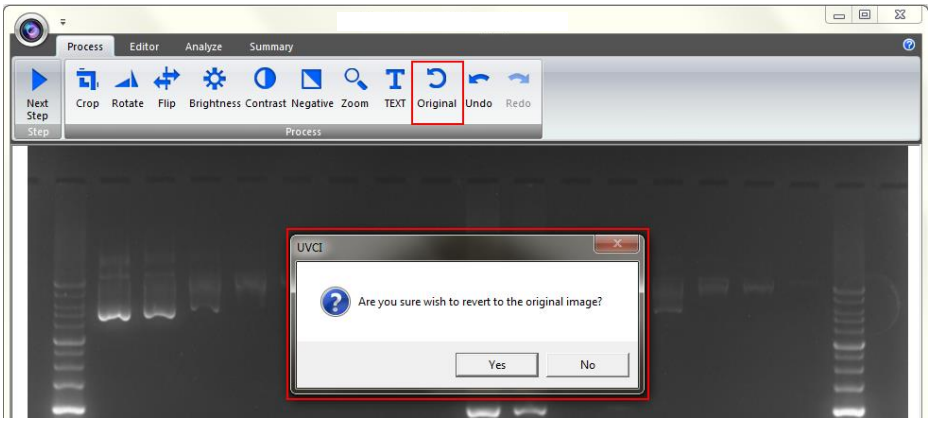
f. Input box: Type in your text here, press **ENTER** first before pressing "✓" to confirm action.

g. 
: Confirm action

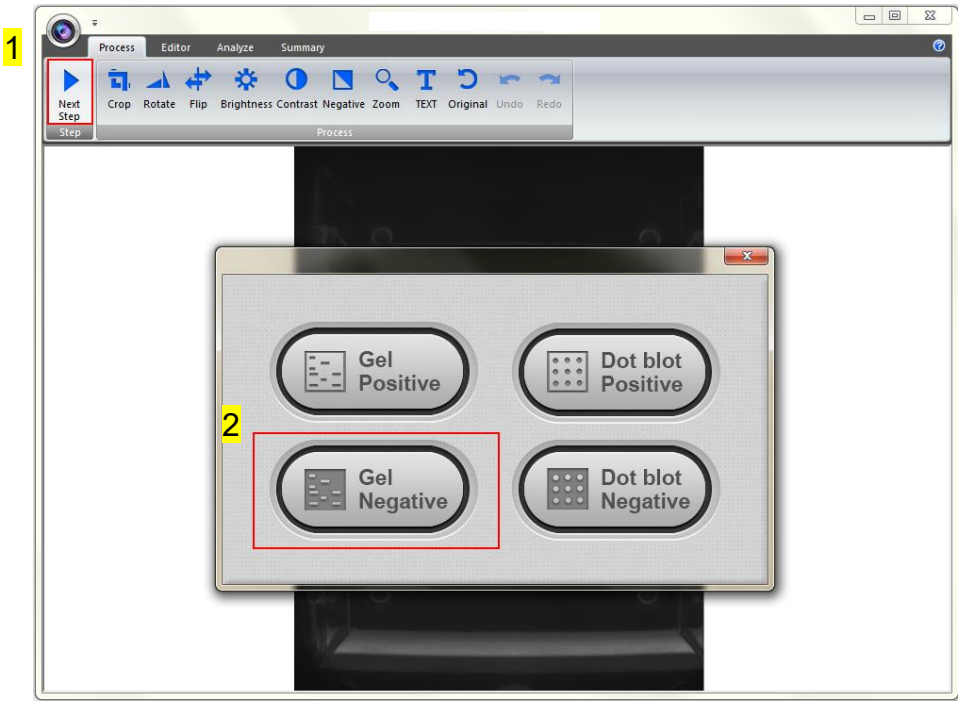
h. 
: Cancel

Note: 1. To add another set of text, please press "TEXT" again.
2. To remove a text, please use "Undo".

Step9Original: This is the master undo button. It will undo ALL the changes you made to the image and revert it back to the original image. A massage will pop up to ask for confirmation once you press the "Original" button. Press "Yes" to proceed.



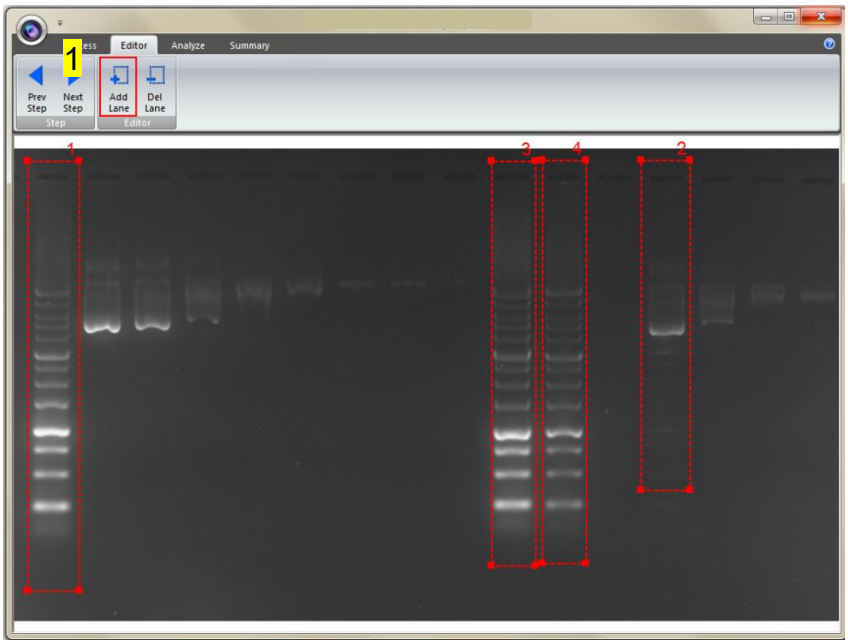
Step10Next Step: Press "Next Step" button (as box1) to continue the analysis. There are 4 analysis methods for you to choose depending on your application. For example here, we choose "Gel Negative" (as box 2) for DNA gel electrophoresis. (The instruction for operating under Gel Positive and Gel Negative is the same)



4.3.3 Selecting the Image Lane

Step1Add Lane: Selecting your lane by creating a long rectangular box along the lane. Press "Add Lane" button (as box 1) and then hold and drag the rectangular box to the area you want. Each time you press "Add

Lane" button, the system will duplicate an exact box as your previous box. You may move the box once the "✣" cursor appeared, hold and drag the box to the appropriate location.

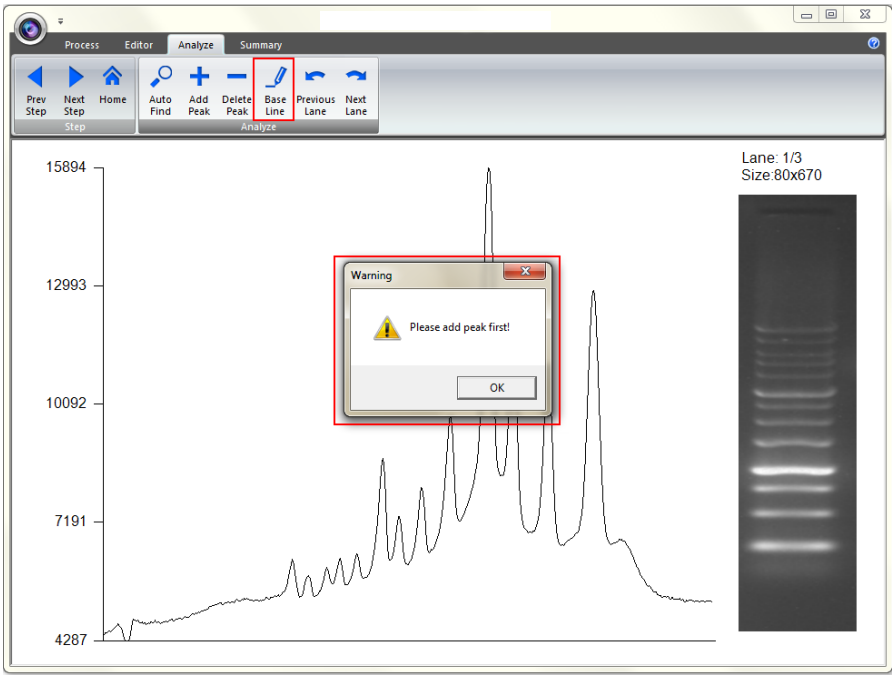


Step2Delete Lane: Press "Del Lane" button (as box1), and then click the center of rectangular box you want to delete. After selecting all lanes, click "Next Step" button (as box 2) to move forward.

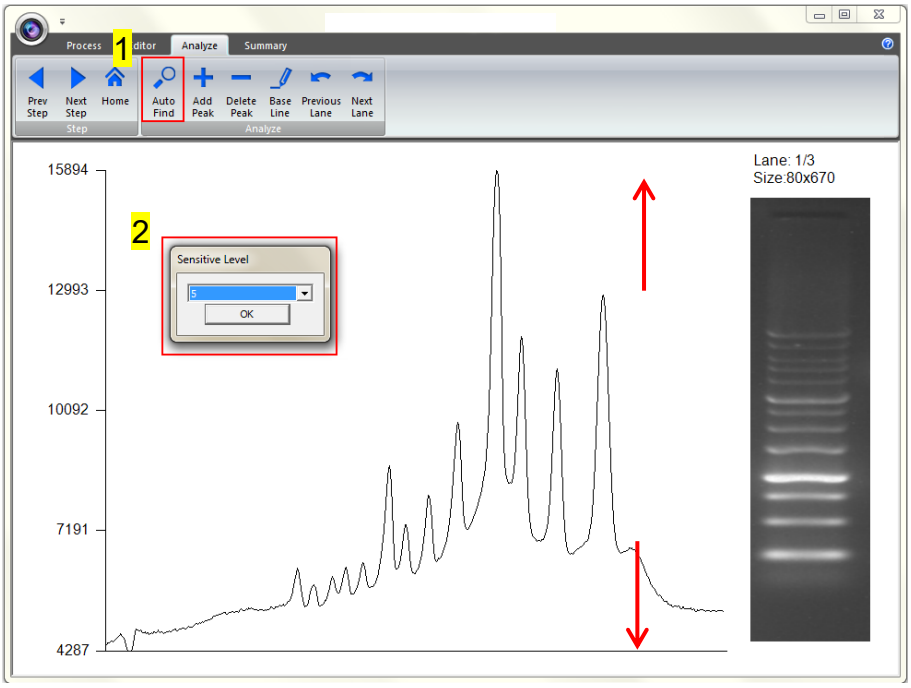
Note: Make sure your bands are straight and enclosed inside the rectangular box. You must choose at least one lane for the analysis software to proceed.

4.3.4 Lane Analysis

The analysis software will analyze the bands inside the lane to create a histogram.

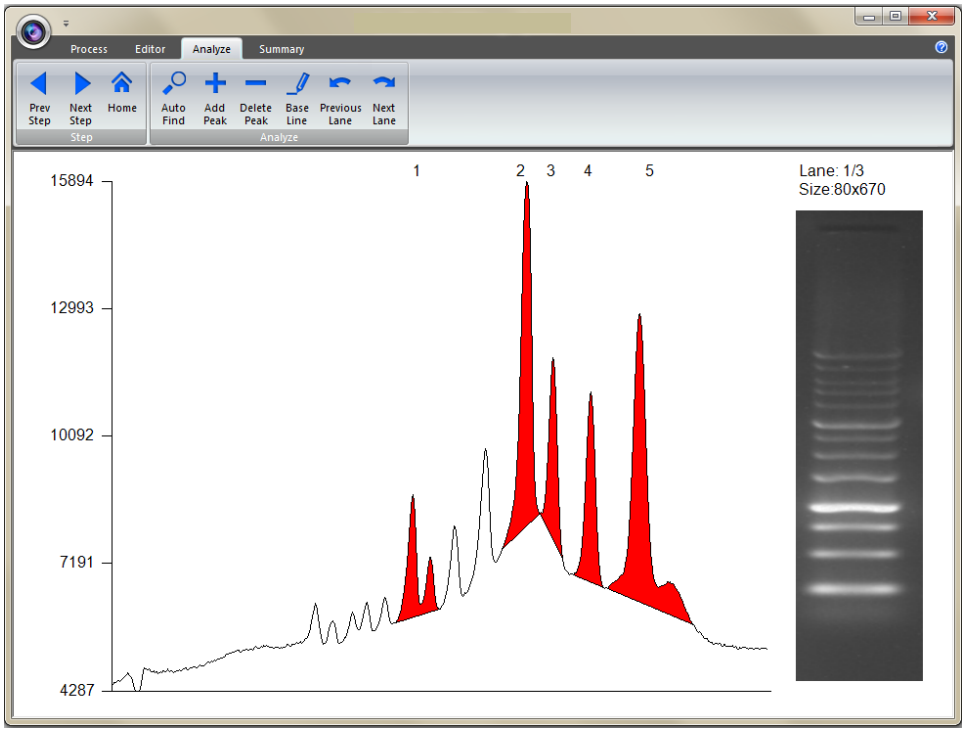


Step1Auto Find: Click on the "Auto Find" button (as box 1), the software will allow you to adjust the sensitivity level according to your needs. Sensitivity level (as box 2) is ranged from 1 to 10. Select a number appropriate to your image. The smallerthe number, the lower the degree of sensitivity. The larger the value, the higher the degree of sensitivity.

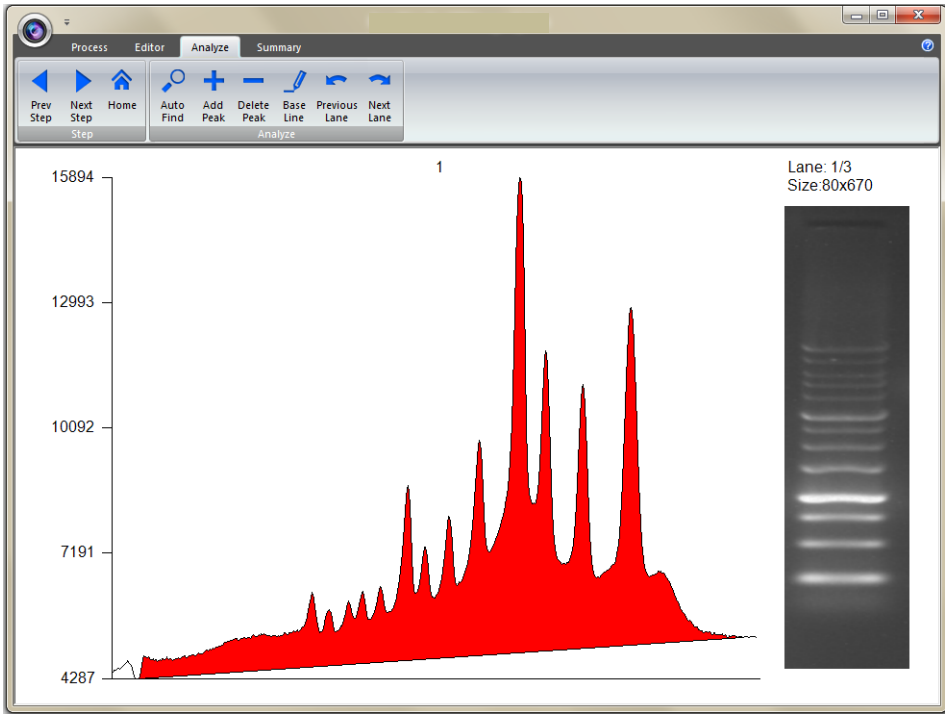


Step1-1 Any peaks above your adjusted sensitivity level will turn "RED".

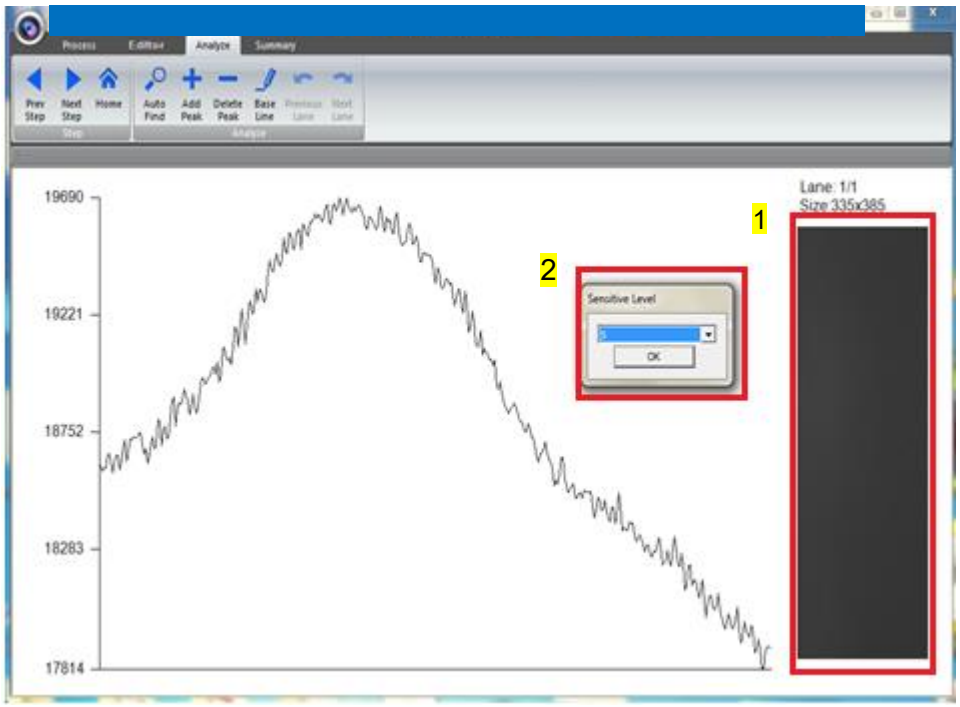
Example A: Sensitivity level 1



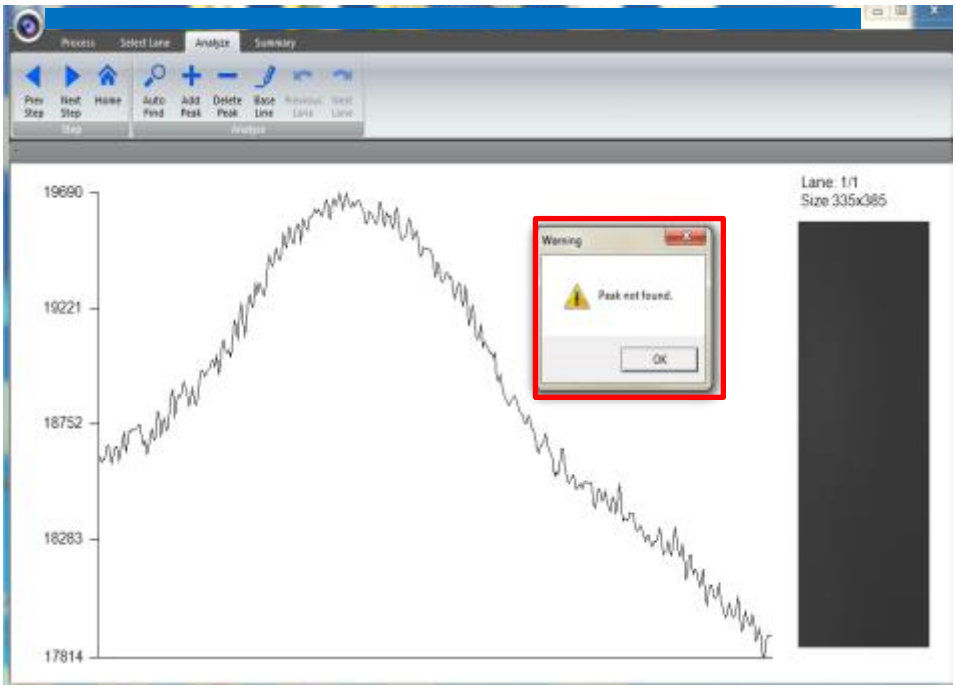
Example B: Sensitivity level 10



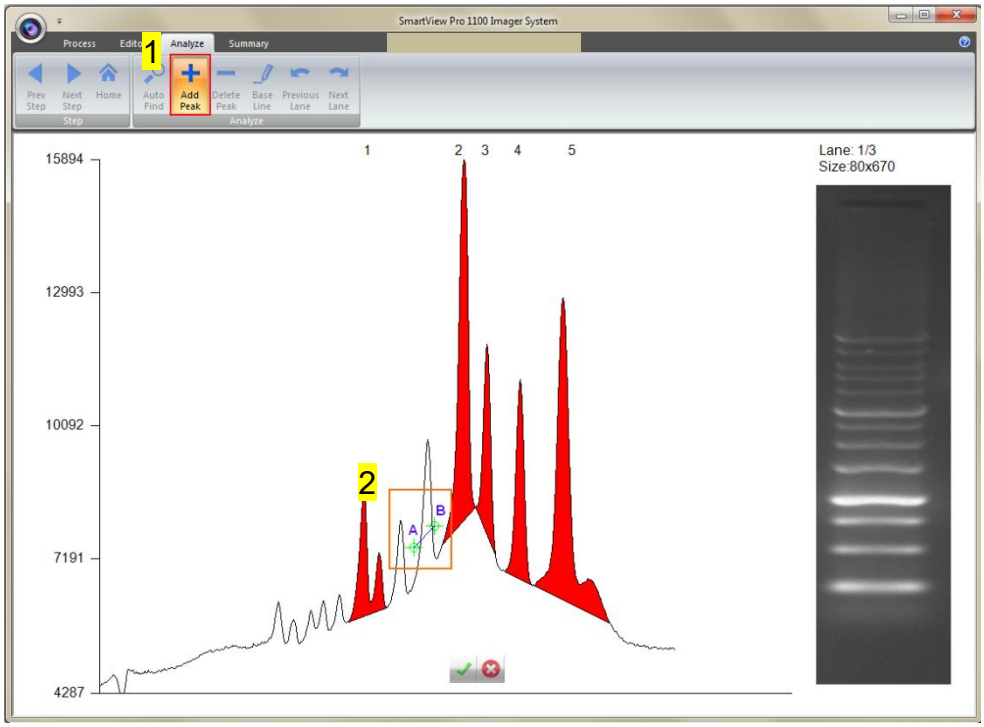
Step1-2 If the density of band (as box1) is not clear, the Auto Find (as box 2) function cannot find any peaks.



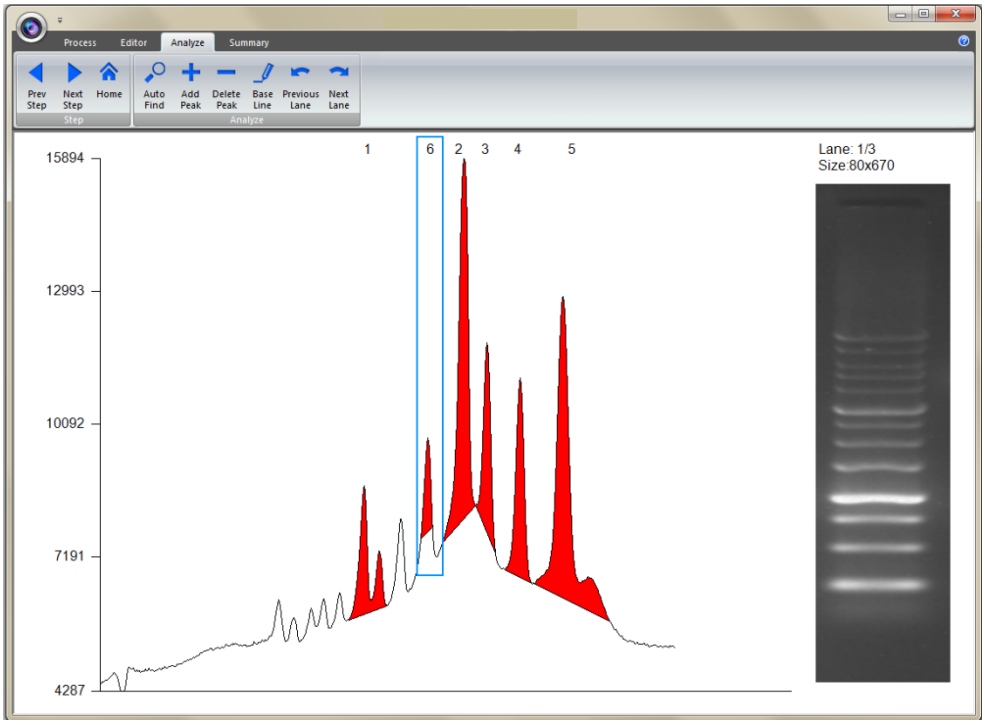
Step1-3 The warning dialog will pop upon the screen.



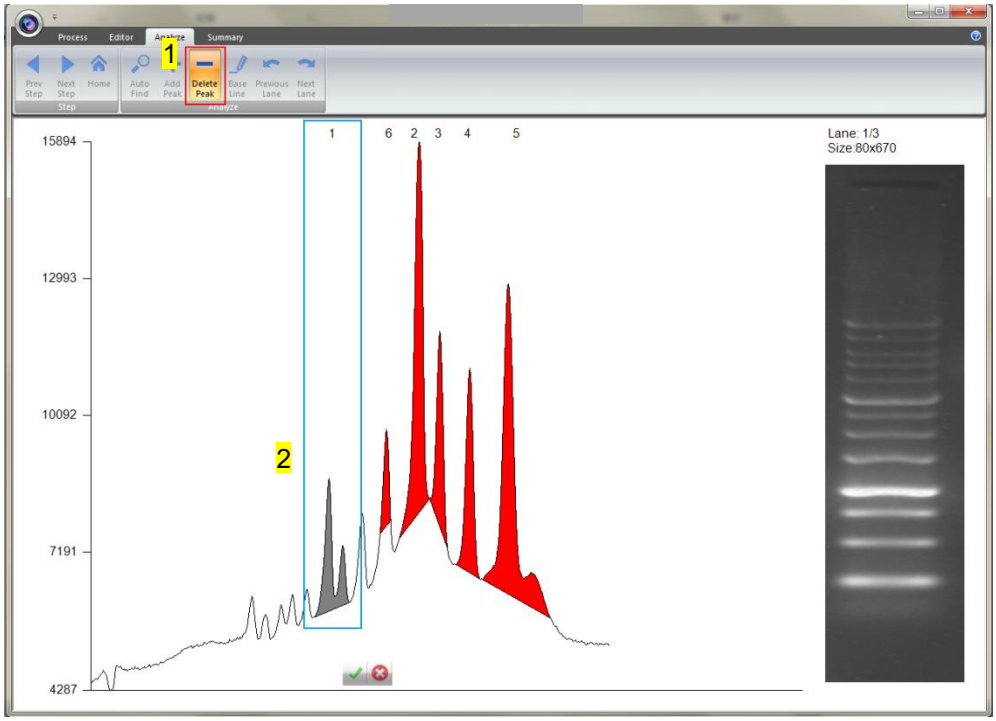
Step2Add Peak: Click "Add Peak" button (as box1), choose two points which covers the range of the peak from the screen (select one point from the left side and a second point from the right side of the desired peak) to add a peak (as box 2) and then click the "✓".



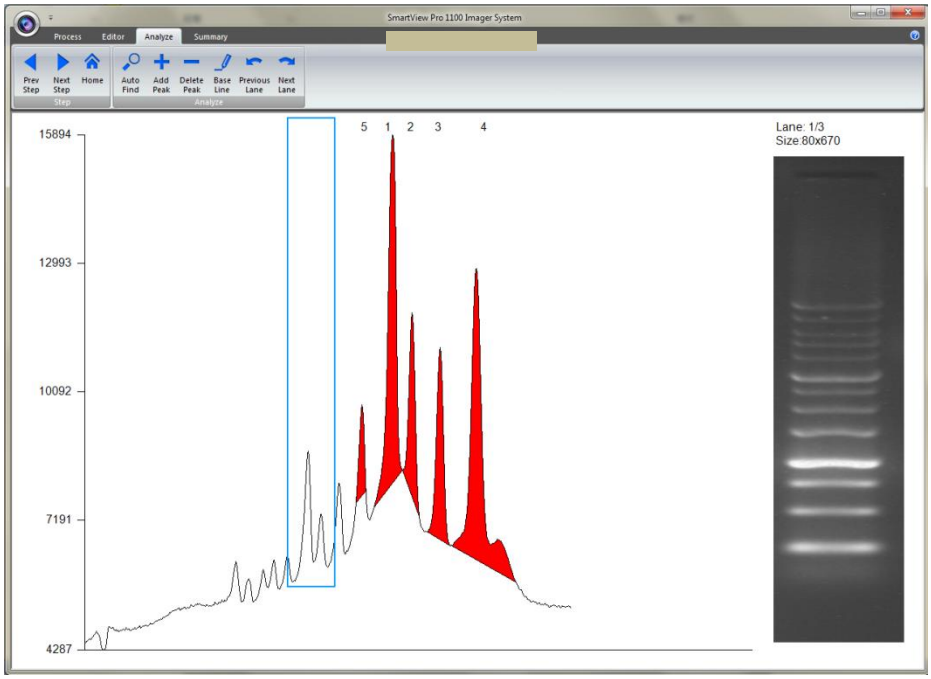
Step2-1 The peak will turn "RED". The new peak number is 6 (shown below).



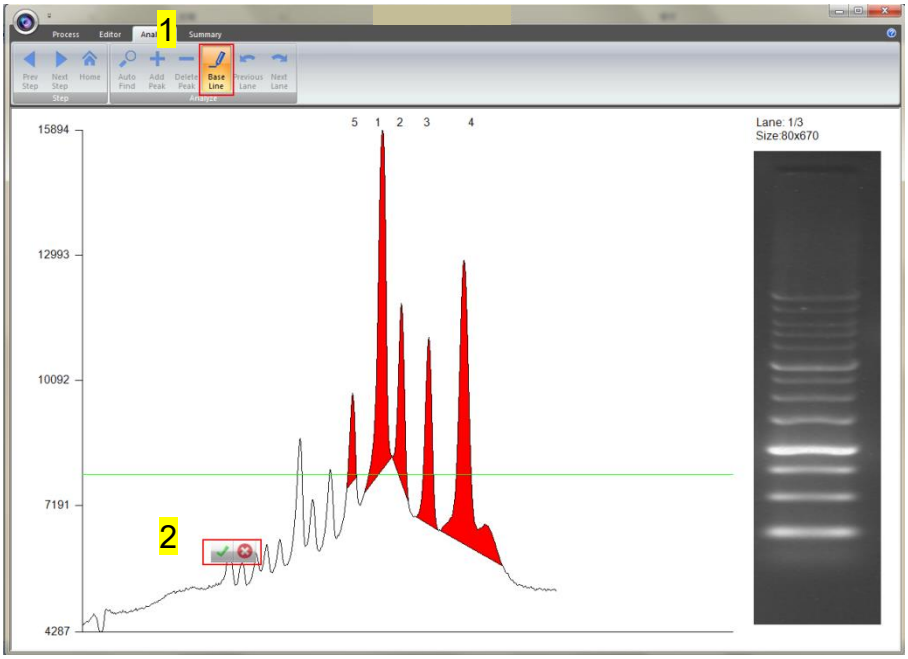
Step3Delete Peak: Press "Delete Peak" button (as box1), click on that peak (as box 2), the peak will turn gray and then click "✓" to finished.



Step3-1 The peak will turn white. The white peak will not be included in the calculation. The order of the peaks will be rearranged.

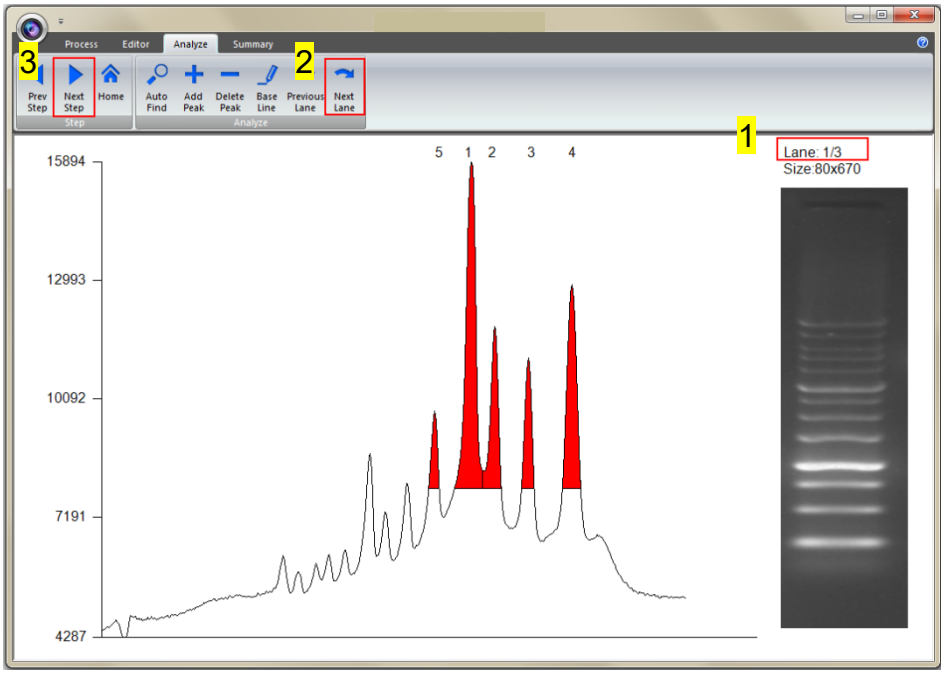


Step4Base Line: This feature is used to help you increase (orcut off) the peaks you want (or do not want) to include in the quantification step. Press "Base Line" button (as box1) and a green line will show up on the screen, you could move the line to the position you desireand the peaks above the base line will be selected, then press "✓"(as box 2)to confirm it.



Note: You need to have at least one peak in order for Base Line feature to function.

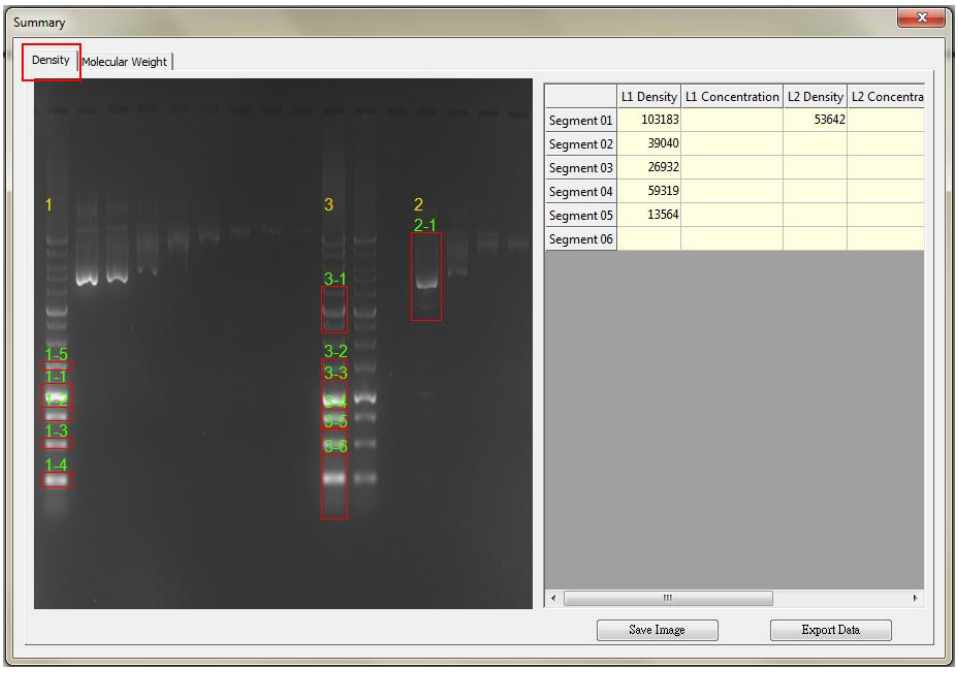
Step4-1 The software will only count the peaks that are above the base line. There were three lanes selected(as box1) in this example, so you need to press on the "Next Lane" button (as box 2) go to select peaks for lane3 before proceeding to summarizing the data. Click "Next Step" button (as box 3) to move to summarizing the data.



4.3.5 Image Summarization

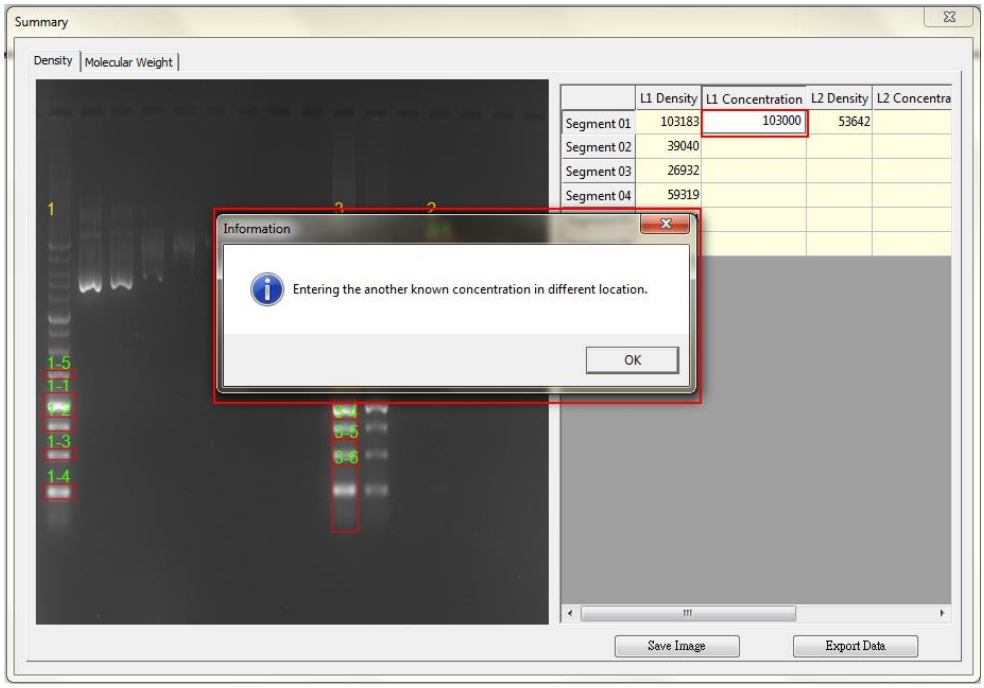
4.3.5.1 Calculating the density

Step1 When clicking the "Density" worksheet (as box 1), you need to input two known concentration from two of the bands from the lane(s).

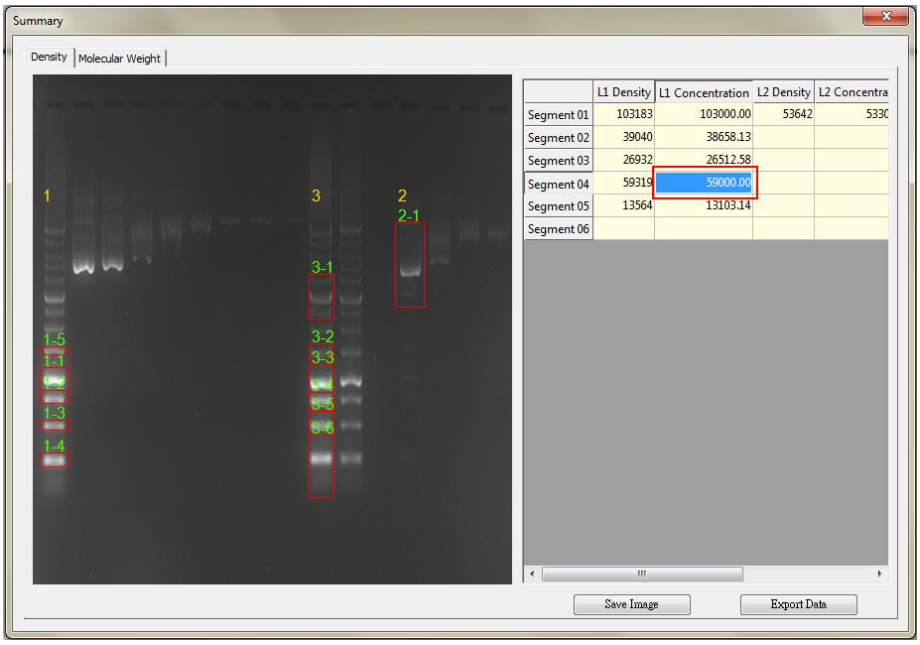


Step2 Double click the blank L1 Concentration box associated with the known marker size. After keying in the first value, the system will show a dialog to remind you to key in the second value.

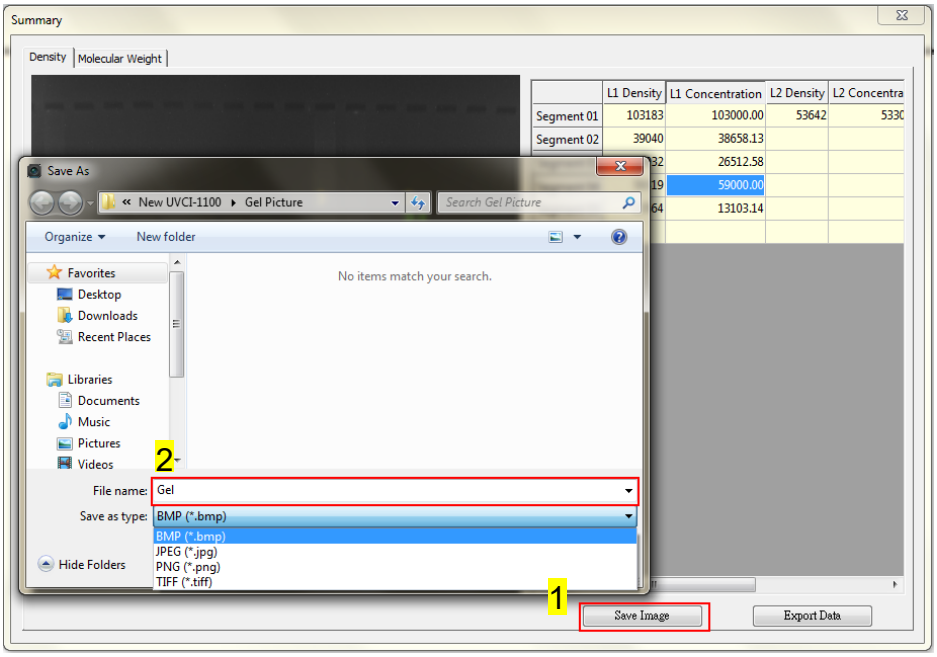
Note: The "concentration" values of marker are provided by marker manufactuerer.



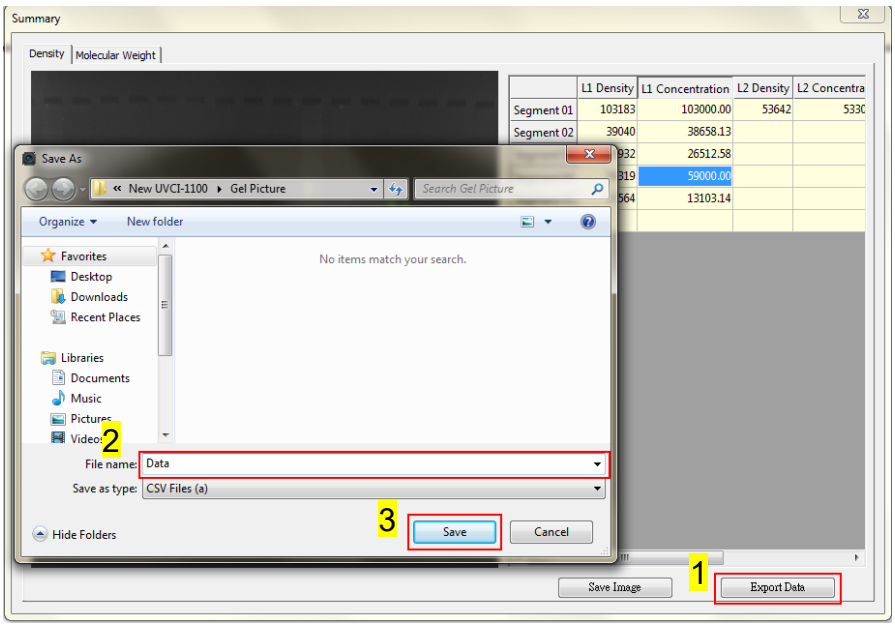
Step3 Enter the second value of known concentration then hit **Enter** on your keyboard to finish, the analysis software will project all the other unknown concentrations based on the 2 known (input) concentrations.



Step4 Click "Save image "button(as box 1) to store this image from the screen. Choose a destination location to save your image. Give the image a file name (as box 2) and press "Save" (as box 3) to finish.

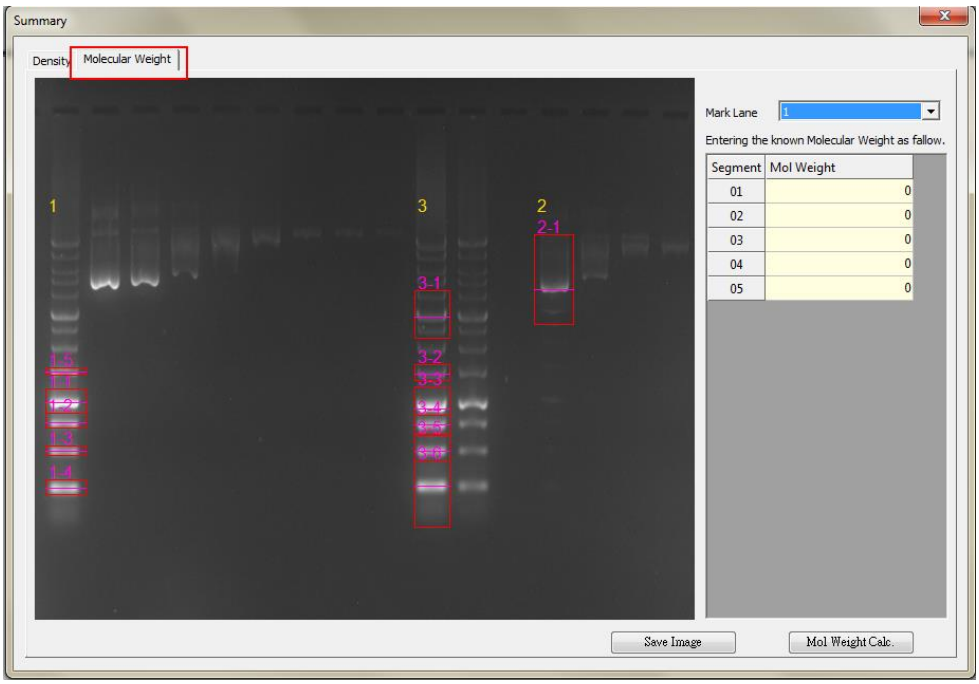


Step5 Click on the "Export Data" button (as box1), a window pops up to ask you to select a destination location to save your file. Give the data a file name (as box 2) and press "Save" (as box 3). Data is then exported using the CSV file format, which could be easily access by using Microsoft Excel.



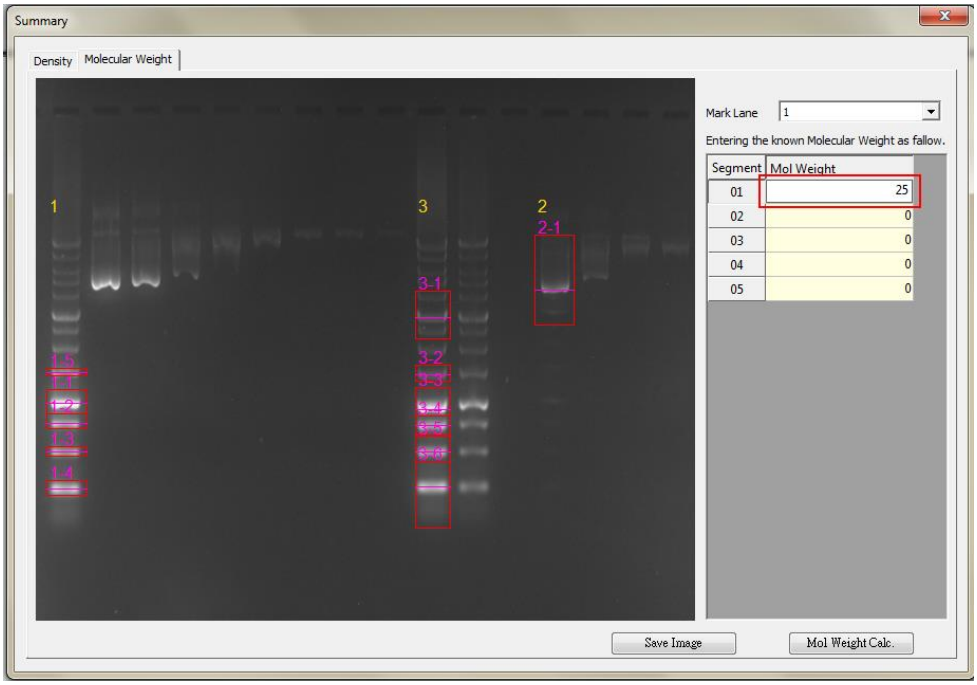
4.3.5.2 Calculating the molecular weight

Step1 Select "Molecular weight" worksheet to move forward with quantification analysis by calculating the molecular weight.



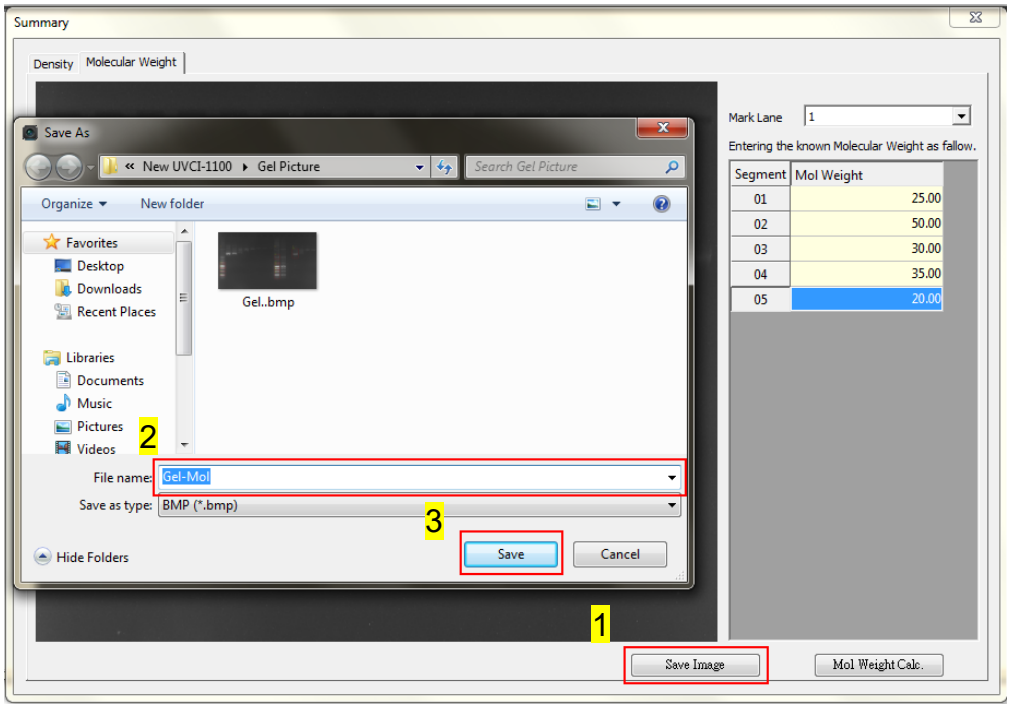
Step2 Key in the respective molecular weight values of the marker in this page.

Note: The "Mol weight" values of marker are provided by marker manufacturer. Click on the "Mol weight" box and then input all known values.

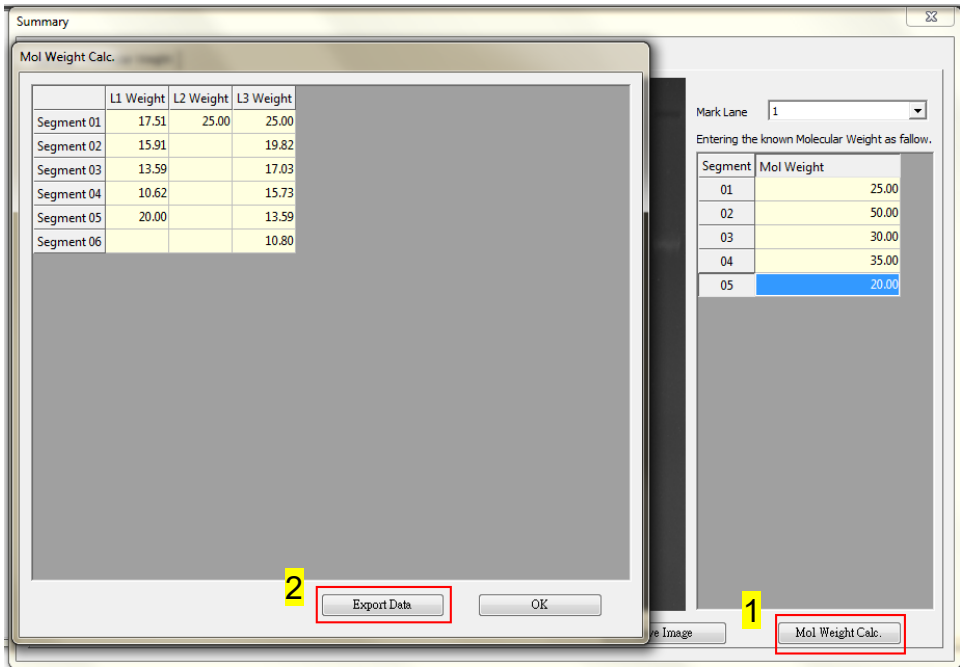


Step3 Fill in all known values of the marker on the list.

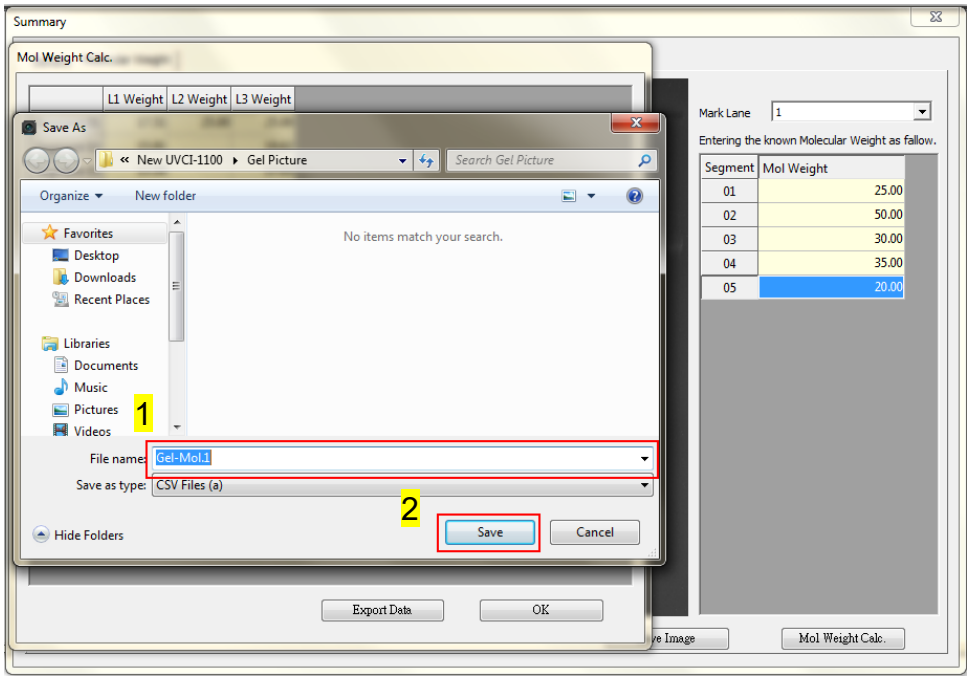
Step4 Click "Save image" button (as box 1) to store this image from the screen. Choose a destination location to save your image. Give the image a file name (as box 1) and press "Save" (as box 2) to finish.



Step5 When clicking the "Mol Weight Calc." button (as box1), this analysis software will calculate the unknown "Mol weight" based on the input marker values. Press the "Export Data" button (as box 2), the software will export the data to a CSV file sheet.



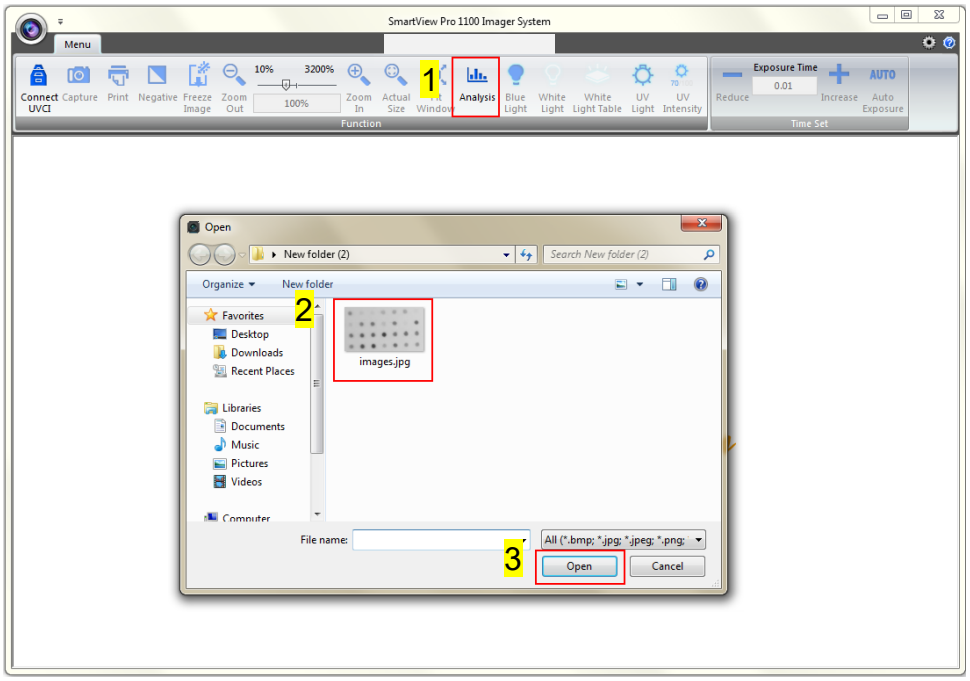
Step6 Choose a destination location to save your export. Give the data a file name (as box1) and press "Save" (as box 2) to finish.



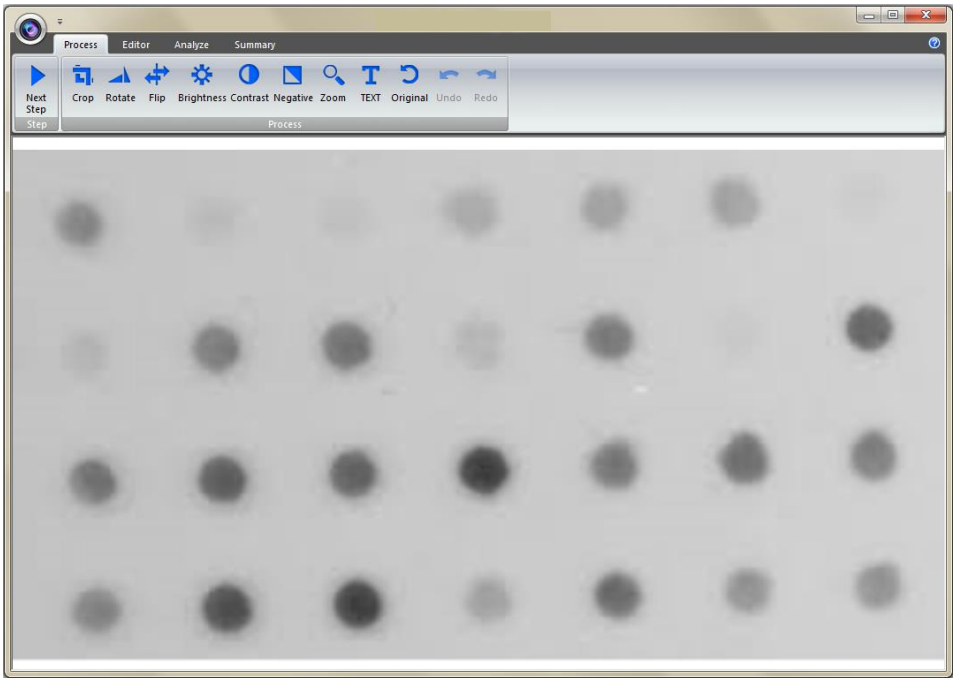
4.4 Image Analysis: Using "Dot blot positive/ Dot blot negative" to analyse the sample

4.4.1 Load the image

Step1 Press "Analysis" (as box1) to select the image you wish to analyze. You may select the image file from the hard drive or the USB drive. Select an image from the folder (as box 2). Press "Open"(as box 3) to load.



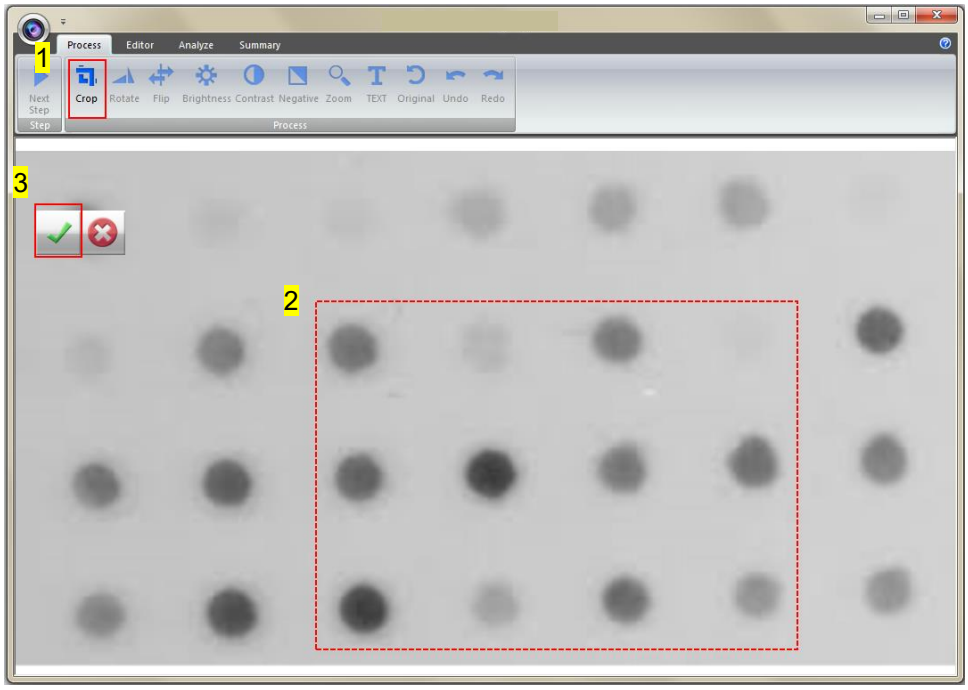
Step2 The image will be shown on the center of a new window.



4.4.2 Processing the Image File

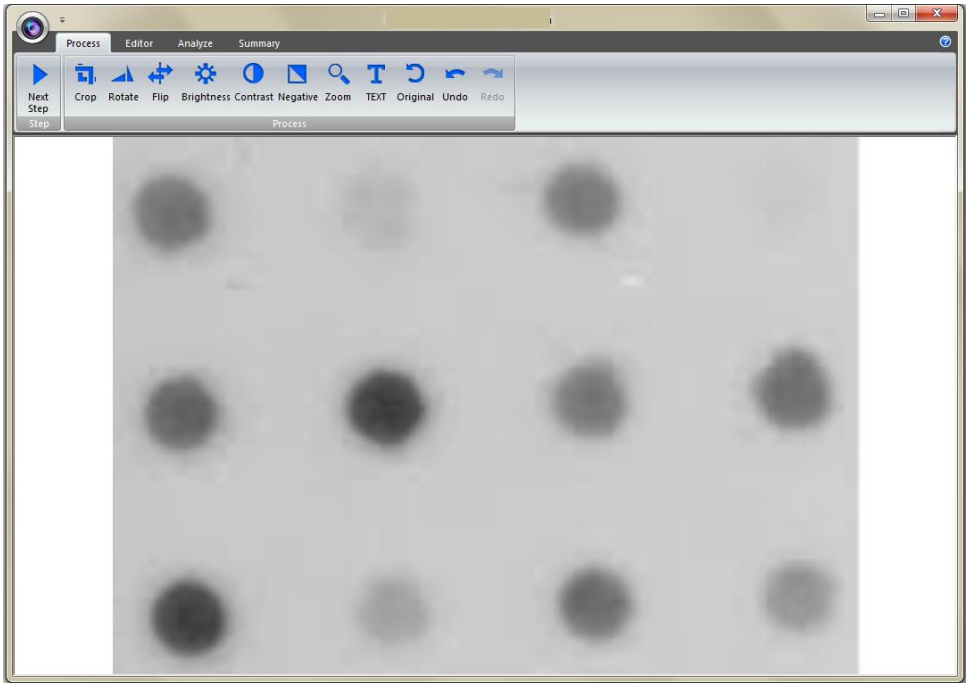
You will be directed to the image processing tool box as shown below.

Step1Crop: Crop the image by press the "Crop" button (as box1). In order to select the cropping area of the image, hold and drag the cursor to select the area you want (as box 2). Once you are done. Press "✓"(as box 3) button to confirm or press "x" to cancel.



Step1-1 The image will be shown below as you selected.

***Remember: Always rotate the image before you crop!"**



Step2Rotate: To rotate the image, first select the "Rotate" button (as box1) and the toolbar (as box 2) will pop up.

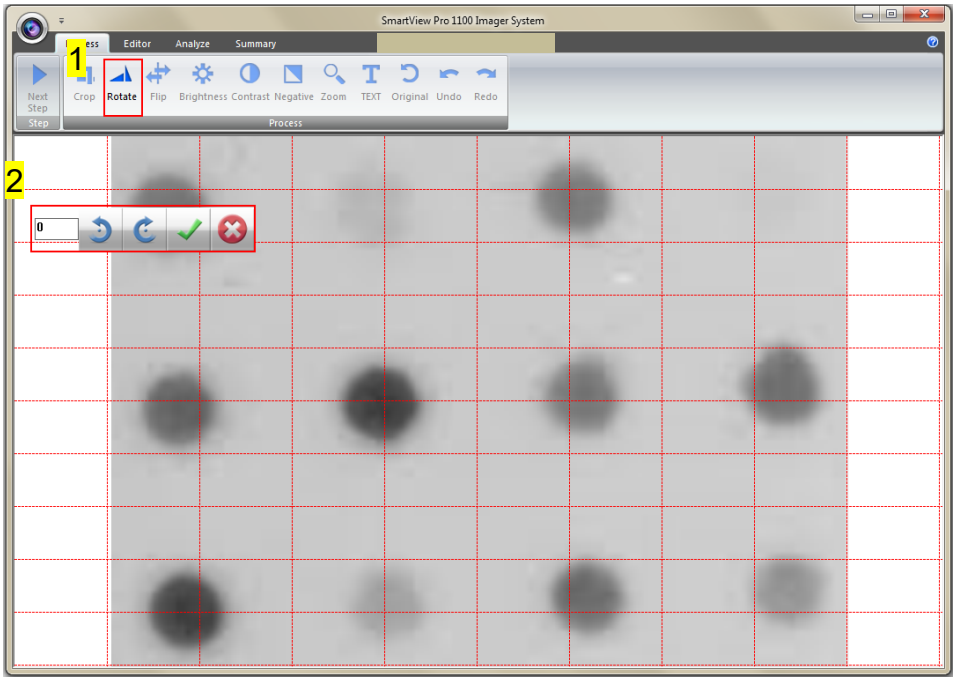
Toolbar:

a.  : Rotate counter-clock wise

b.  : Rotate clock wise

c.  : Confirm action

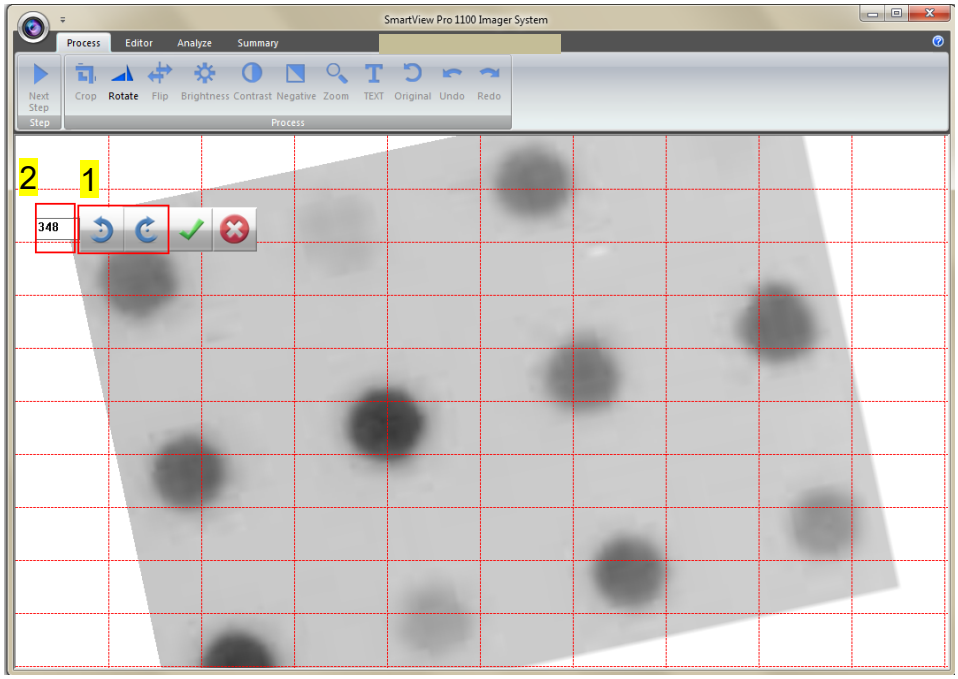
d.  : Cancel



Step2-1 You may rotate the image counter-clock wise or clock wise in two ways:

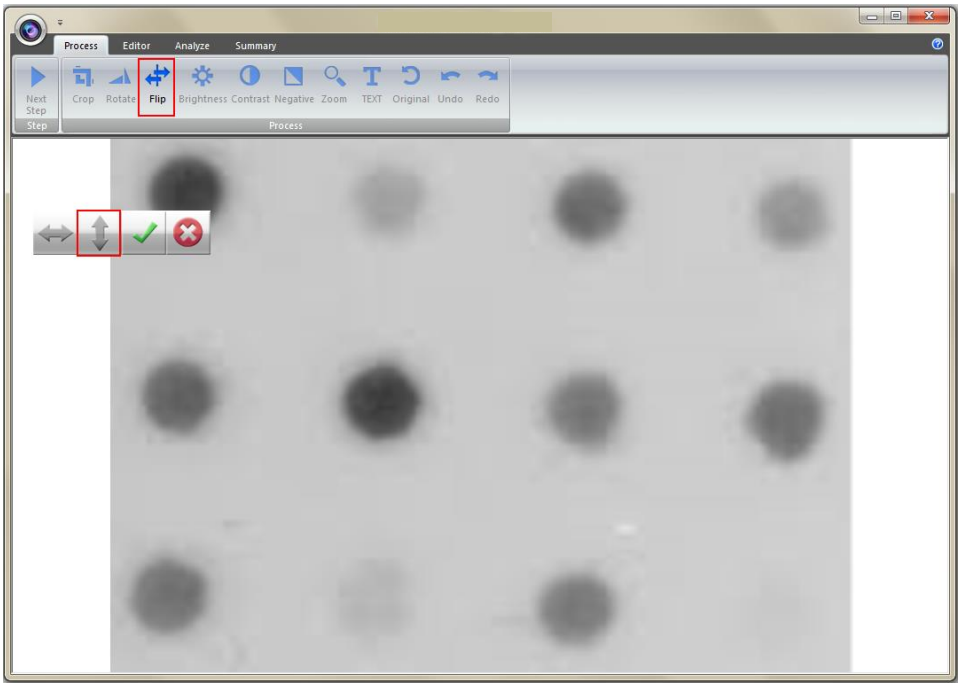
a. Using the toolbar labeled as box 1, press "✓" to confirm action.

b. Input the desired angle (0~359) directly in the blank space labeled as box 2, press **ENTER** first before pressing "✓" to confirm action.

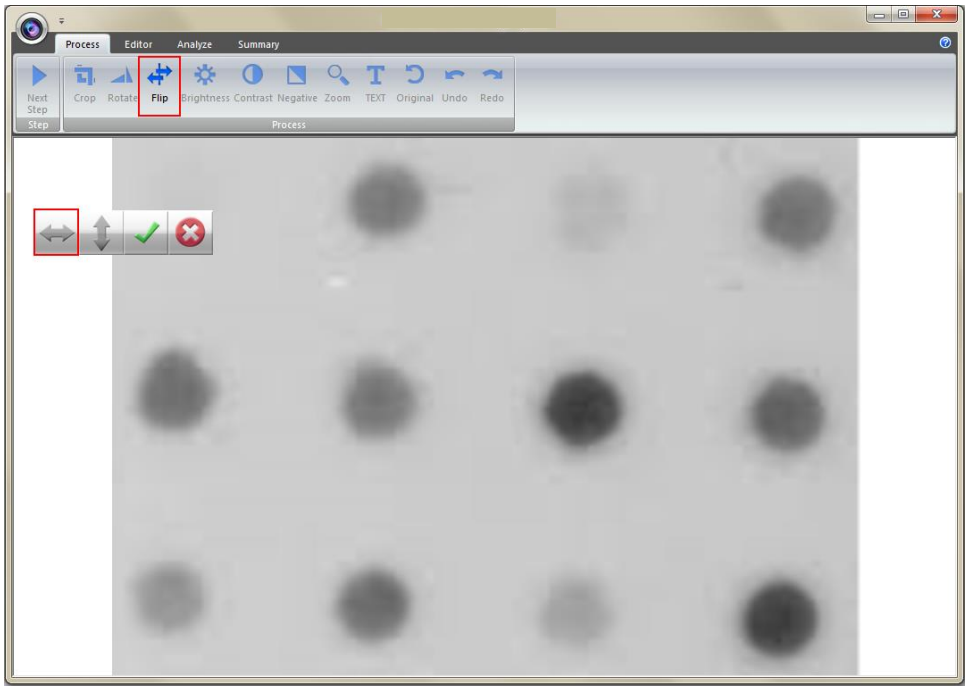


Step3Flip: To flip the image according to the orientation you desired.

a.  : Invert the image upside down.



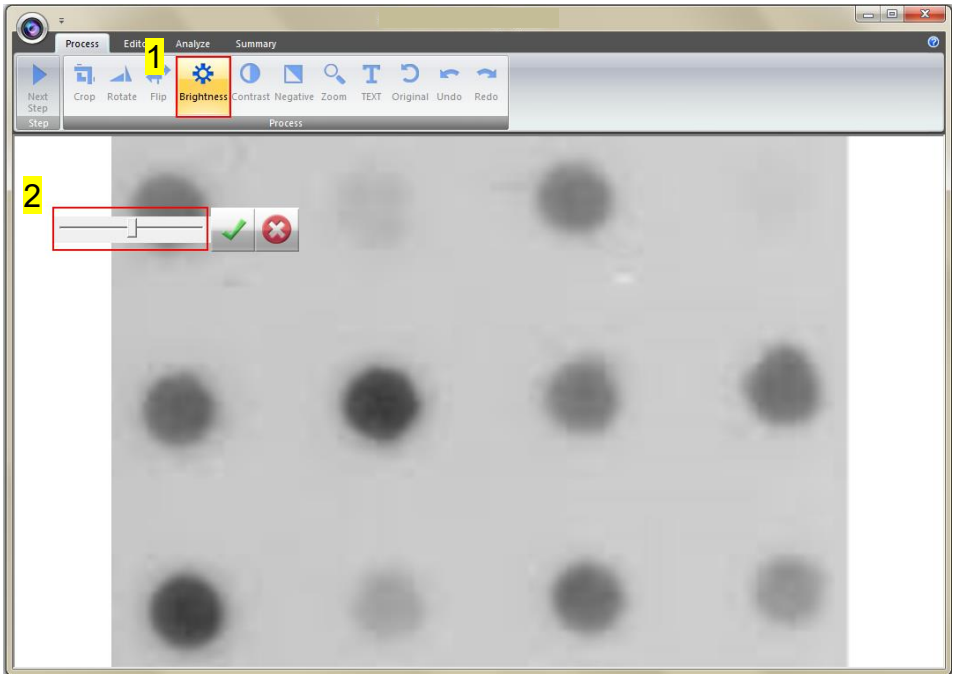
b.  : Invert the image from left to right.



c.  : Confirm action d.  : Cancel

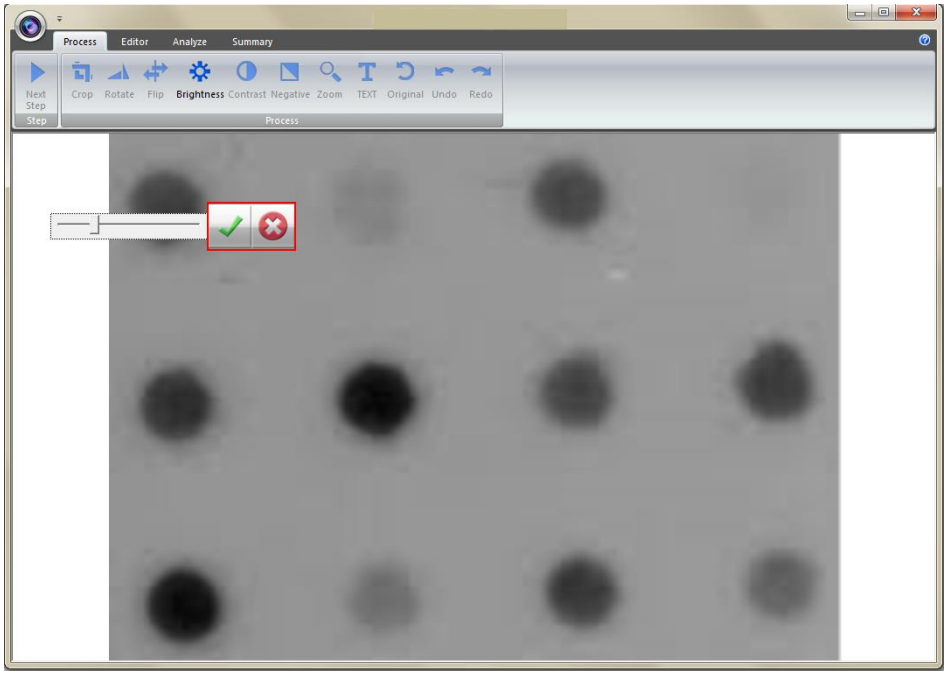
Step4Brightness: Adjusting the brightness of the image by pressing on the "Brightness" button (as box1), then use the scrollbar (as box 2) to adjust the brightness level.

a.  : Low – High



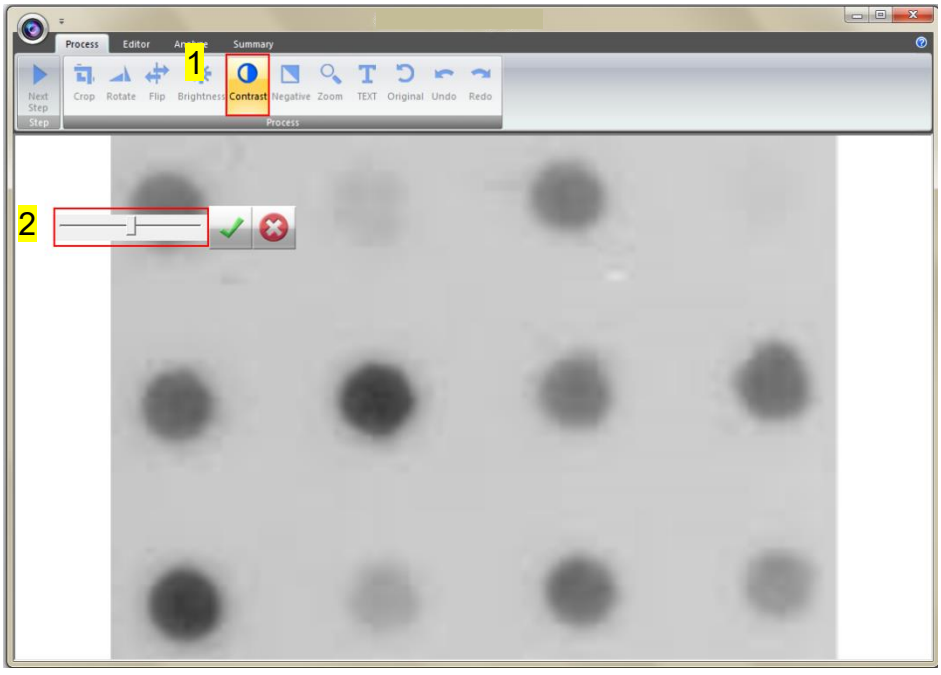
Step4-1 The result of Brightness is shown below. Press "✓" to proceed or press "X" to cancel.

b.  : Confirm action c.  : Cancel



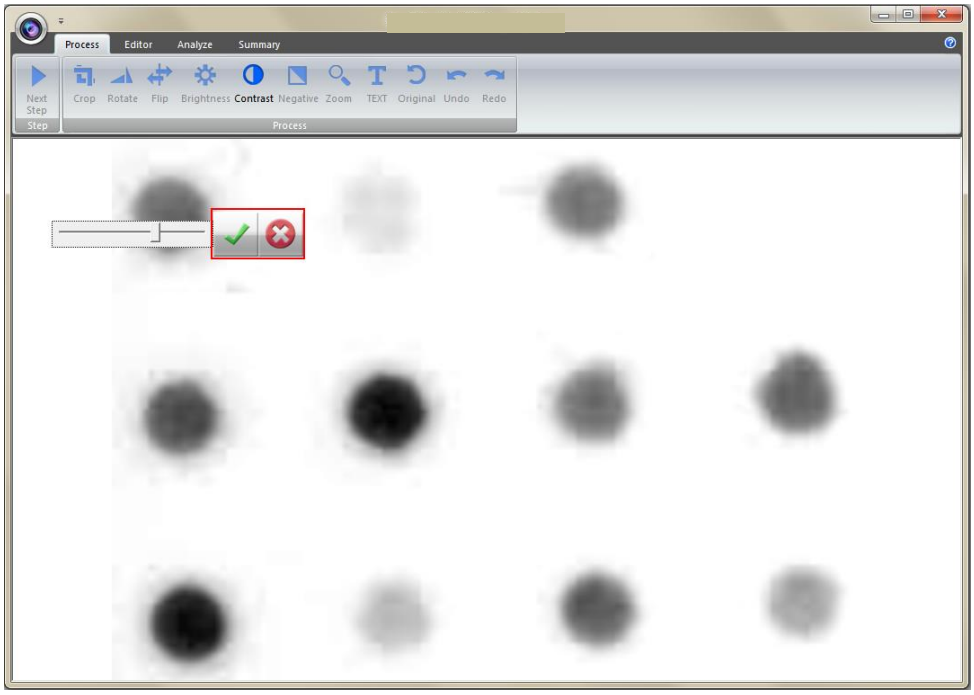
Step5Contrast: Adjusting the contrast level of the image by pressing the "Contrast" button (as box1), then use the scrollbar (as box 2) to adjust the contrast level.

a.  : Low – High

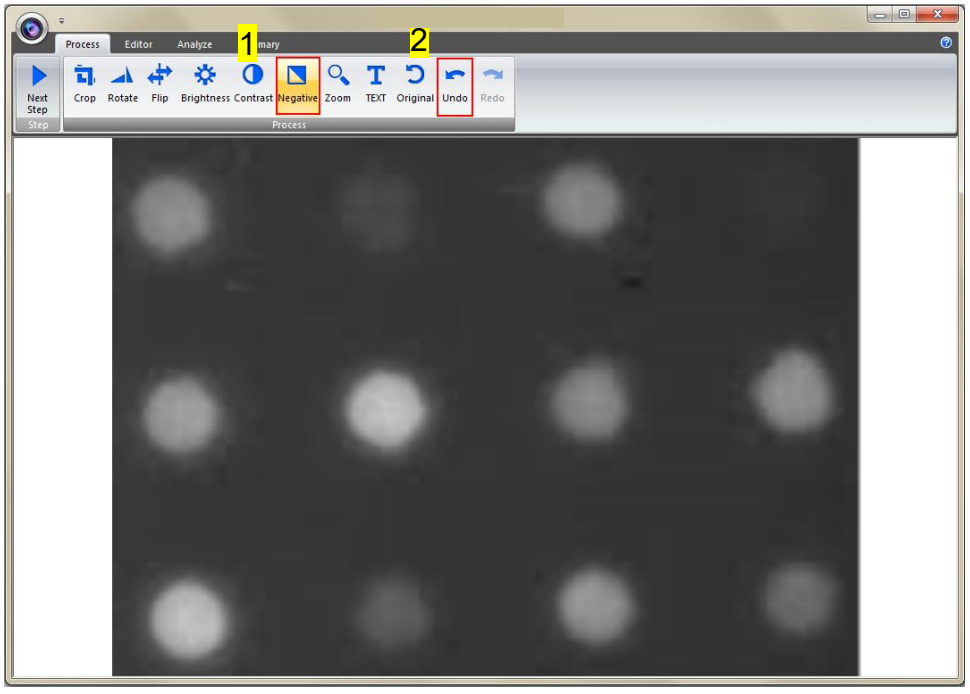


Step5-1 The result of Contrast is shown below. Press "✓" to proceed or press "x" to cancel.

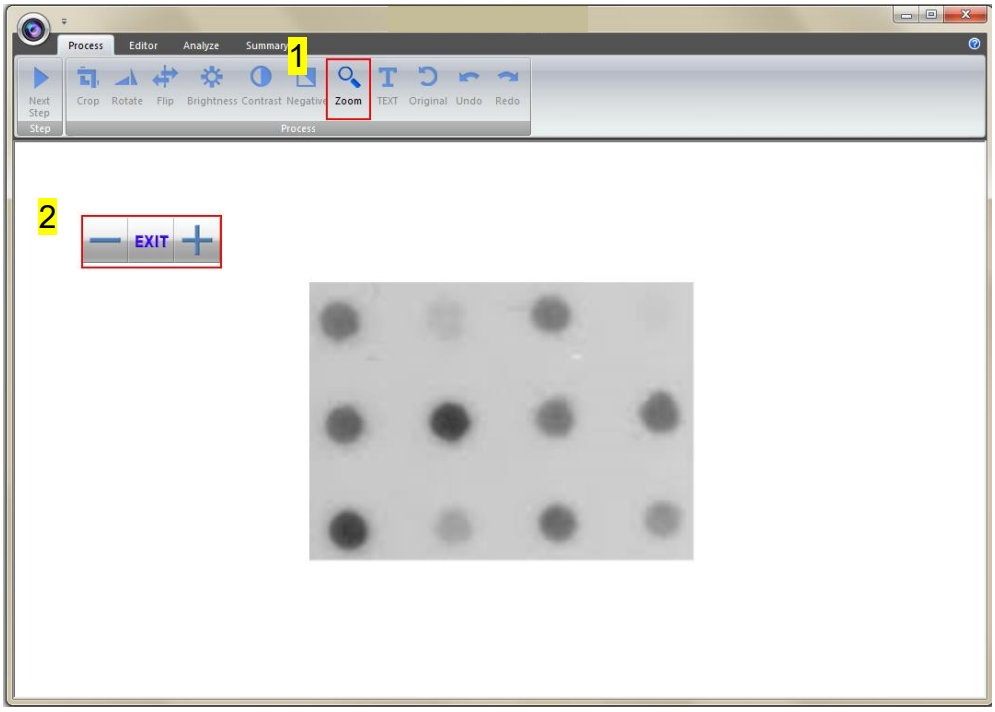
b.  : Confirm action c.  : Cancel



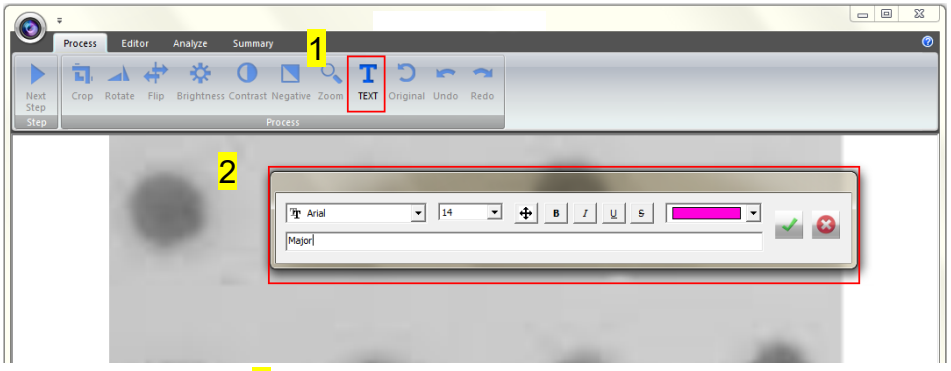
Step6Negative: To reverse the image between black and white by pressing on the "Negative" button (as box1). If you don't want to negative the image, you can press the "Negative" button again or you can press the "Undo" button (as box 2) to recover the image.



Step7Zoom: Adjusting the zoom of the image by pressing on the "Zoom" button (as box1) and then a toolbar will pop out. If you want to zoom in the image, press the "+"button (as box2). If you want to zoom out of the image, press the "-"button (as box2). Press "EXIT" to finish. This feature simply lets you zoom in and zoom out of the image but will not make any changes to the image file.



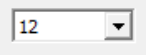
Step8Text: You could add text onto the image. Click on the "Text" button (as box1) and then the toolbar (as box2) will show up. The sample text will show on middle of the screen.



Step8-1 Click on the input box, type in your text here. You could adjust your text using this toolbar. The toolbar functions are explained as below.

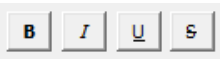
a. 

: Change the font type

b. 

: Change the font size.

c.  : Move the text to the desired location by move the mouse cursor to the desired location on the image and click the left button of the mouse.

d.  : Change the font properties.

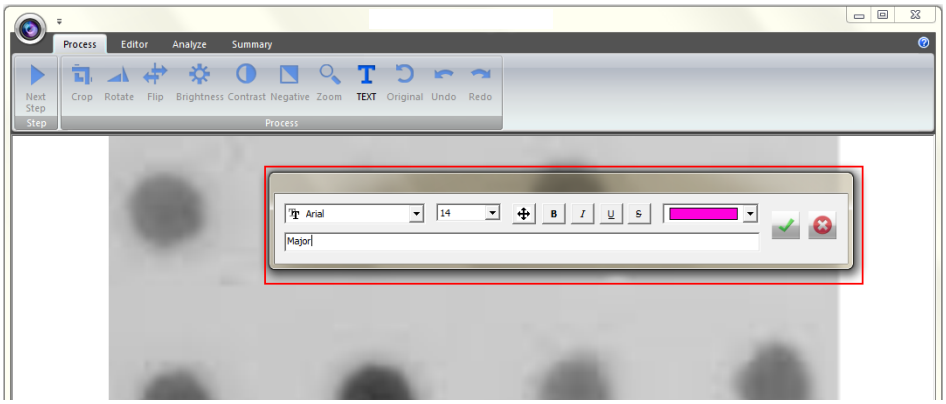
e.  : Change the color of the font.

f.Input box: Type in your text here, press **ENTER** first before pressing "✓" to confirm action.

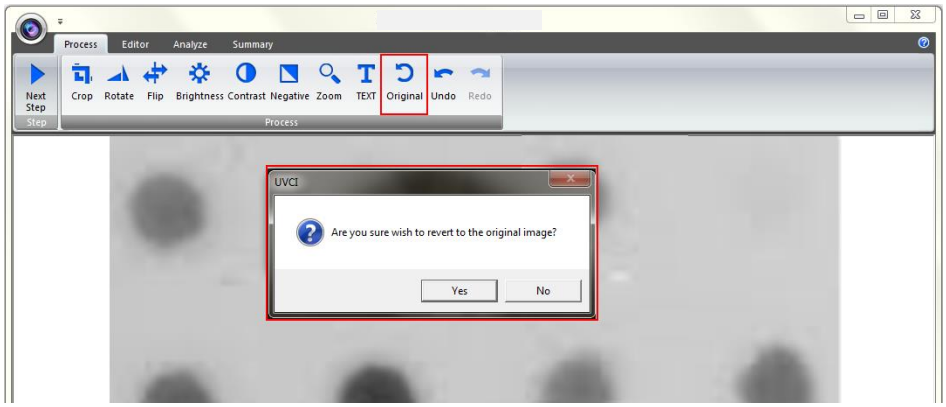
g.  : Confirm action

h.  : Cancel

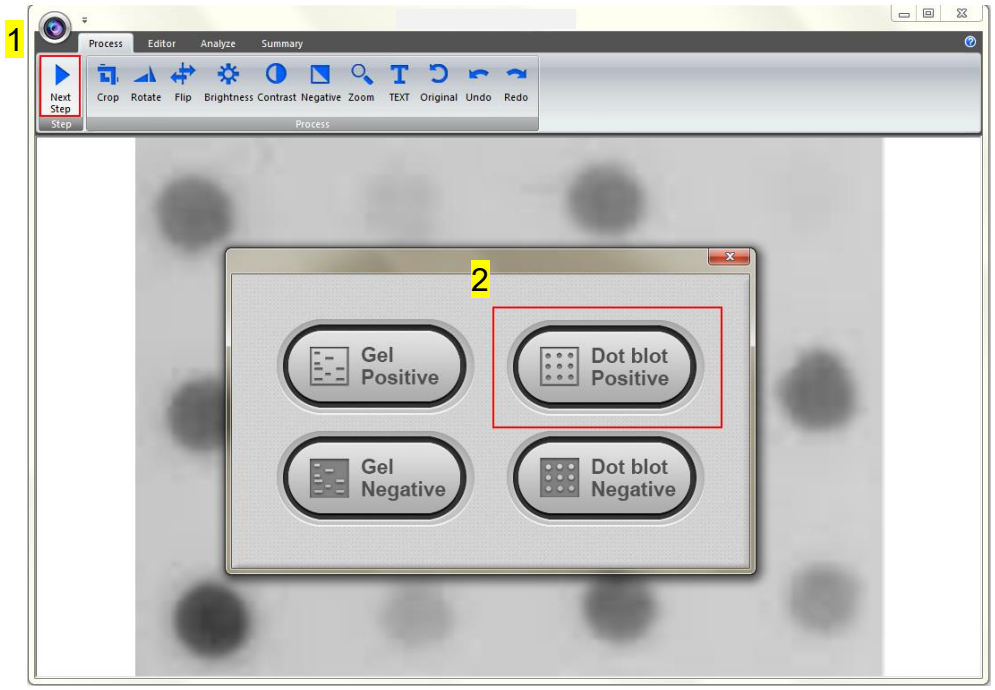
Note: 1. To add another set of text, please press "TEXT" again.
2. To remove a text, please use "Undo".



Step9Original: This is the master undo button. It will undo ALL the changes you made to the image and revert it back to the original image. A massage will pop up to ask for confirmation once you press the "Original" button. Press "Yes" to proceed.

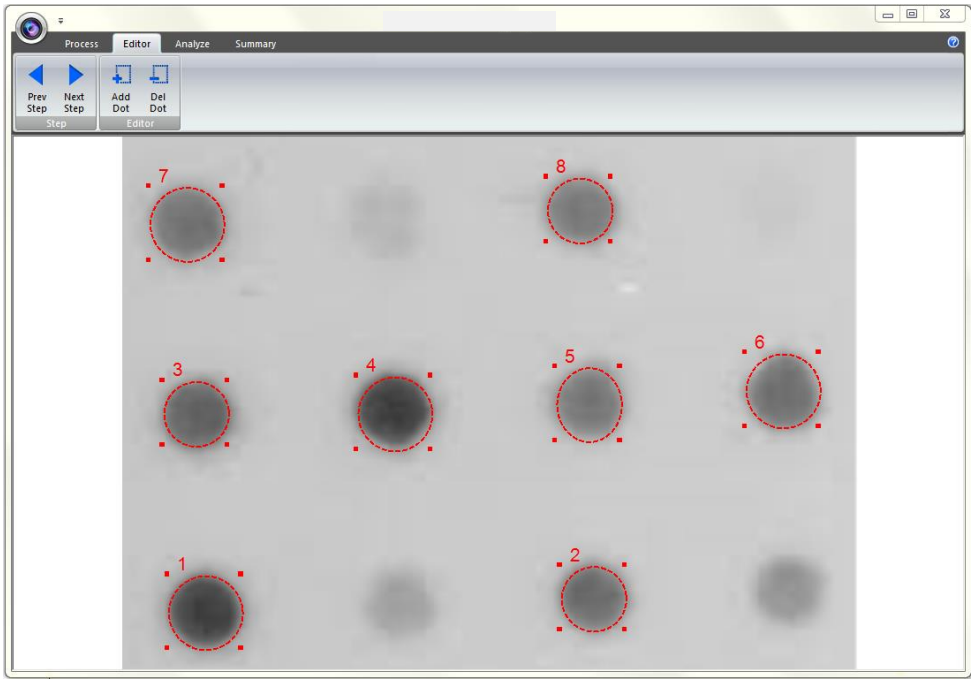


Step10Next Step: Press "Next Step" button (as box1) to continue the analysis. There are 4 analysis methods for you to choose depending on your application. For example, we choose "Dot blot Positive" (as box 2) for DNA gel electrophoresis. (The instructions for operating under Dot blot Positive and Dot blot Negative is the same)

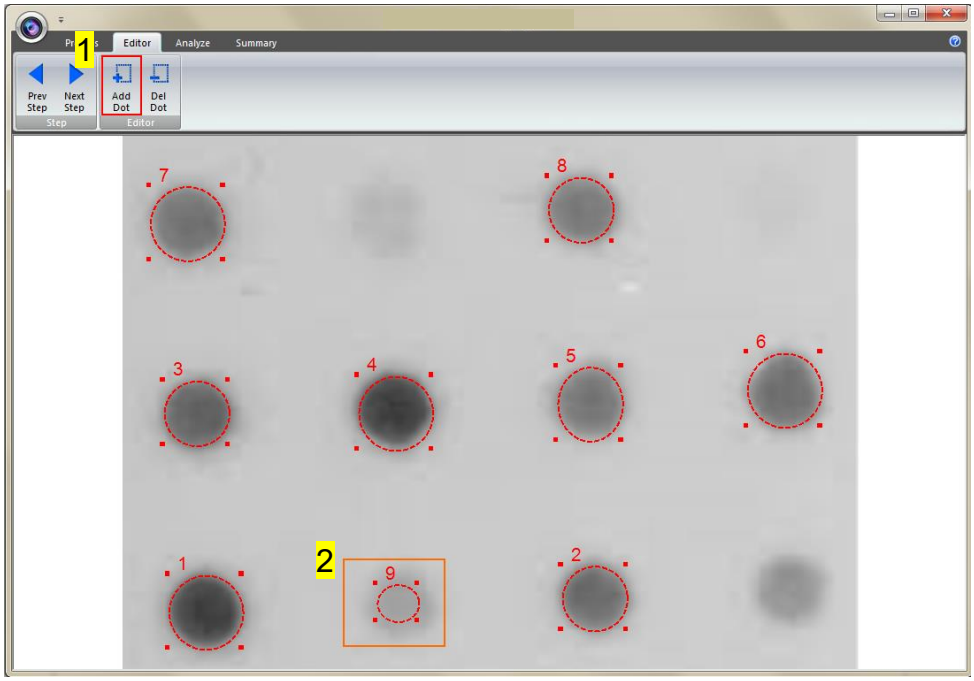


4.4.3 Selecting the Image Dot

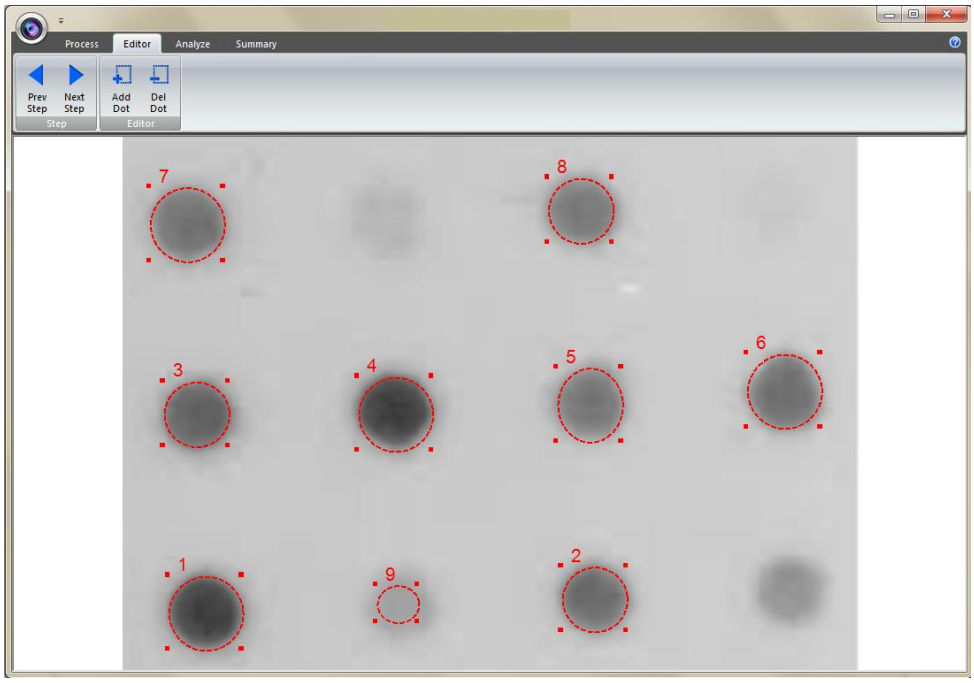
Press "Dot blot Positive" button and the software will automatically analyze the dot-blot samples from the image.



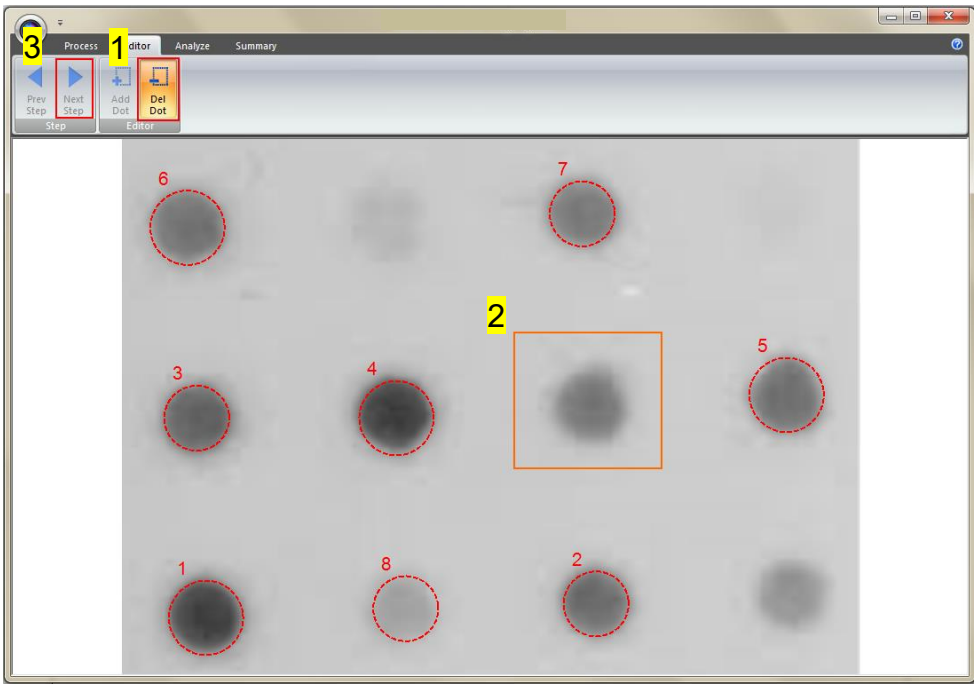
Step1Add Dot: Click "Add Dot" button (as box1) to add one sample. Use the mouse to select the sample (as box 2) from the screen. Each time you press the "Add Dot " button, the system will duplicate a random circle size. Use the cursor to adjust the circle size.



Step1-1 The image will be shown as below.

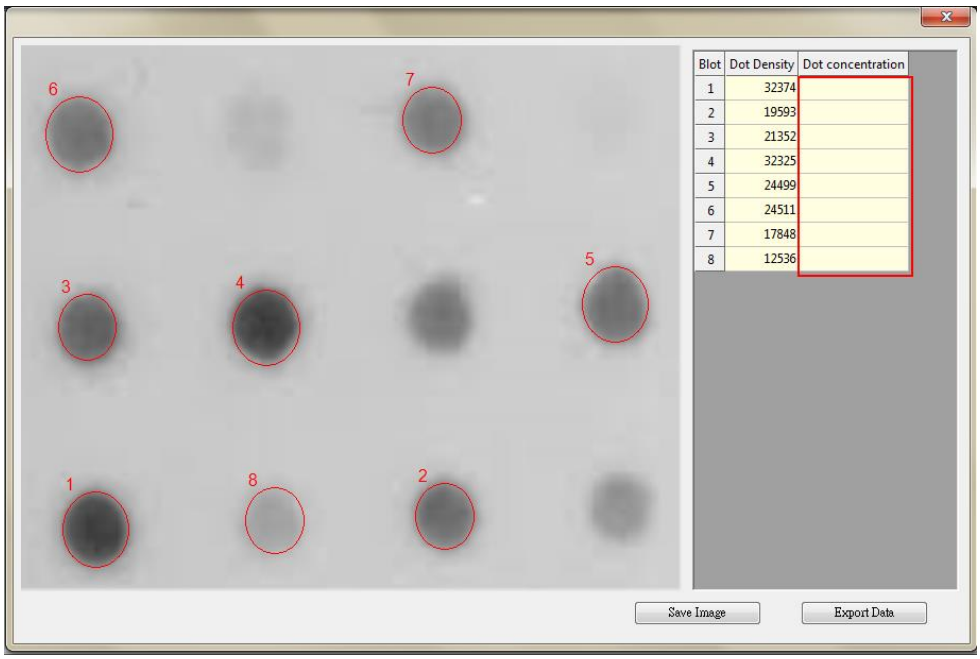


Step2Delete Dot: Press "Del Dot" button (as box1), and then select the dot (as box 2) you want to delete. After selecting the dot, click on "Next Step " button(as box 3)to move forward to next step.

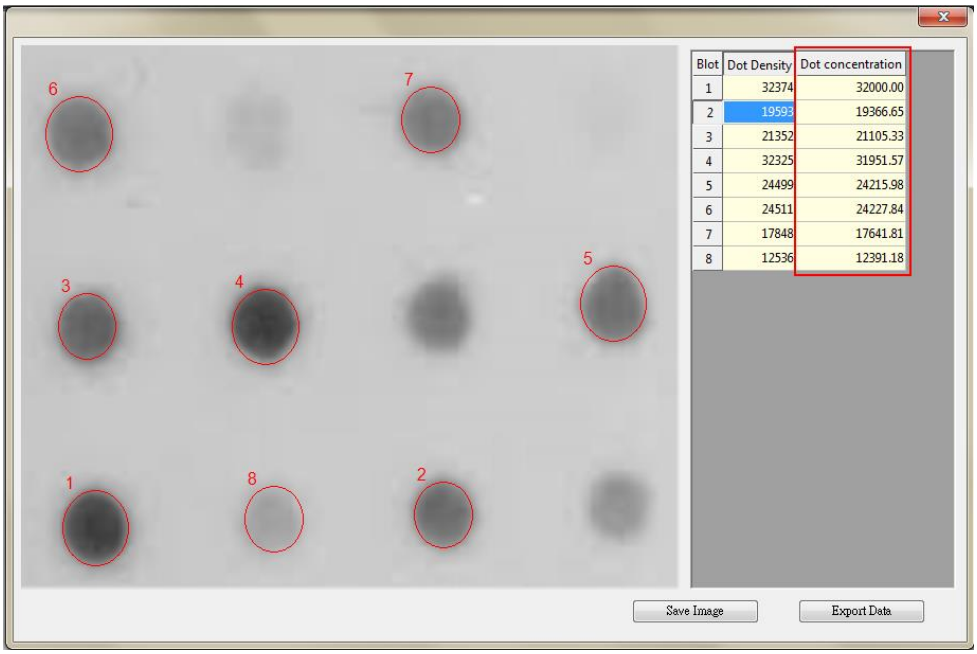


4.4.4 Calculating the density

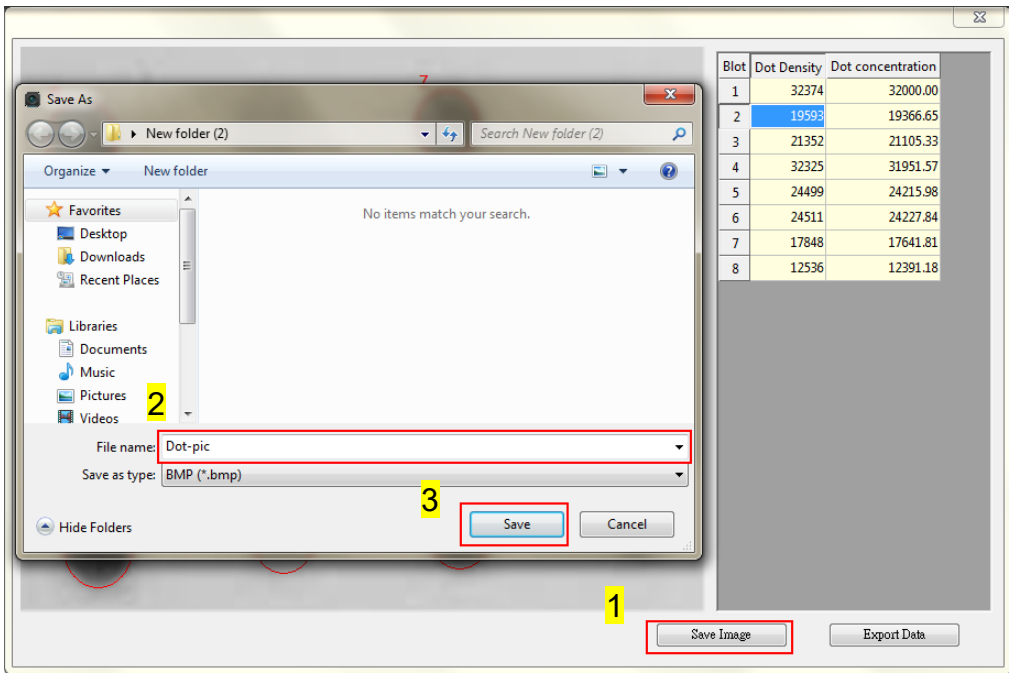
Step1 Double click on the "Dot concentration" blank boxes to input the real density of each sample.(You will need at least one value in order to calculate the rest of the numbers.)



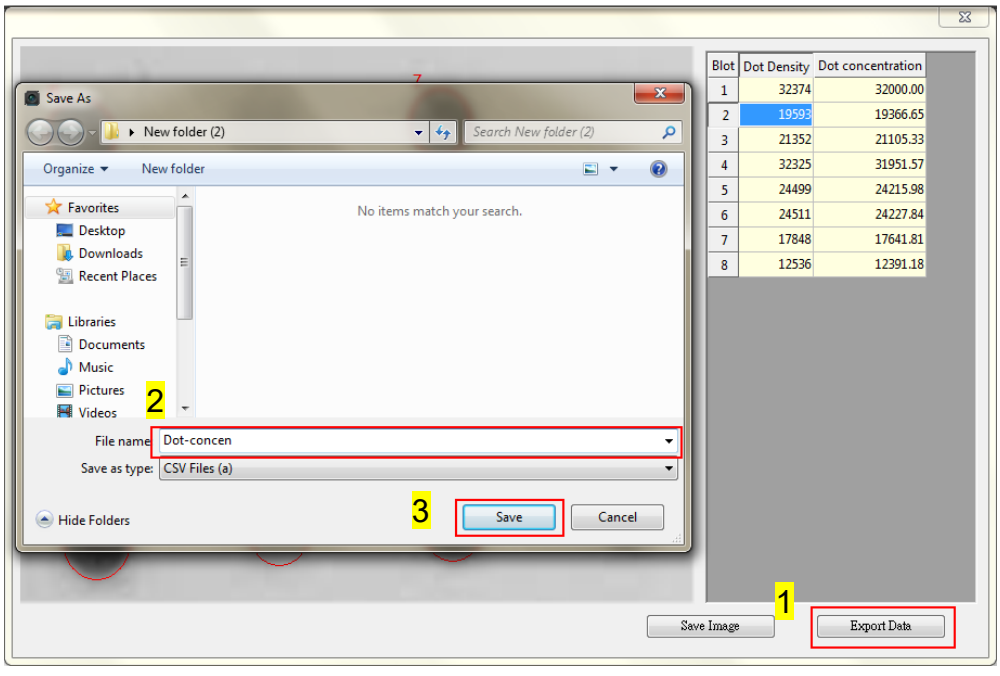
Step2 Enter the value of known concentration. The analysis software will project other unknown concentrations based on the known (input) concentration.



Step3 Click "Save image" button (as box1) to store this image from the screen. Choose a destination location to save your image. Give the image a file name (as box 2) and press "Save" (as box 3) to finish.



Step4 Click on the "Export Data" button (as box1), a window pops up to ask you to select a destination location to save your file. Give the data a file name (as box 2) and press "Save" (as box 3) to finish. (Data is then exported using the CSV file format, which could be easily access by using Microsoft Excel)



Section 5 Troubleshooting Guide

Many operating problems may be solved by carefully reading and following the instructions in this manual. Some suggestions for troubleshooting are given below. Should these suggestions not resolve the problem, please contact our SERVICE DEPARTMENT or our distributor in your region for assistance. If troubleshooting service is required, please include a full description of the problem.

Symptom	Action
Screen doesn't light on	Check the main power switch is on
No Signal from the CMOS scientific grade camera	-Please check if the Wi-Fi is connected. -Please check if the camera is on. -Check power input cable between CMOS scientific grade camera and chamber is connected well. -Check video output cable between CMOS scientific grade camera and chamber is connected well.
Light lamp doesn't light up	Check white light lamp is switched on
UV light doesn't light up	Check UV transilluminator is switched on
Cannot print the image file on 64 bit system (e.g. Select the printer type as Adobe PDF).	Please select the PDFCreator type to print the image. PDFCreator download web site: http://www.pdfforge.org/pdfcreator

Section 6 Maintenance

The painted surfaces of the filter areas on the built-in UV Transilluminator must be cleaned with water and soap, using a sponge or towel. Dry the filter surface with a soft cloth after each operation. Never use abrasive cleaners, solvent based cleaners or scouring pads. The housing may be cleaned with a moist cloth containing a mild soap solution.

Always disconnect the OmniDOC Gel Documentation System from the electrical power prior to cleaning.

6.1 Replacing the Fuse

For additional fuses, contact Thistle Scientific

To replace the fuse:

1. Turn off the main power switch at the rear of system and detach the power cord.

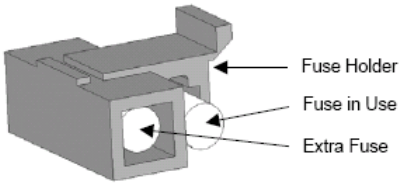
2. Open the fuse compartment located inside the Power Entry Module by inserting a small flathead screwdriver into the slot below the ON/OFF switch. Turn the screwdriver to gently pry open the fuse compartment.

Note: the fuse compartment will not open with the power cord in place.

3. Pull the fuse holder out of the compartment and inspect the fuse. If the fuse is burned or there is a break in the fuse element, replace the fuse with an identical type of fuse (**T2A/250V~**) as provided in the fuse holder (see figure below)

4. Place the fuse holder back into the compartment.

5. Snap the cover close.

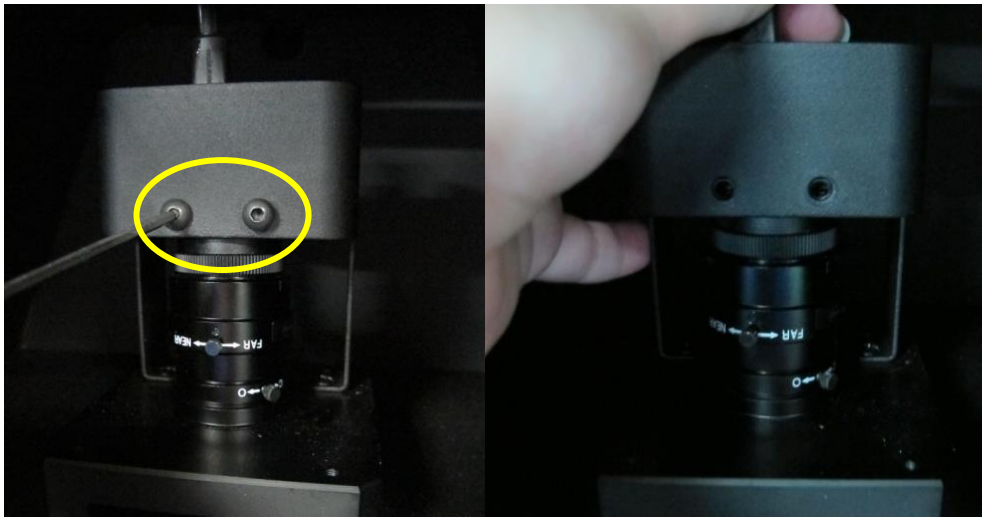


6.2Adjust the scientific grade camera for clearer image

Tool: 2.5 mm hex wrench (not provided)

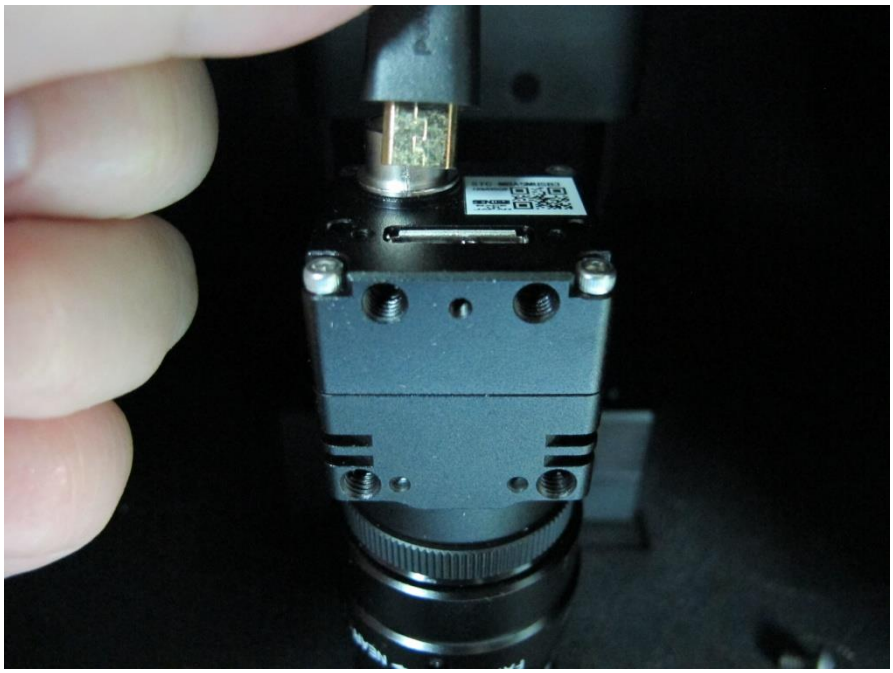
Step1 Open scientific grade camera door. Remove the filter to a stable place.

Step2 Use 2.5mm hex wrench to loosen the screws of camera holder and hold the scientific grade camera to prevent damage to the lens.



Step3 Pull out the scientific grade camera gently.

Step4 Disconnect the USB port from the scientific grade camera.



Step5 Separate the camera with darkroom, you could use general camera cleaning kit to clean the lens and then reinstall the camera on the camera holder for clearer images.

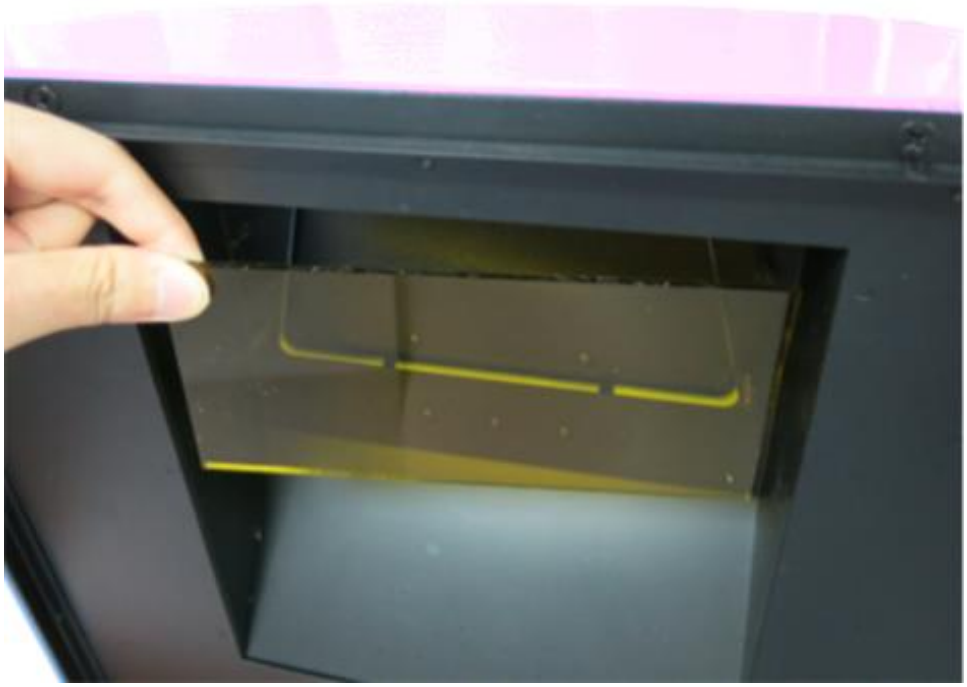
6.3 Replacing Amber Filter onto Viewing Window

Two filters (transparent filter and amber filter) are installed as default, if you did not purchase the blue light module and would like to remove the amber filter, please follow the steps below.

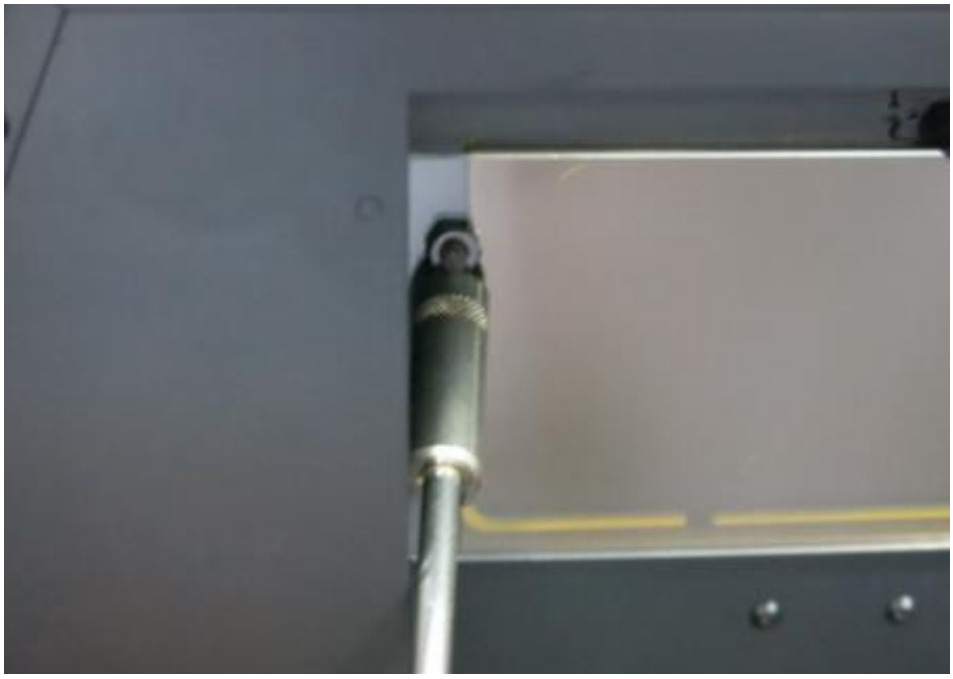
Tool:7M/M socket wrench (not provided)

Step1 Loosen 4nuts from the corners. Remove the transparent filter.

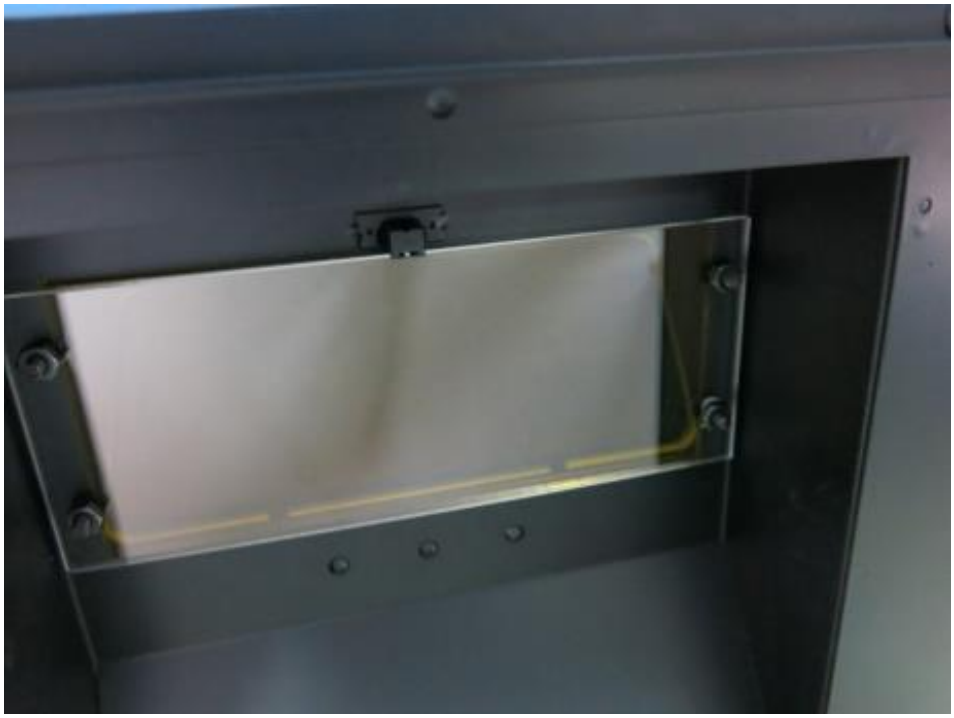
Step2 There are no screw holes on the amber filter, please put the amber filter on the inside of the bolt.



Step3 Cover the transparent filter on the amber filter, put the nuts of four corners and then use the socket wrench to tighten the nuts.



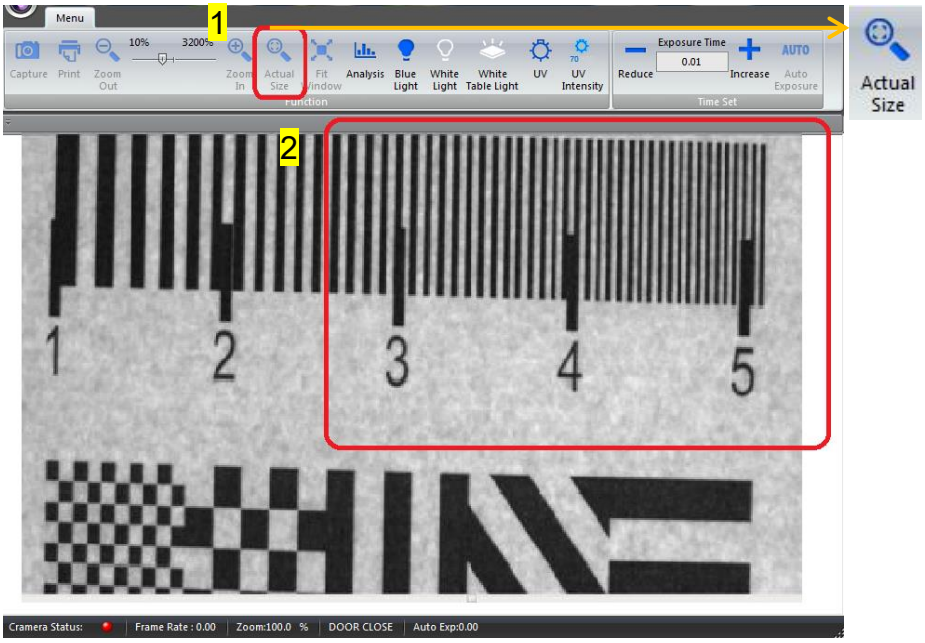
Step4 Confirm the amber filter is fixed in the center of the viewing window.



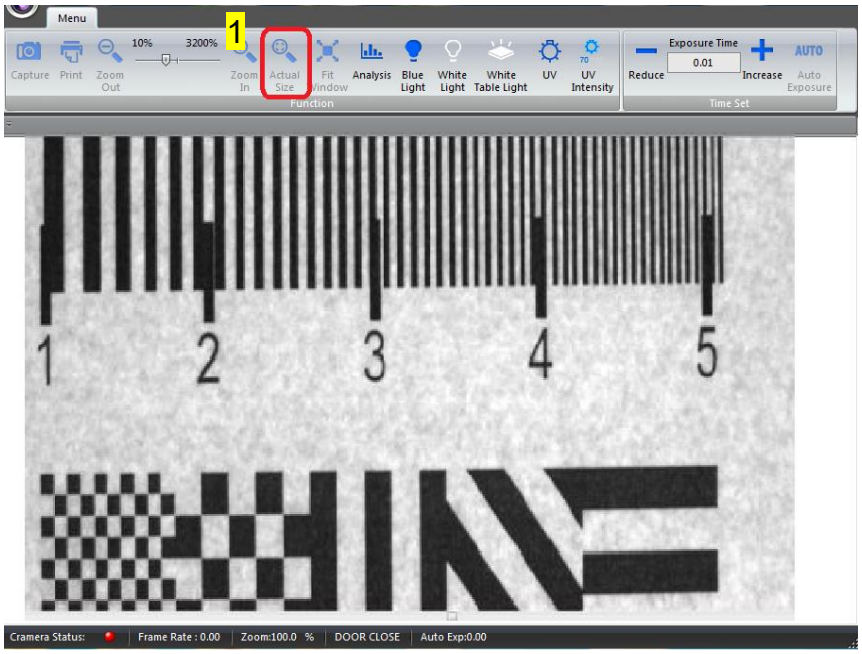
6.4 Adjust the scientific camera when out of focus

Adjust the scientific camera for out of focus only under OmniDOC Gel Documentation system pc version to operate, please refer to OmniDOC Gel Documentation system pc version instruction manual to install the software on your computer.

Step1 Adjust the maximum iris and lock it to fix. Put the fluorescent ruler on the UV table. Turn on the UV light and press “Actual Size” button (as box 1). Adjust the focus ring to make the picture (as box 2) clear and without losing focus.



Step2 Put fluorescent ruler on the UV table again. Turn on the UV light and press “Actual Size” button (as box 1) to make sure the picture is clear and focus on. Fix the focus ring after adjustments.



Section 7 Warranty

Thistle Scientific warrants apparatus of its manufacture against defects in materials and workmanship, under normal service, for ***two years from the shipping date to purchaser***. This warranty excludes damages resulting from shipping, misuse, carelessness, or neglect. Consumable parts (UV lamp and UV filter) are not covered by our warranty. Thistle Scientific's liability under the warranty is limited to the receipt of reasonable proof by the customer that the defect is embraced within the terms of the warranty. All claims made under this warranty must be presented to Thistle Scientific within two years following the date of delivery of the product to the customer.

Manufacturer:
Thistle Scientific Ltd.

Address:
Thistle Scientific Ltd

Unit 41,
Somers Road Industrial Estate
Rugby, CV22 7DH
Warwickshire- United Kingdom

Contact details:
Tel: +44 (0) 1788 565300

Fax: +44 (0) 1788 552822

Email : **hello@thistlescientific.com**

Or for technical support: **support@thistlescientific.com**