

Celloger[®] Pro

Automated live cell imaging system

| Quick Manual



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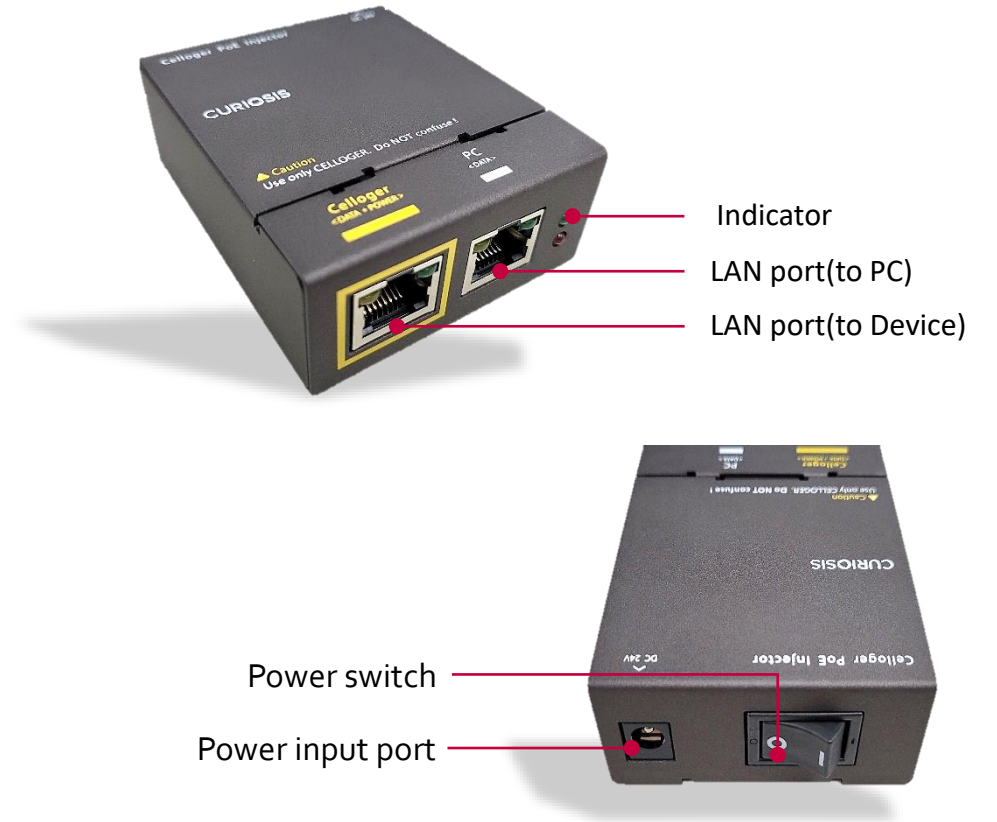
Device Layout

I. Device Layout

Front-Left Side



POE

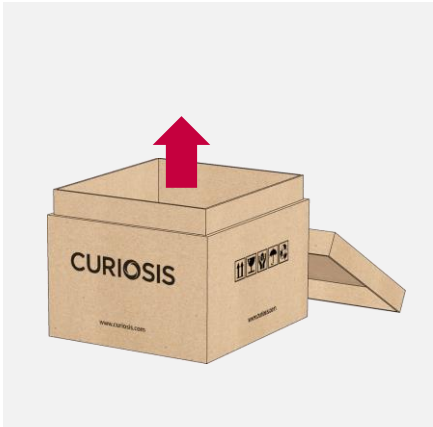




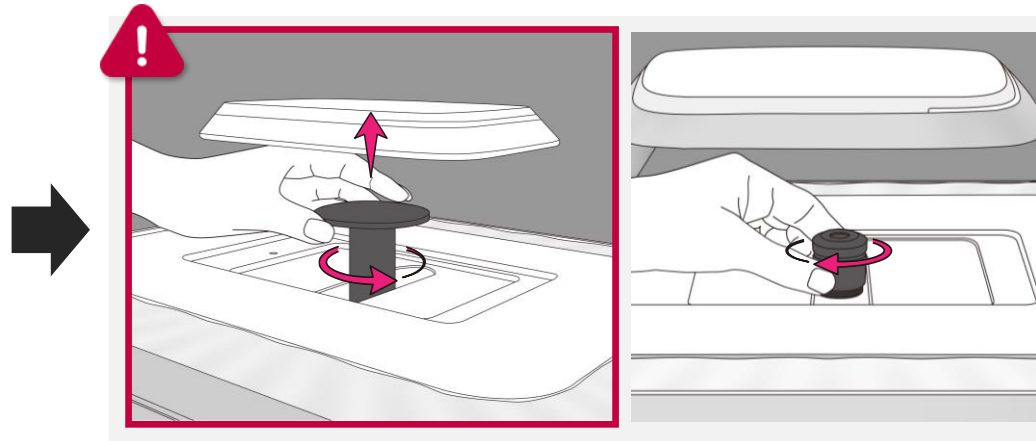
Installation

II. Installation

1. Hardware

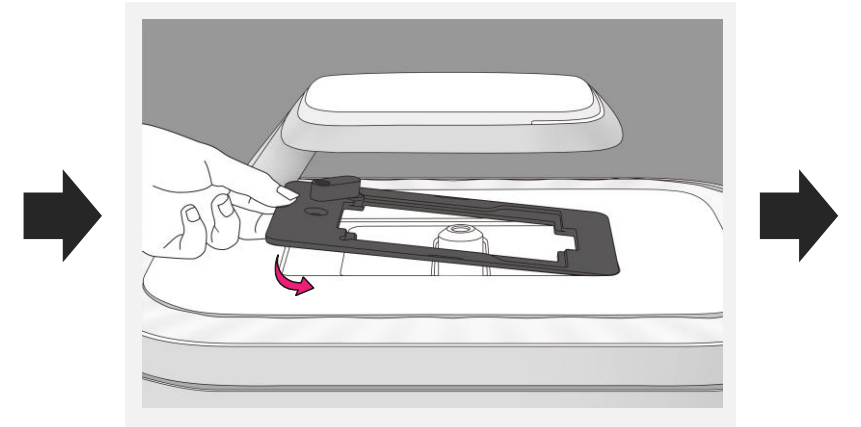


Step 1. Take the equipment out of the package.

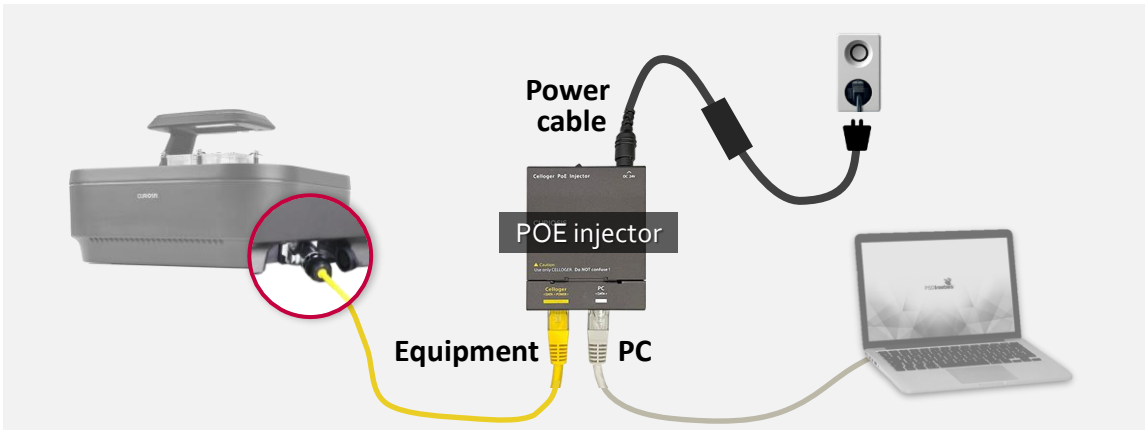


Step 2. Unscrew the optics fixing bolt and mount the lens.

Do not turn on the equipment before removing the bolt.



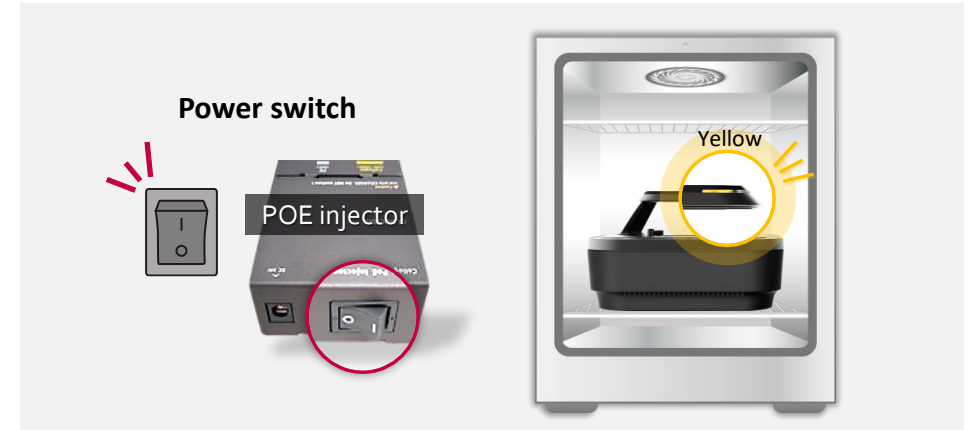
Step 3. Install the vessel holder on the stage.



Step 4. Connect two LAN cables and a Power cable to the POE injector.

Step 5. Connect one LAN cable(Yellow) to the equipment and another LAN cable(White) to the PC. (Push the cable until you hear the clicking sound)

Step 6. Connect the Power cable to an outlet.



Step 7. Put the device inside the incubator.

Step 8. Turn on the power switch.

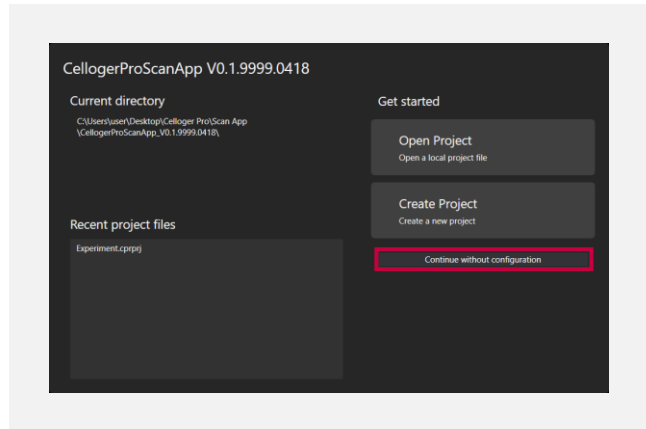
Step 9. Check if the LED indicator illuminates yellow to confirm the device's power connection status.

II. Installation

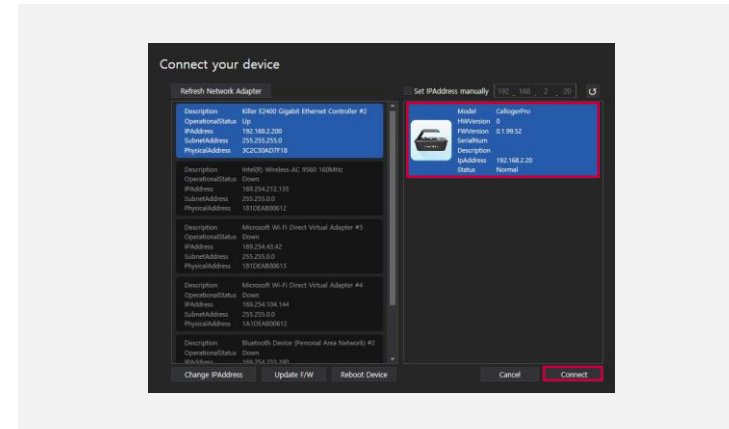
2. Software



Step 1. Open the **Celloger Pro Scan App**.



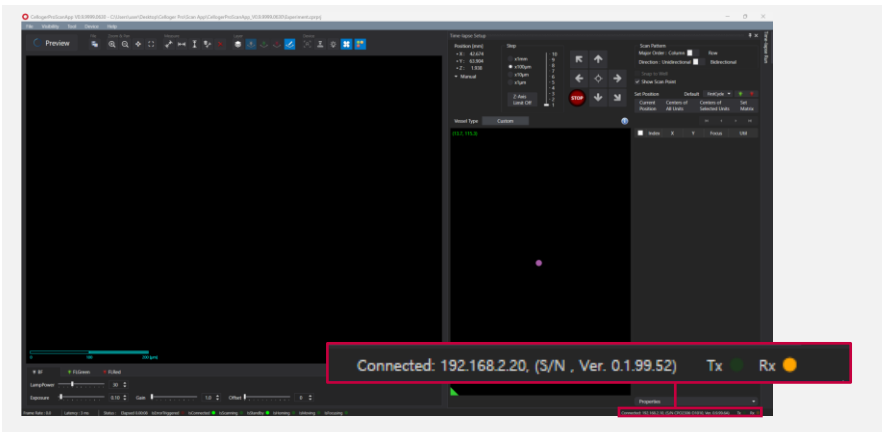
Step 2. Click **Continue without configuration**.



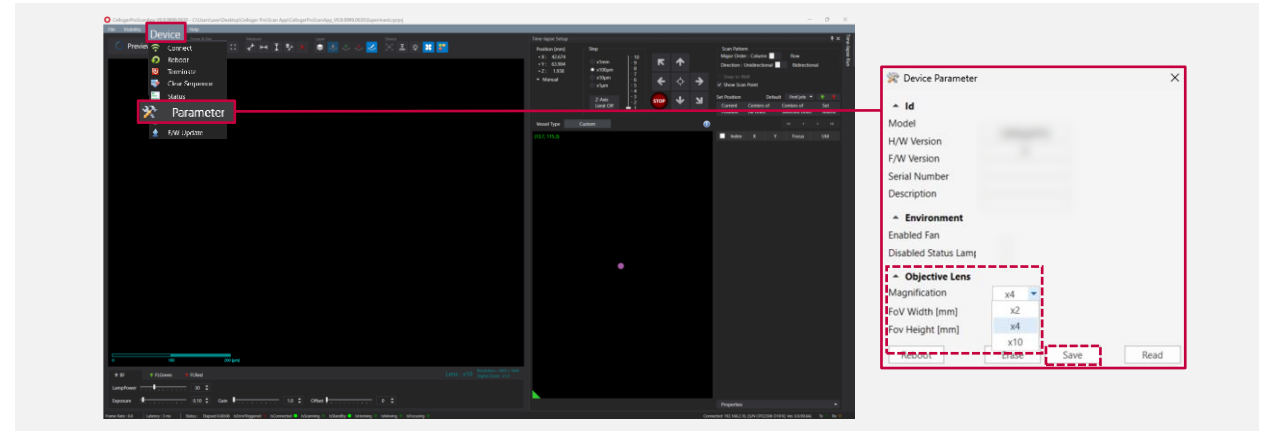
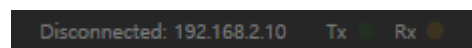
Step 3. Click the **device icon**.

Step 4. Click the **Connect** button to connect the device

***Note.** Check the PC network setting if the device icon is not shown (**Appendix p.20~23**).



Step 5. Verify the **Connection status**. (If the PC and the device are not connected, a **Disconnected** sign will appear.)



Step 6. Click on **Device** in the menu bar and select **Parameter**.

Step 7. Choose the **magnification (2X, 4X, 10X)** for the **objective lens** installed on the device.

Step 8. Click on **Save** to apply the changes.

***Note.** You can also change the magnification by referring to **Appendix p.24**

II. Installation

3. Preparation Before Starting Experiments



Step 1. Place the sample on the stage of the Celloger® Pro, Make sure the A1 of the plate and stage are aligned.

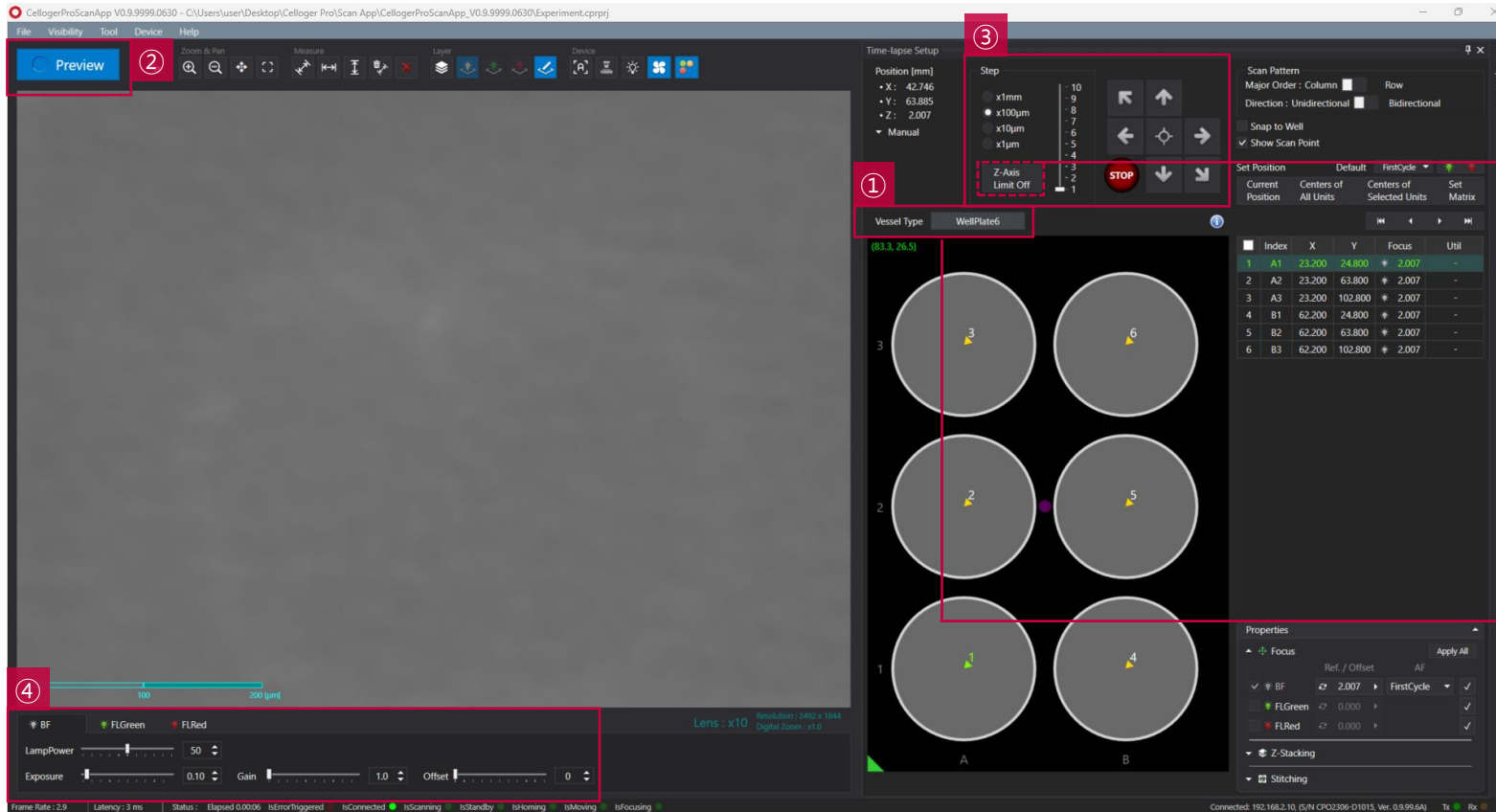
Step 2. Before beginning experiments, place the Celloger® Pro in an incubator for prewarming. (It is recommended to prewarm for more than 2 hours.)



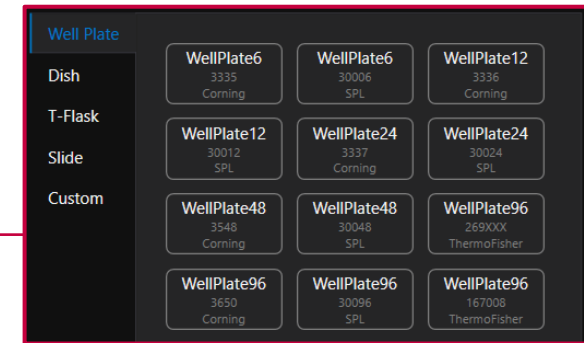
Operation

III. Operation – Scan App

1. Vessel Setting & Positioning



Z-Axis Limit Off
It is a function that allows focusing beyond the range of the existing Z-axis.



Step 1. Select a **Vessel type**.

(*Note. You can customize the vessel type according to the product brand.)

Step 2. Click **Preview** for streaming.

Step 3. Move to the desired position using the **Jog button**. (Use diagonal arrows to change the focus level (Z-coordinates).)

Step 4. Adjust the brightness using the **Light Source panel**.

(*Note. To adjust the fluorescence light level, switch the light source tab to 'FL Green' or 'FL Red')

III. Operation – Scan App

2. Focusing



Set Matrix

It is a function that allows you to designate the top, bottom, left, and right positions based on the current position at specified intervals.

Focus

It is the Z-axis coordinate of BF and FL channels. BF channel shows the focus of Z coordinates and FL channel shows the focus difference from the BF channel.

- : Upon clicking, the current coordinate is entered into the box next to it.
- : Upon clicking, the Z position moves according to the coordinates shown in the left box.
- : Apply the coordinates and autofocus settings shown to the left.

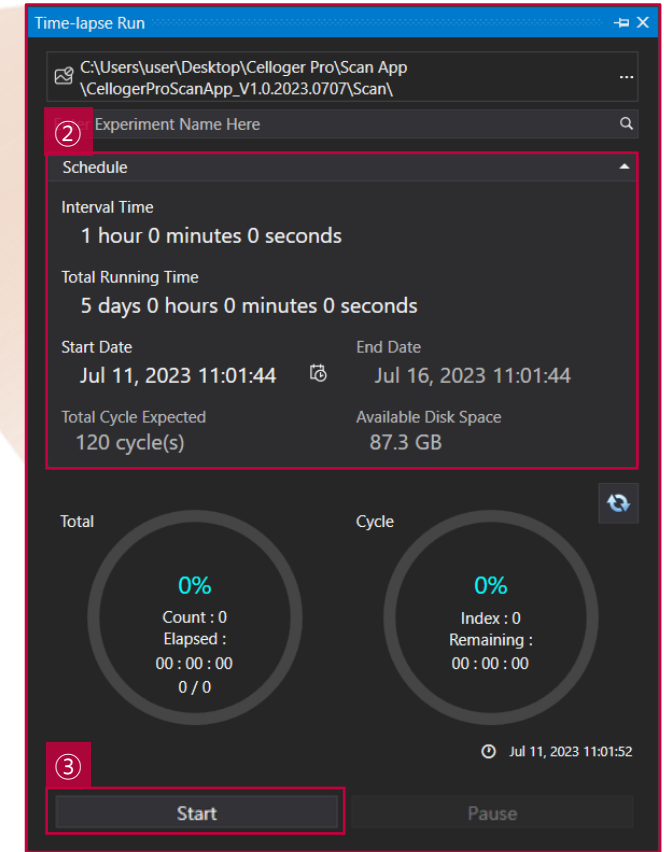
Step 1. Set the focus using the **Jog button**(,).

(***Note.** Because the focus for fluorescence scanning can be different, it should be adjusted upon use.)

Step 2. Upon finding the best focal point for scanning, designate the location by pressing **Current Position** in the **Set Position** section.

III. Operation – Scan App

3. Time Setting & Time-Lapse Imaging



Step 1. Click **Time-lapse Run**.

Step 2. Enter the **Interval time** and **Total Running Time** in the schedule; other information will be set automatically.


Step 3. Click **Start** to begin image scanning.

III. Operation – Analysis App

1. Confluency & Graph

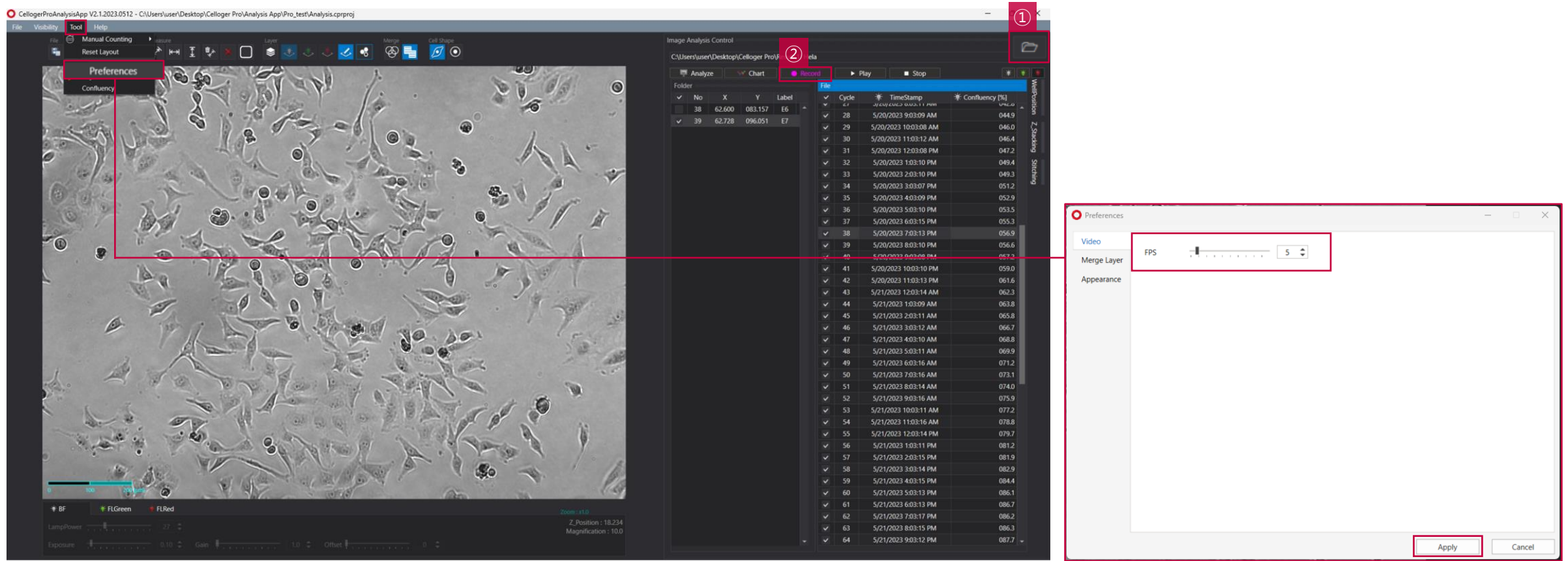
The screenshot displays the Celloger Pro Analysis App interface. On the left is a microscopy image of cells with a yellow overlay. In the center is a data table with columns for Folder, File, Cycle, TimeStamp, and Confluency [%]. On the right is a 'Confluency(%) graph' window showing a line graph of confluency percentage over time for two wells (BF and BF). A well position grid is also visible.


Folder	File	Cycle	TimeStamp	Confluency [%]
✓	8	1	5/19/2023 6:03:05 AM	021.4
✓	8	2	5/19/2023 7:03:08 AM	022.8
✓	8	3	5/19/2023 8:03:13 AM	021.8
✓	8	4	5/19/2023 9:03:11 AM	023.0
✓	8	5	5/19/2023 10:03:12 AM	023.6
✓	8	6	5/19/2023 11:03:11 AM	025.1
✓	8	7	5/19/2023 12:03:10 PM	026.2
✓	8	8	5/19/2023 1:03:17 PM	026.4
✓	8	9	5/19/2023 2:03:09 PM	026.7
✓	8	10	5/19/2023 3:03:09 PM	026.7
✓	8	11	5/19/2023 4:03:10 PM	027.9
✓	8	12	5/19/2023 5:03:12 PM	029.5
✓	8	13	5/19/2023 6:03:13 PM	030.4
✓	8	14	5/19/2023 7:03:12 PM	030.8
✓	8	15	5/19/2023 8:03:16 PM	031.4
✓	8	16	5/19/2023 9:03:06 PM	031.8
✓	8	17	5/19/2023 10:03:11 PM	032.8
✓	8	18	5/19/2023 11:03:11 PM	034.5
✓	8	19	5/19/2023 12:03:11 AM	034.8
✓	8	20	5/20/2023 1:03:03 AM	035.5
✓	8	21	5/20/2023 2:03:07 AM	036.8
✓	8	22	5/20/2023 3:03:08 AM	037.5
✓	8	23	5/20/2023 4:03:09 AM	037.9
✓	8	24	5/20/2023 5:03:09 AM	040.1
✓	8	25	5/20/2023 6:03:09 AM	040.7
✓	8	26	5/20/2023 7:03:09 AM	041.0
✓	8	27	5/20/2023 8:03:11 AM	042.8
✓	8	28	5/20/2023 9:03:09 AM	044.9
✓	8	29	5/20/2023 10:03:08 AM	046.0
✓	8	30	5/20/2023 11:03:12 AM	046.4
✓	8	31	5/20/2023 12:03:08 PM	047.2
✓	8	32	5/20/2023 1:03:10 PM	049.4
✓	8	33	5/20/2023 2:03:10 PM	049.3
✓	8	34	5/20/2023 3:03:07 PM	051.2
✓	8	35	5/20/2023 4:03:09 PM	052.9
✓	8	36	5/20/2023 5:03:10 PM	053.5
✓	8	37	5/20/2023 6:03:15 PM	055.3
✓	8	38	5/20/2023 7:03:13 PM	056.0

- Step 1.** Import the time-lapse folder or the image file by pressing  .
- Step 2.** Click **Analyze** to estimate confluency.
- Step 3.** Click **Chart** to create the confluency graph.

III. Operation – Analysis App

2. Video Recording



Step 1. Import the time-lapse folder or the image file by pressing  .

Step 2. Click **Record** to create the video.

***Note.** To adjust the parameter(**FPS: Frames per second**), click on **Preferences** under the **Tool** menu. (**Recommended value: 5~13**)



Specifications

IV. Specifications

Imaging modes	Brightfield, Dual fluorescence (Green & Red)
Objective lens	2X, 4X, 10X (User-interchangeable)
Fluorescence	Green (EX : 470/40, EM : 540/50) Red (EX: 562/40, EM: 641/75)
Stage	Fully motorized XYZ (Fixed stage, camera moving type)
Camera	High sensitivity 5.0 MP CMOS
Imaging positions	Multiple
Field-of-view	2X (2.08 x 1.55 mm), 4X (1.46 x 1.09 mm), 10X (0.72 x 0.54 mm)
Focus	Autofocus, Manual focus
Imaging methods	Single/multicolor, stitching, Z-stacking, time-lapse, real-time recording
Included software	Scan App, Analysis App
Dimensions (H x W x L)	250 x 338 x 412 mm
Weight	9.6 kg
Culture vessels	Well plate up to 96-well, flask, dish, slide
File export format	TIFF, AVI (JPEG, PNG)
Operating environment	10~40°C, 20~95% humidity
Power requirement	100-240V, ~50/60Hz
O/S required	Windows 10 and above
Incubator specification	Above 200L (recommend)

Ordering information

Catalog No.	Description
CRCLG-P01	Celloger® Pro, Live cell imaging system(Bright Field, GFP+RFP) & Objective Lens set
CRCLG-PL02A	Objective lens (2X)
CRCLG-PL04A	Objective lens (4X)
CRCLG-PL10A	Objective lens (10X)
CRCLG-PLS	Objective lens set (2X, 4X, 10X)





Appendix

V. Appendix – Z-Stacking in Scan App

Images are captured in different focal planes and then stack together into a clearly focused composite image.
 (You may skip this step if the Z-stacking function is not needed.)

Index	X	Y	Focus	Util
1 A1	13.780	17.460	2.007 0.000 0.000	-
2 A2	13.780	36.760	2.007 0.000 0.000	-
3 A3	13.780	56.060	2.007 0.000 0.000	-
4 A4	13.780	75.360	2.007 0.000 0.000	-
5 A5	13.780	94.660	2.007 0.000 0.000	-
6 A6	13.780	113.960	2.007 0.000 0.000	-
7 B1	33.080	17.460	2.007 0.000 0.000	-
8 B2	33.080	36.760	2.007 0.000 0.000	-
9 B3	33.080	56.060	2.007 0.000 0.000	-

Step 1. Select the position in the **Scan table** where the Z-stacking function will be applied.



- Step 2.** Select the channel to perform Z-stacking under **Properties**.
- Step 3.** Specify the **Step** and **Range** to execute the Z-stacking function.
- Step 4.** Click **Apply All**.



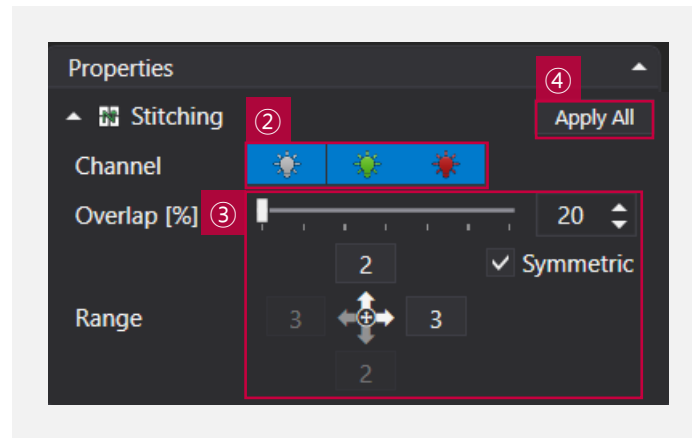
Step 5. Set the **Interval Time** and **Total Running Time** in the schedule and scan the image.

V. Appendix – Stitching in Scan App

Capturing multiple images and combining the overlapping parts enable high-resolution mapping of a large area of a sample. (You may skip this step if the Stitching function is not needed.)

☑	Index	X	Y	Focus	Util
1	A1	13.780	17.460	2.007 0.000 0.000	-
2	A2	13.780	36.760	2.007 0.000 0.000	-
3	A3	13.780	56.060	2.007 0.000 0.000	-
4	A4	13.780	75.360	2.007 0.000 0.000	-
5	A5	13.780	94.660	2.007 0.000 0.000	-
6	A6	13.780	113.960	2.007 0.000 0.000	-
7	B1	33.080	17.460	2.007 0.000 0.000	-
8	B2	33.080	36.760	2.007 0.000 0.000	-
9	B3	33.080	56.060	2.007 0.000 0.000	-

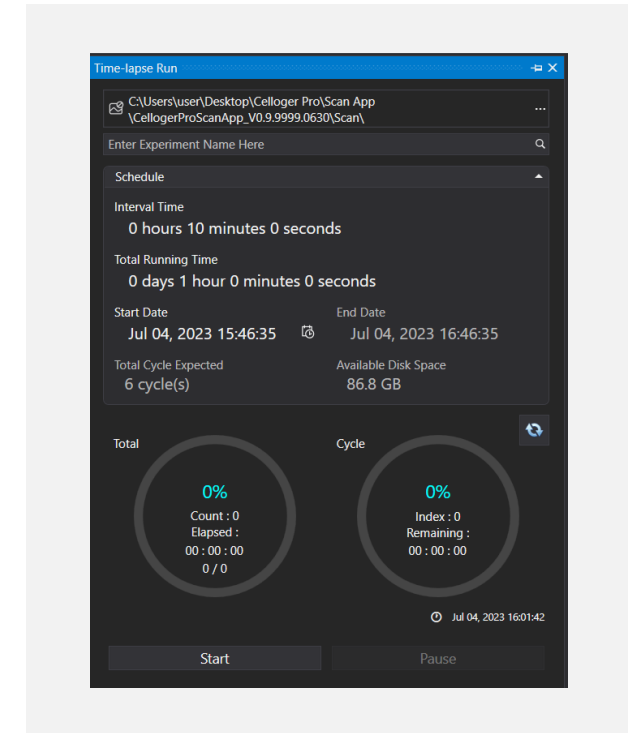
Step 1. Select the position in the **Scan table** where the stitching function will be applied.



Step 2. Select the channel to perform Stitching under the **Properties**.

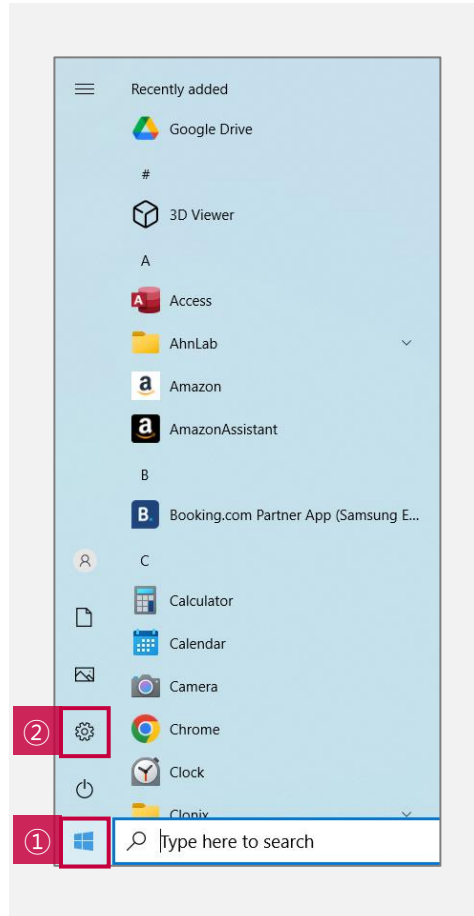
Step 3. Adjust the scroll bar to specify the **Overlap** to execute the stitching function, then specify the **Range**.

Step 4. Click **Apply All**.

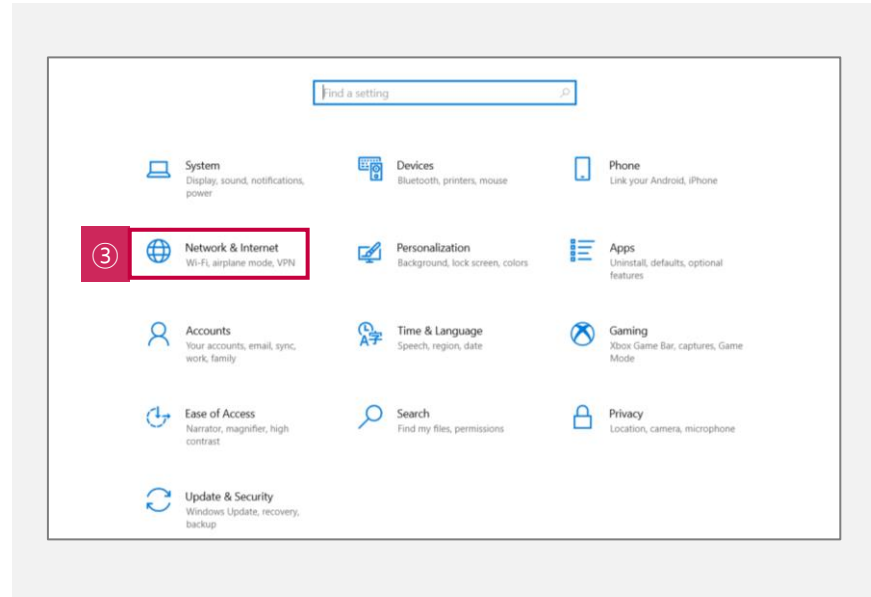


Step 5. Set the **Interval Time** and **Total Running Time** in the schedule and scan the image.

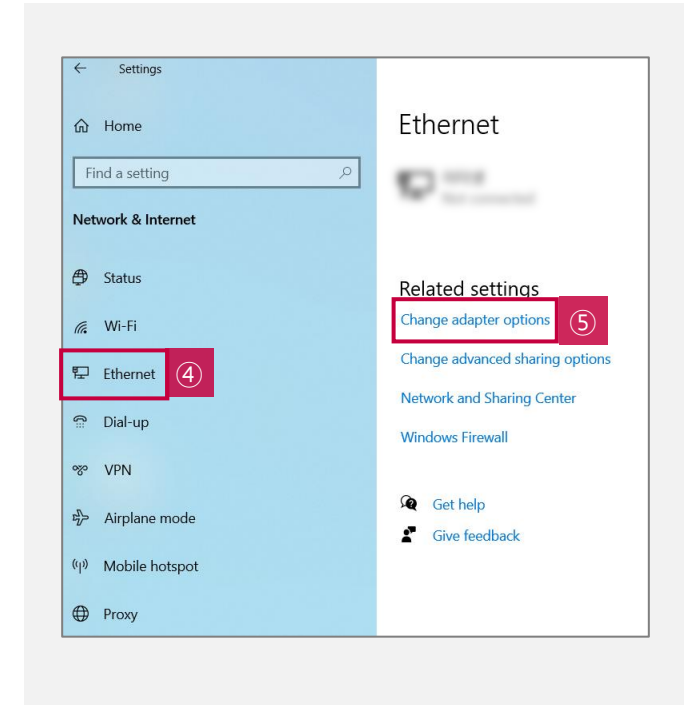
IP Setting **Window 10**



Step 1. Click the **Window** icon.
Step 2. Click the **Setting** icon.



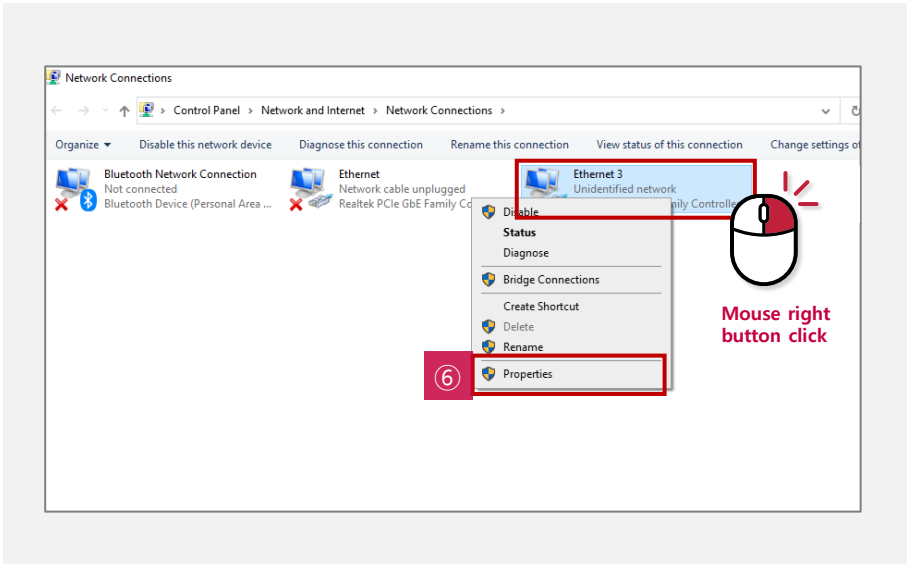
Step 3. Click **Network and Internet**.



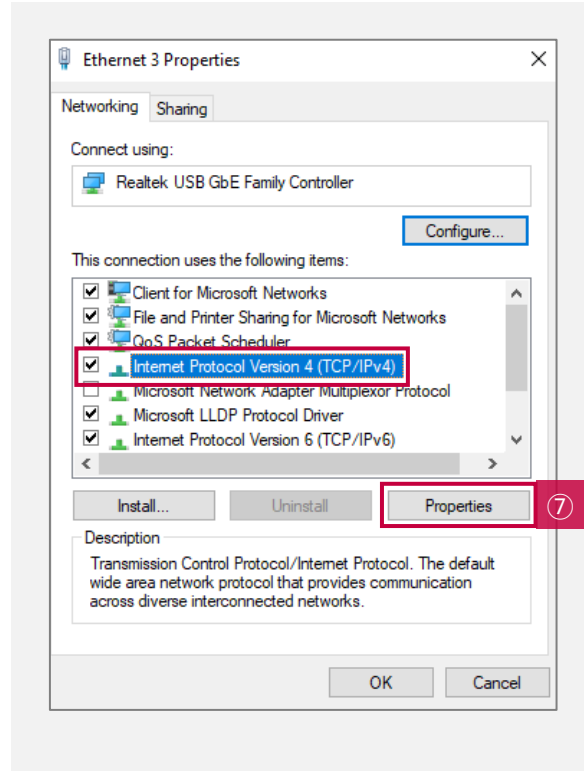
Step 4. Click **Ethernet**.
Step 5. Click **Change adapter options**.

V. Appendix

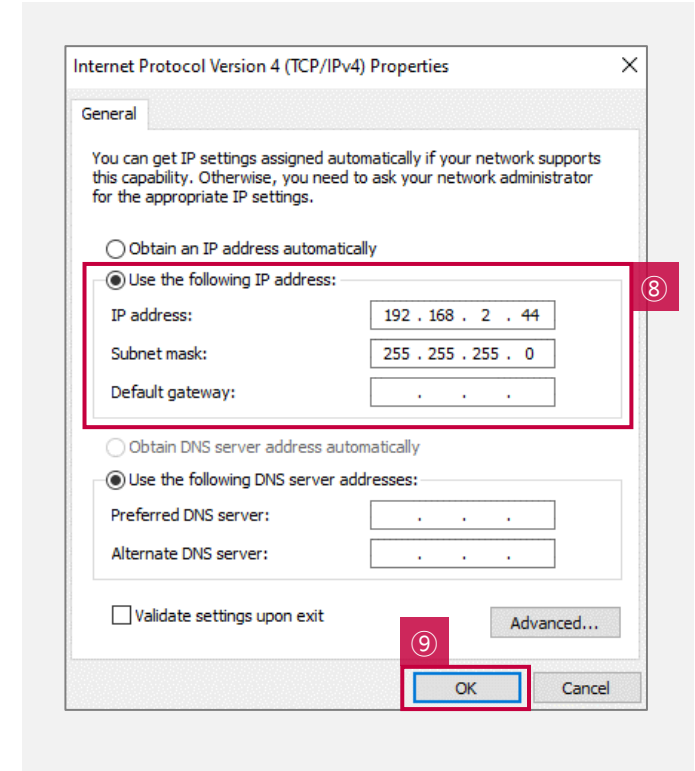
IP Setting **Window 10**



Step 6. Right-click **Ethernet** and click **Properties** in the window that appears.



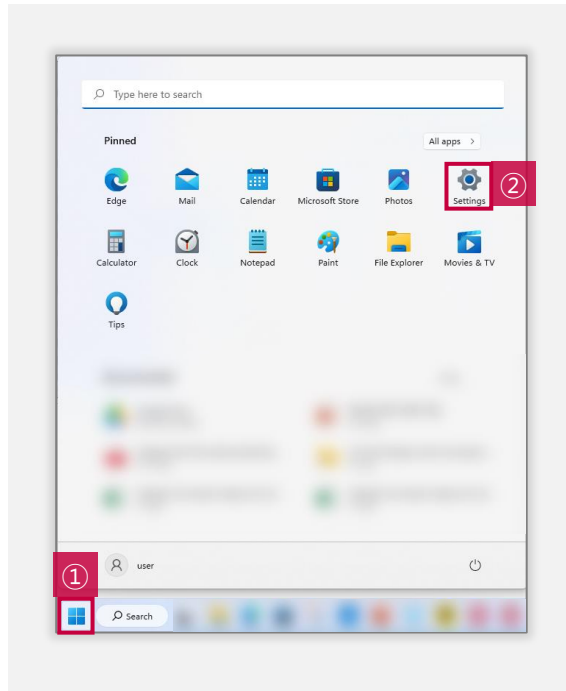
Step 7. Select **Internet Protocol Version 4(TCP/IPv4)** and click **Properties**.



Step 8. Select **Use the following IP address** and enter the **IP address (192.168.2.XX)** and **Subnet mask (255.255.255.0)** in the blank fields.
***Note.** Fill 2 ~ 254 except 10 in XX fields.

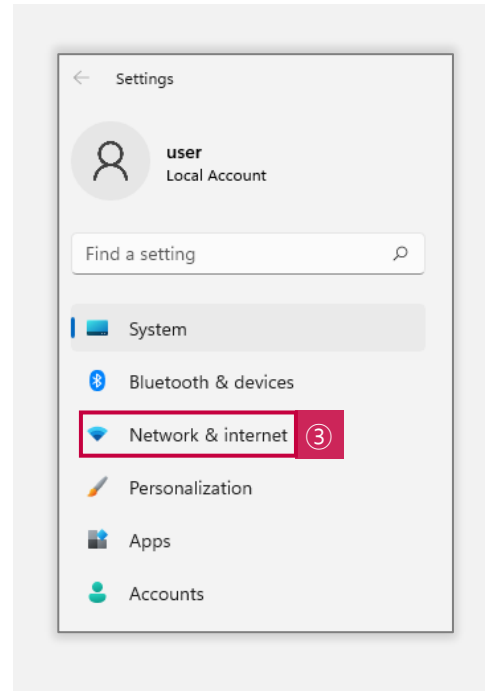
Step 9. Click **OK**.

IP Setting **Window 11**

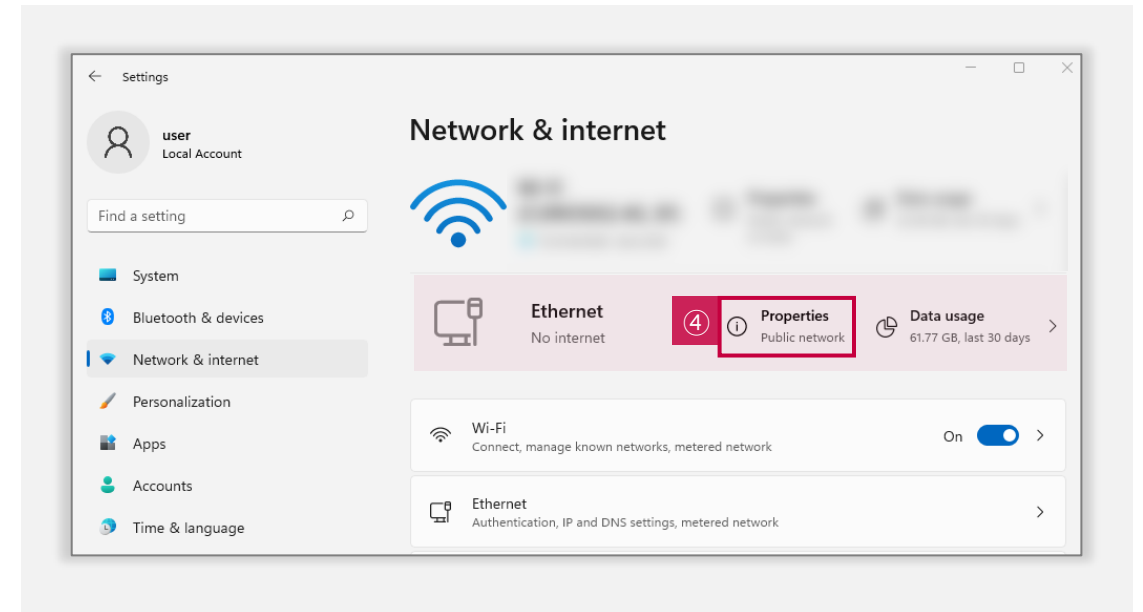


Step 1. Click the **Window** icon.

Step 2. Click the **Setting** icon.



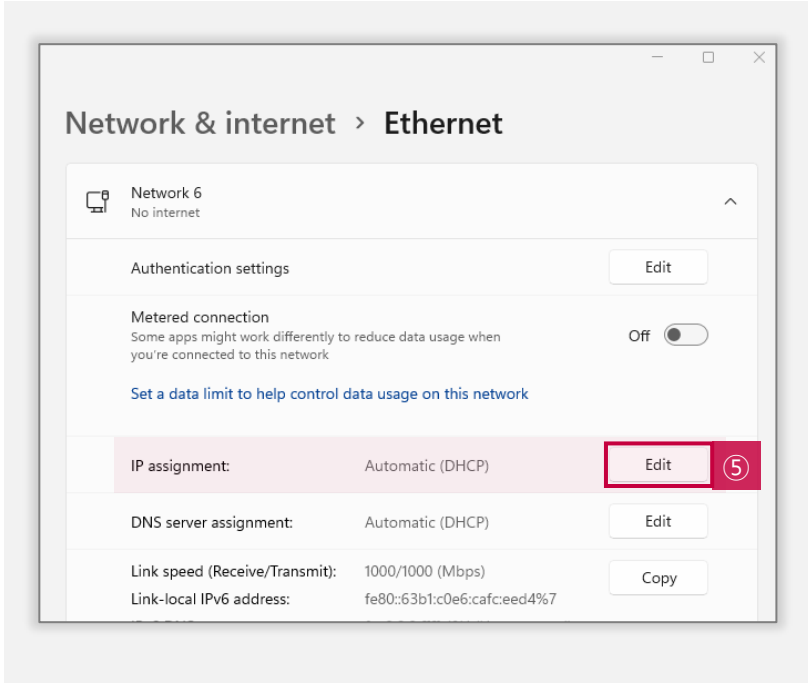
Step 3. Click **Network and Internet**.



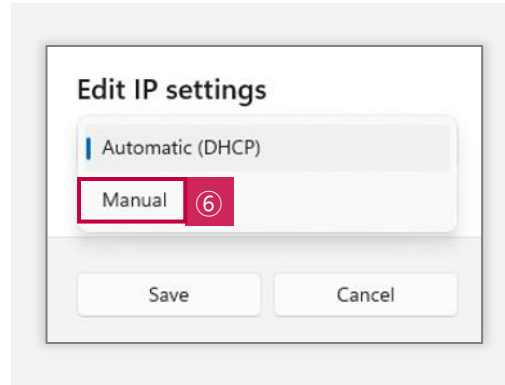
Step 4. Next to **Ethernet**, click **Properties**.

V. Appendix

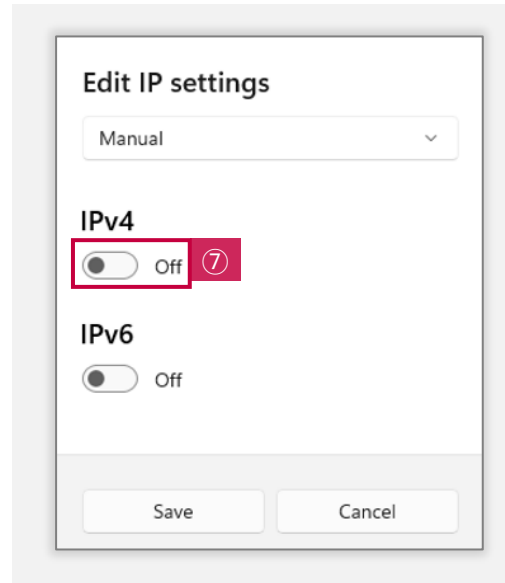
IP Setting **Window 11**



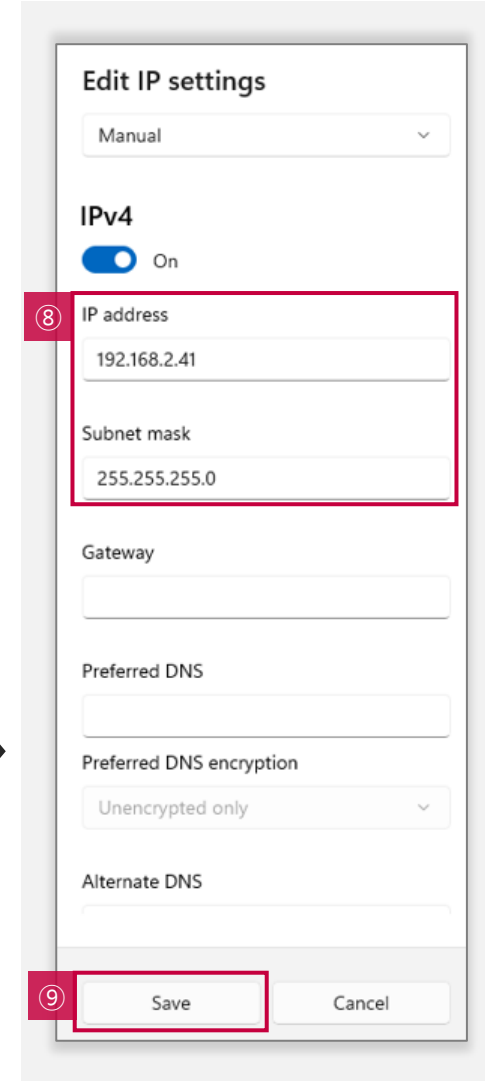
Step 5. Next to **IP assignment**, click **Edit** to change the IP address.



Step 6. Select **Manual**.



Step 7. Change **IPv4** to **On**.

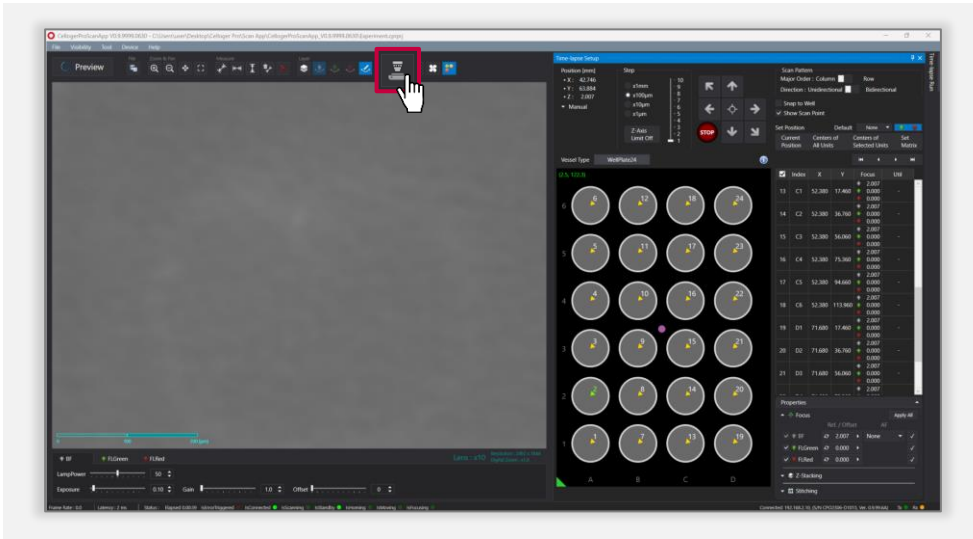



Step 8. Enter the **IP address(192.168.2.XX)** and **Subnet mask(255.255.255.0)** in the blank fields.

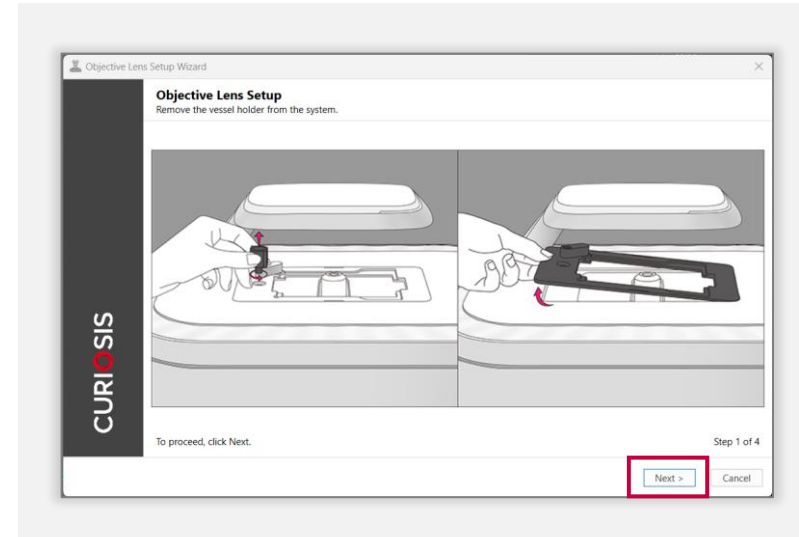
***Note.** Fill in any numbers from 2~254 except 10 in fields.

Step 9. Click **Save**, then the network configuration is completed.

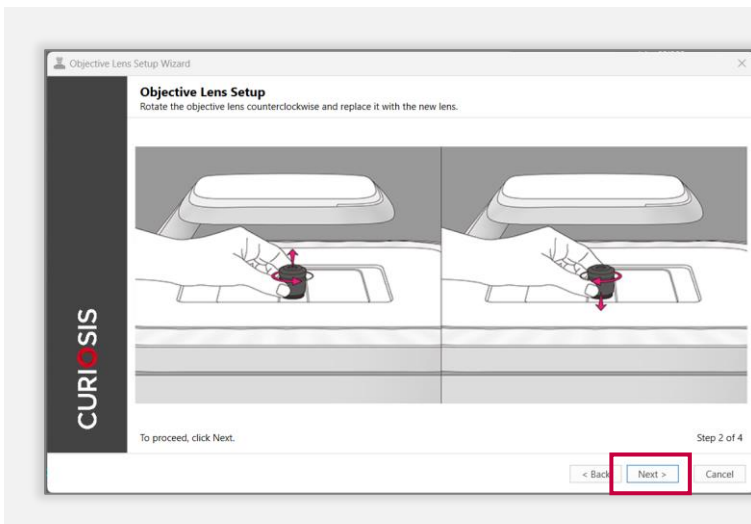
V. Appendix – Lens Change in Scan App



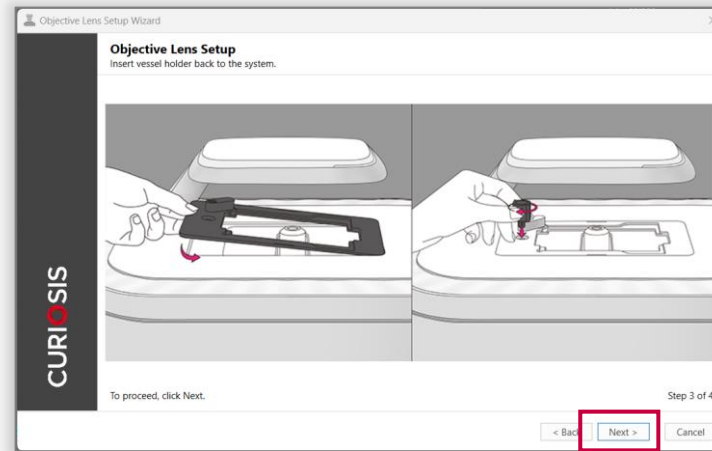
Step 1. Click the button () to change the lens.



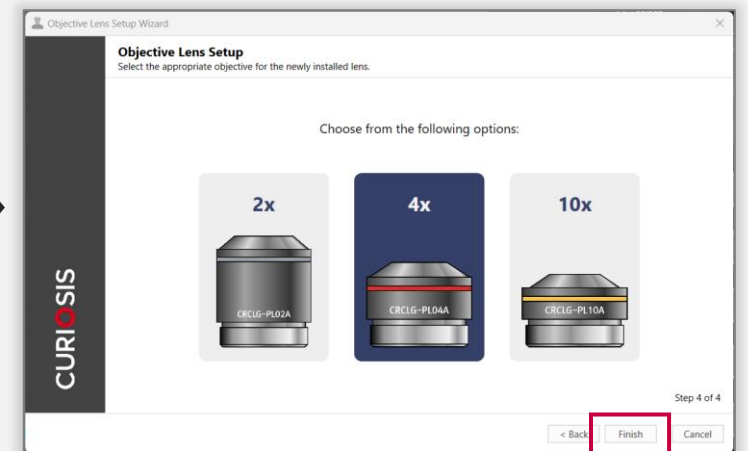
Step 2. Remove the vessel holder from the device and click **Next**.



Step 3. Remove the objective lens by rotating it counterclockwise and **replace** it with the new lens.
Step 4. Click **Next**.



Step 5. Insert the vessel holder back into the device and click **Next**.



Step 6. Select the appropriate objective for the newly installed lens and click **Finish**.

Thank you

End of Document

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