

[u-Nova + USB 3.0]

[Installation guide]

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1. Recommended System Configuration

The following system configuration is recommended when using the camera.

- OS – Microsoft Windows 7/8/10 (32-bit, 64-bit)
- Ports – USB 3.0
- Software – Microsoft Visual Studio 2015 (to compile and run example code)

2. Preparation for Camera Configuration

The following components are required to install the camera.

- USB3.0 cable (see [6.2. USB3.0 Connector](#))
- GPIO cable (see [6.3. GPIO Connector](#))
- Lens (see [5.1. Attach a Lens](#))
- Interface card

3. Handling Precautions

3.1. Instrument safety instructions

- We are not responsible for any damage caused by user negligence or other equipment connection.
- Handle the u-Nova with care. For example, be careful of strong impact or storage in an unsuitable environment.
- Do not use accessories that are not recommended as they may be dangerous.

3.2. Important safety precautions

- Please check the specifications for each product and use a power supply with the appropriate specifications.
- Keep the product away from radiators, heaters, stoves, or other products (amplifiers, etc.) and heat sources.
- Be careful not to let flammable substances, water, or metal get inside the camera.
- Do not modify the camera or use the camera with the outer cover removed.
- Avoid using the camera in thunder or lightning storms.

- When using the camera outdoors, protect it from moisture. (rain/snow, etc.)
- Board level notes
 - Be careful to avoid electric shocks such as static electricity (ESD).
 - Use a ground (GND), etc. to cope with ESD, etc.
 - Be careful not to get plastic, vinyl, or Styrofoam into the circuit board.
 - Do not touch the parts of the circuit board with your hands or conductive devices.

3.3. Handling and cleaning

- Do not attempt to disassemble the camera.
- When replacing or removing the lens or filter, be careful not to allow water or dust to enter.
- Use a blower or lens brush to remove dust from the lens or optical filter.
- Do not disassemble the front flange.
- Clean the case with a soft, dry cloth.
- Do not use benzene, thinner, alcohol, liquid or spray-type cleaners.

3.4. Installation

Avoid installing or storing the camera in the following locations.

- Environments exposed to direct sunlight, rain or snow
- Environments with flammable or corrosive gases
- Excessive temperature or low temperature environment (recommended ambient temperature: 0 ~ 45° C)
- Wet or dusty places
- Places subject to excessive vibration or shock
- Environments exposed to strong electric or magnetic fields
- Do not point the camera at the sun or other strong light sources.
- In case of unfavorable conditions, be sure to inquire about the installation environment.

3.5. Performance and longevity

- Please configure the environment that meets the camera operation specifications. If the ambient temperature is high, the service life may be shortened due to deterioration of the parts. In that case, you also need to consider the cooling system.

3.6. Connector

- When manufacturing the I/O connector, be careful with the connection so that the wires fit well.
- Make sure the power is off before connecting or disconnecting I/O connectors.
- To avoid damaging the connector, do not pull by the electric wire, etc.

4. Installing the Software

4.1. Download the Installation File

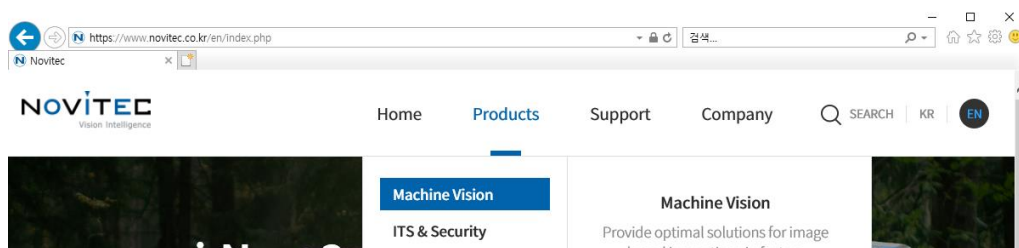
We recommend that you download and install the latest version of the SDK from the Novitec website.

- Go to the Novitec website (<https://www.novitec.co.kr/>).



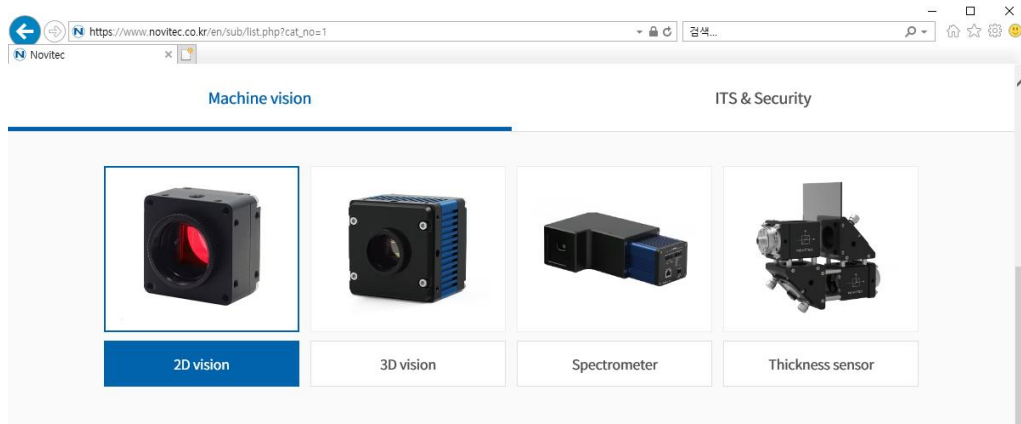
<image> 1. Enter the website address image

- Click [Machine Vision] of [Products] in the top tab.






<image> 2. Click Machine Vision Image

- Click [2D vision] in Machine Vision.



<image> 3. Click 2D vision image

d. Click one of the uN-20M, uN-20C, uN-20C-F in the camera list to Access the page.

<input type="checkbox"/>		uN-20C-F	1600 x 1200 pixels	50 fps	1/1.8"	Global shutter	Color
<input type="checkbox"/>		uN-20C	1600 x 1200 pixels	50 fps	1/1.8"	Global shutter	Color
<input type="checkbox"/>		uN-20M	1600 x 1200 pixels	50 fps	1/1.8"	Global shutter	Mono

<image> 4. Camera list image

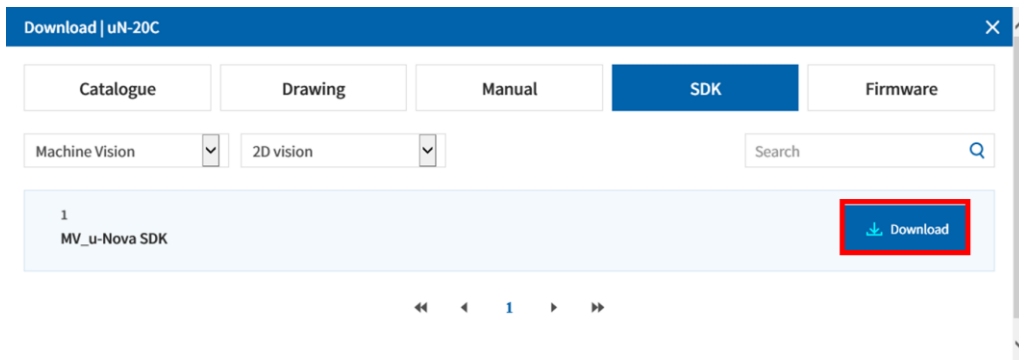
e. Click [Download] of SDK, in the download field at the bottom of the product page.

Download

Catalogue	Detailed Product Information	Download
Drawing	Detailed Product Drawing and CAD file	Download
Manual	Downloadable product Manual	Download
SDK	Downloadable Product Software Development Kit	Download
Firmware	Download Latest Product Firmware	Download

<image> 5. Download section on product page image

f. Click [Download] of MV_u-Nova SDK to download the installation file.

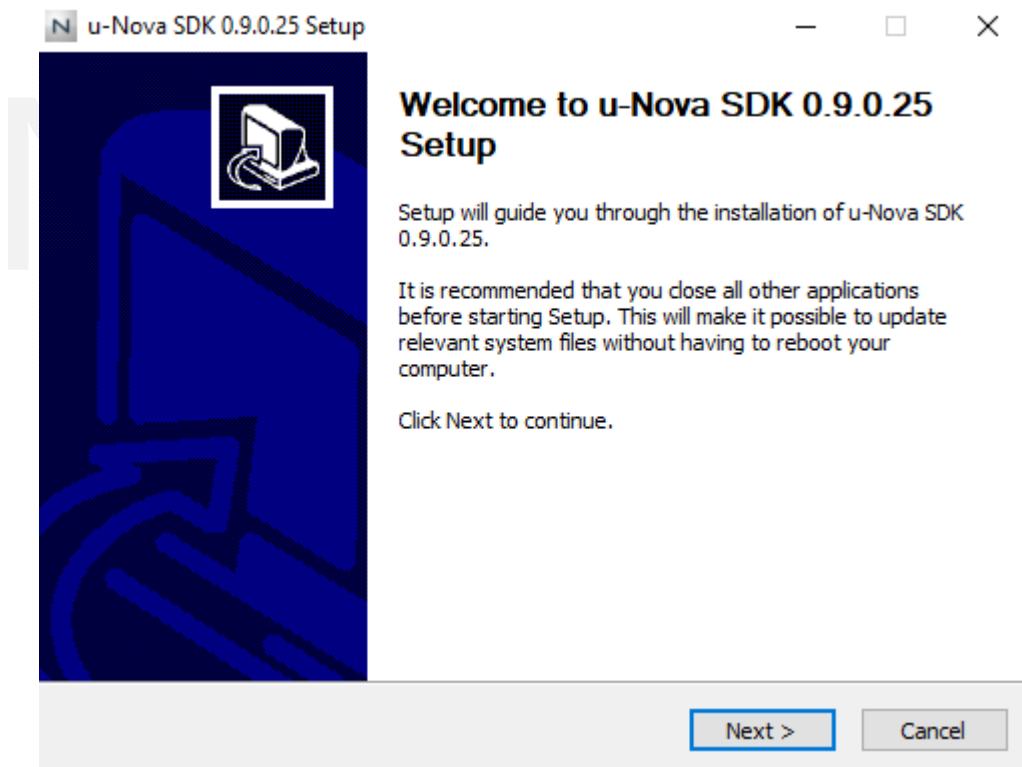


<image> 6. SDK download window image

4.2. Install the Novitec Software

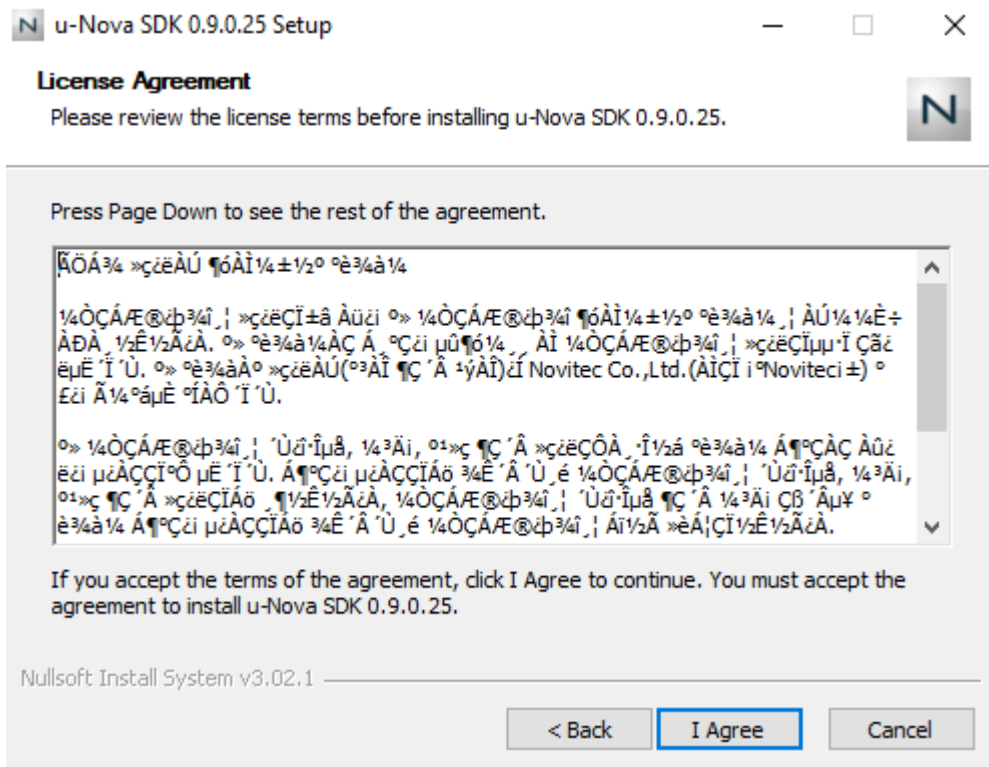
Refer to [4.1. Download the Installation File](#) to prepare the installation file for Windows.

- a. Execute the u-Nova SDK installation file (Setup_u-NovaSDK_X.X.X.X.exe) and Click [Next >].



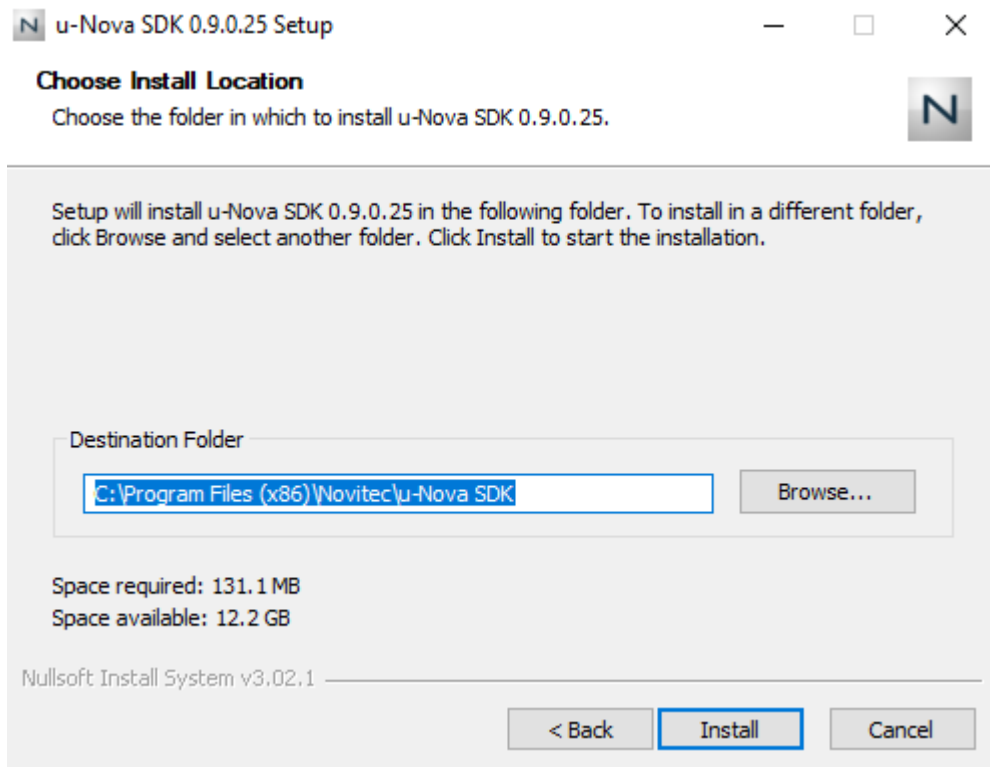
<image> 7. Installation Startup Image

- b. Click [I Agree].



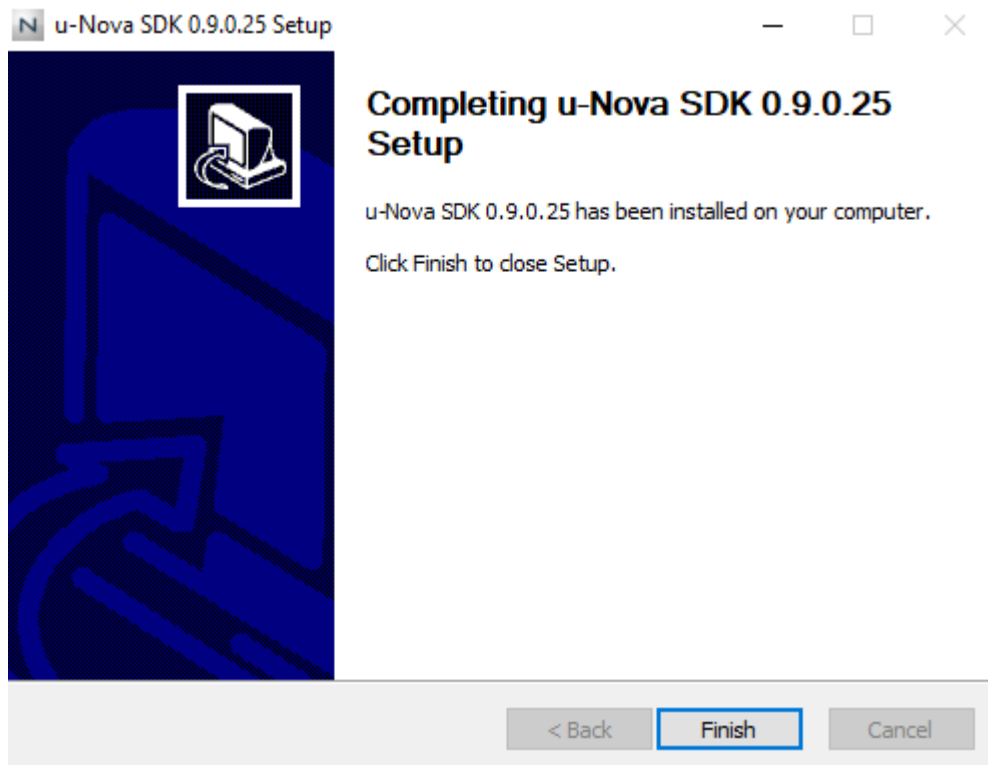
<image> 8. License agreement image

- c. After selecting the folder to install, Click [Install].



<image> 9. Choose Install location image

- d. Click [Finish] to finish the installation.



<image> 10. Installation finish image

5. Installing the Camera

5.1. Attach a Lens

Attach the lens after removing the cap from the lens holder.

u-Nova has a removable 5mm C mount adapter is installed as standard, and it can be used as a CS mount by removing the adapter.

5.2. Connect the interface Card and Cable to the Camera

USB3.0 cable to the camera and PC.

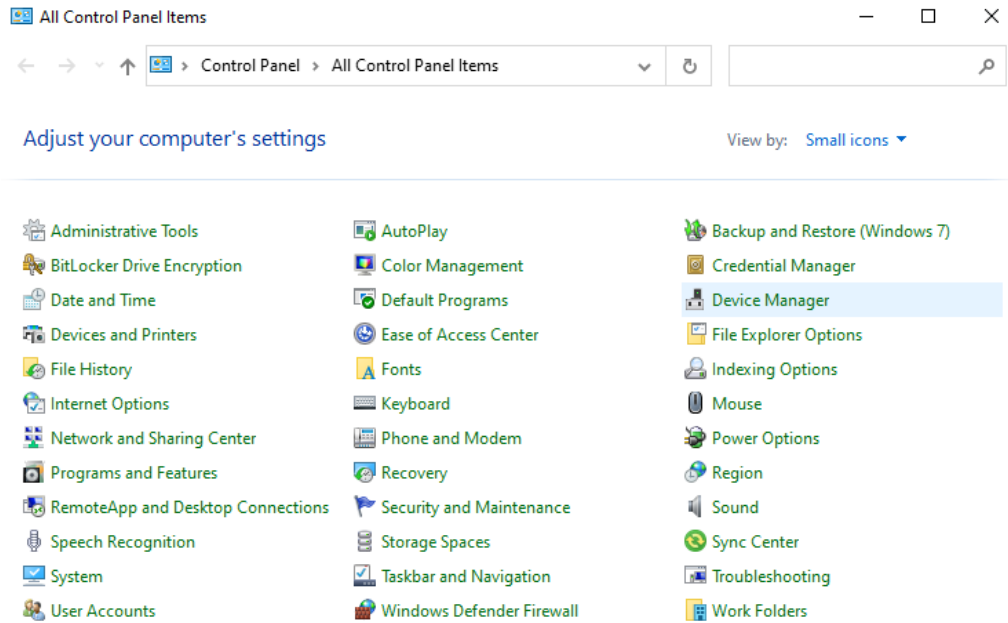
USB3.0 Micro-B type must be connected to the camera side, On the interface card side, check the type suitable for the interface card used and connect it.

5.3. Configure USB Settings

After connecting the camera and the interface card, users need to install the camera's driver.

- a. Connect the u-Nova to the USB3.0 port of the PC using a USB3.0 cable.

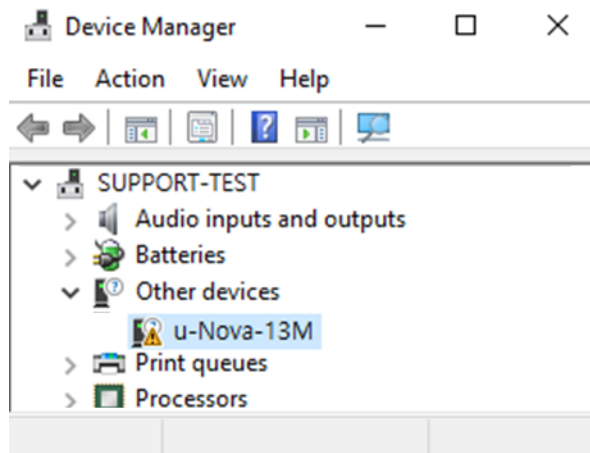
b. Execute [Device Manager] from the control panel.



<image> 11. Device manager location image

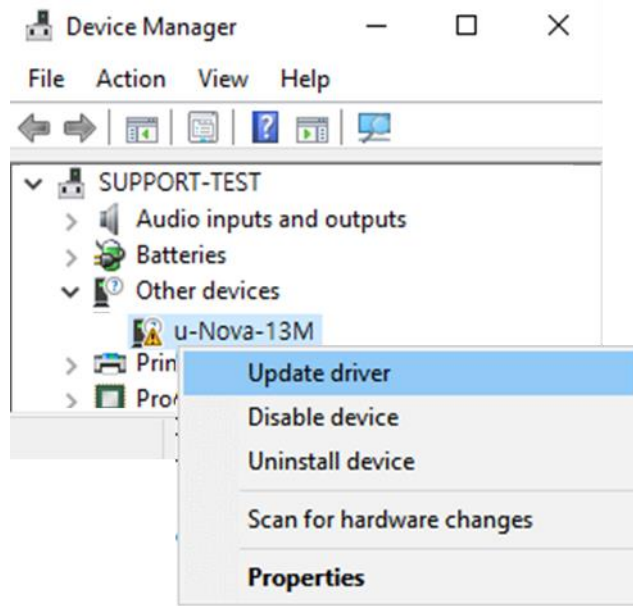
c. Check the "Other devices" item has a device that starts with the word "u-Nova".

- If the device does not appear in the list, check the connection between the camera and the PC.



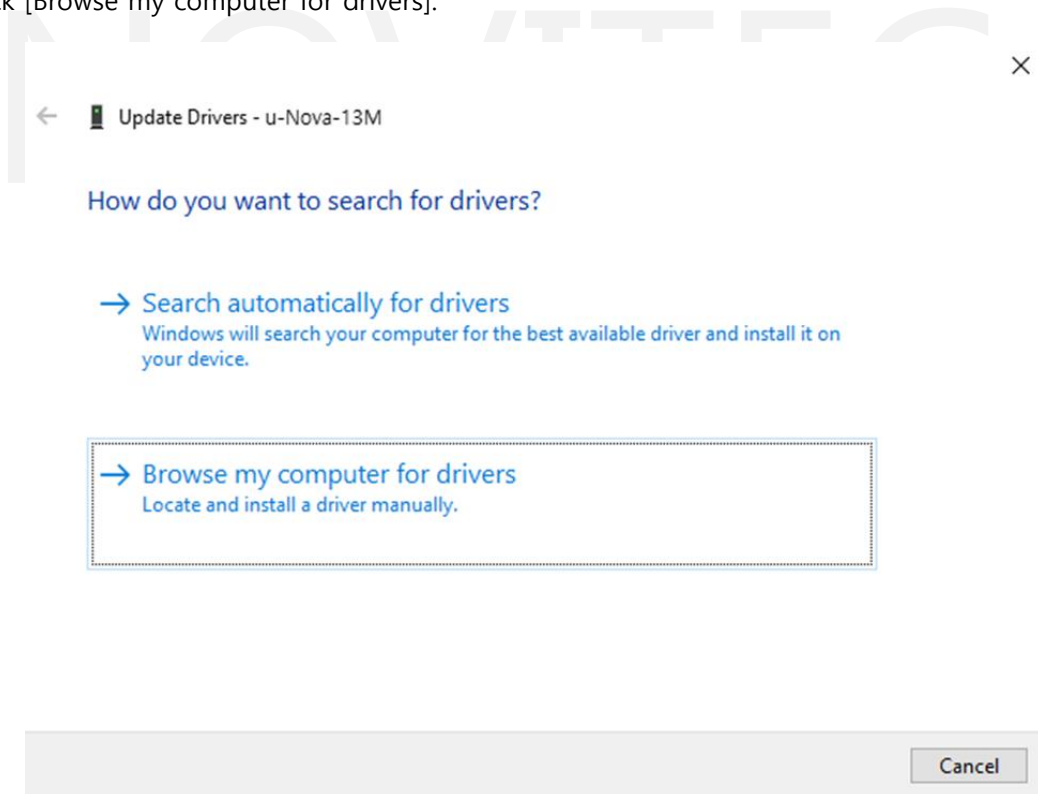
<image> 12. u-Nova driver warning image

d. Right-click on "u-Nova" and click [Update driver].



<image> 13. Update driver image

- e. Click [Browse my computer for drivers].



<image> 14. Manually select driver location image

- f. Click [Browse...].



← Update Drivers - u-Nova-13M

Browse for drivers on your computer

Search for drivers in this location:

C:\Users\Novitec\Documents

Browse...

Include subfolders

→ Let me pick from a list of available drivers on my computer

This list will show available drivers compatible with the device, and all drivers in the same category as the device.

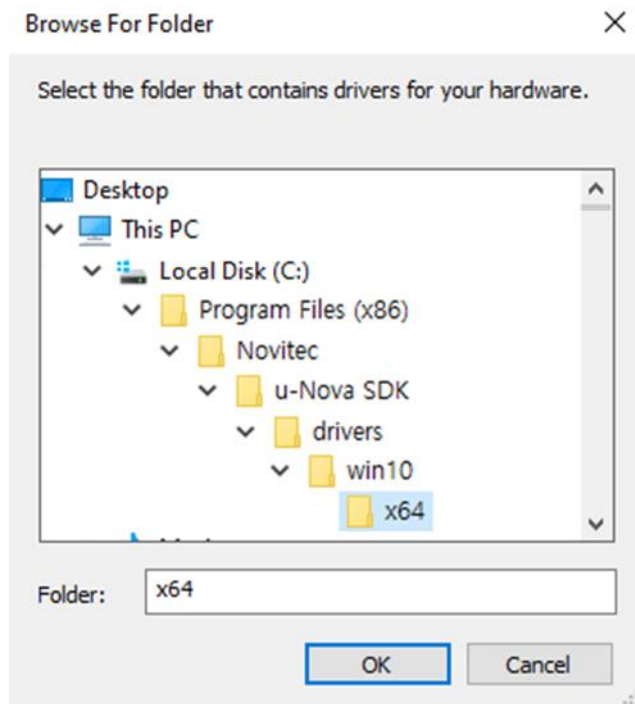
Next

Cancel

<image> 15. Choose driver location image

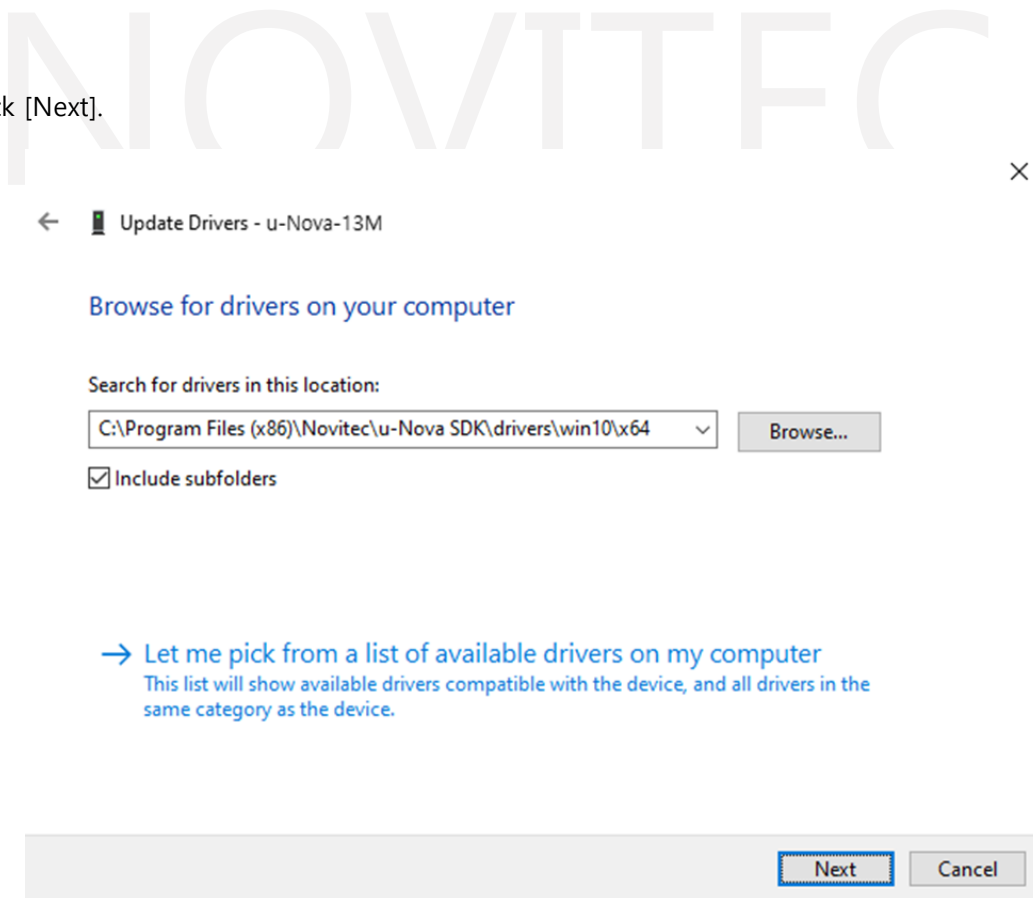
- g. Select drivers from the folder where the user installed the SDK and click [OK].

Default path : Desktop\This PC\Local Disk (C:)\Program Files (x86)\Novitec\U-Nova SDK\drivers\win10\64



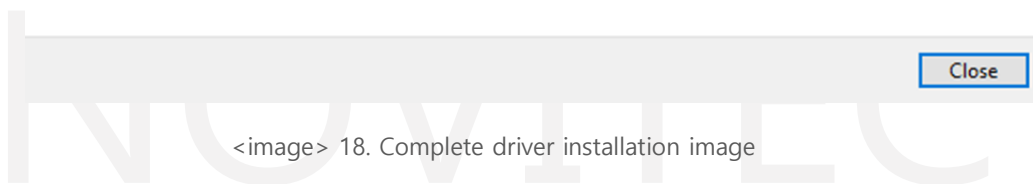
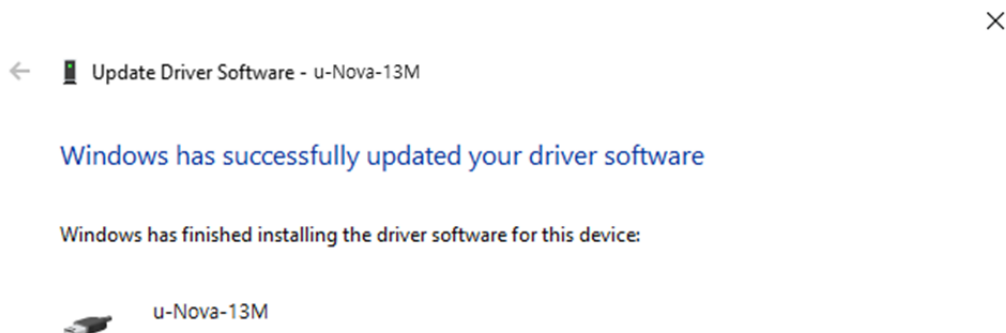
<image> 16. Driver path image

h. Click [Next].



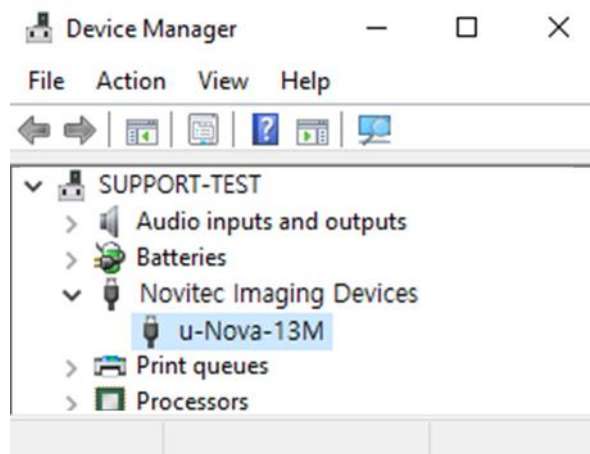
<image> 17. Complete driver location selection image

- i. Click [Close] to finish updating the driver.



<image> 18. Complete driver installation image

- j. In the "Device Manager", check that the warning mark on the camera has disappeared.

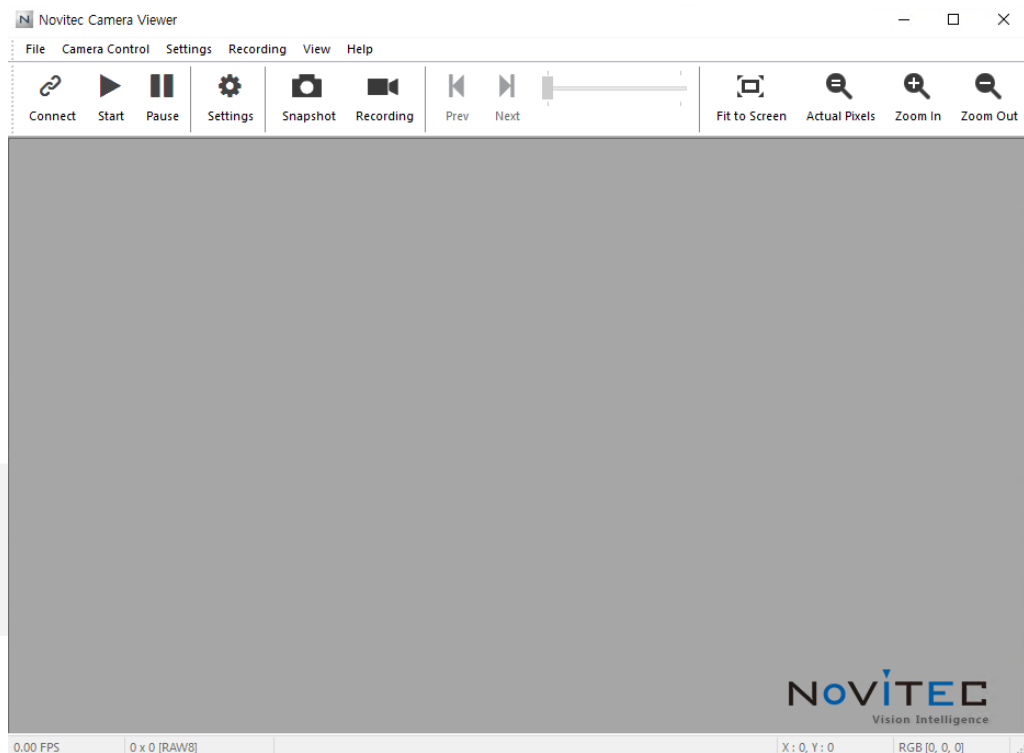


<image> 19. Driver recognized normally image

5.4. Launch Viewer

3 ways to launch the camera viewer.

- Click the shortcut icon of "Novitec Camera Viewer" on the desktop.
- Click Novitec - "Novitec Camera Viewer" in the Windows Start menu.
- Go to the path below in the File Explorer and run the NvtCameraViewer.exe.
 - Default path : C:\Program Files (x86)\Novitec\U-Nova SDK\bin\x86

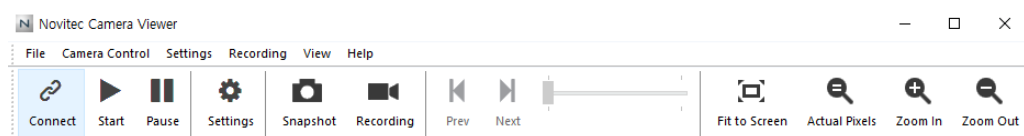


<image> 20. Launch viewer image

5.5. Connect the Camera

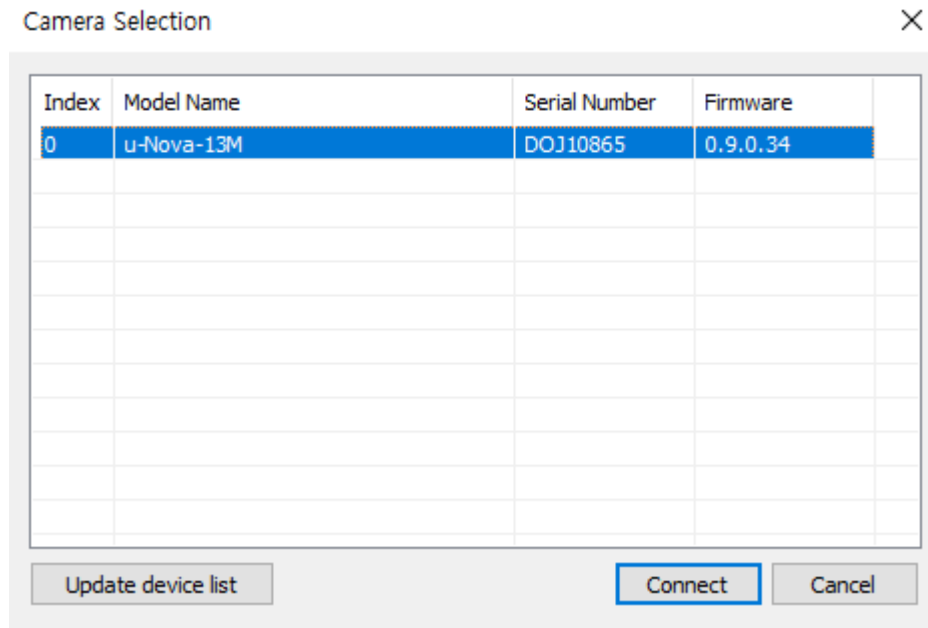
To use the camera, the user must connect the camera to the viewer.

- Click [Connect] at the top of the viewer.



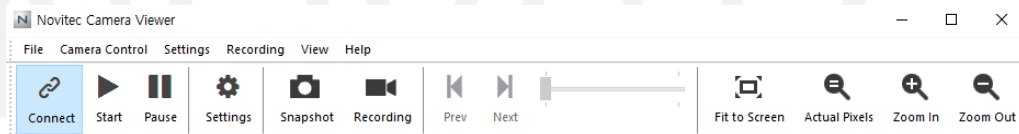
<image> 21. Connect the Camera image

- Check the model name and serial number of the camera connected to the PC, select the camera in the list, and click [Connect].



<image> 22. Select camera image

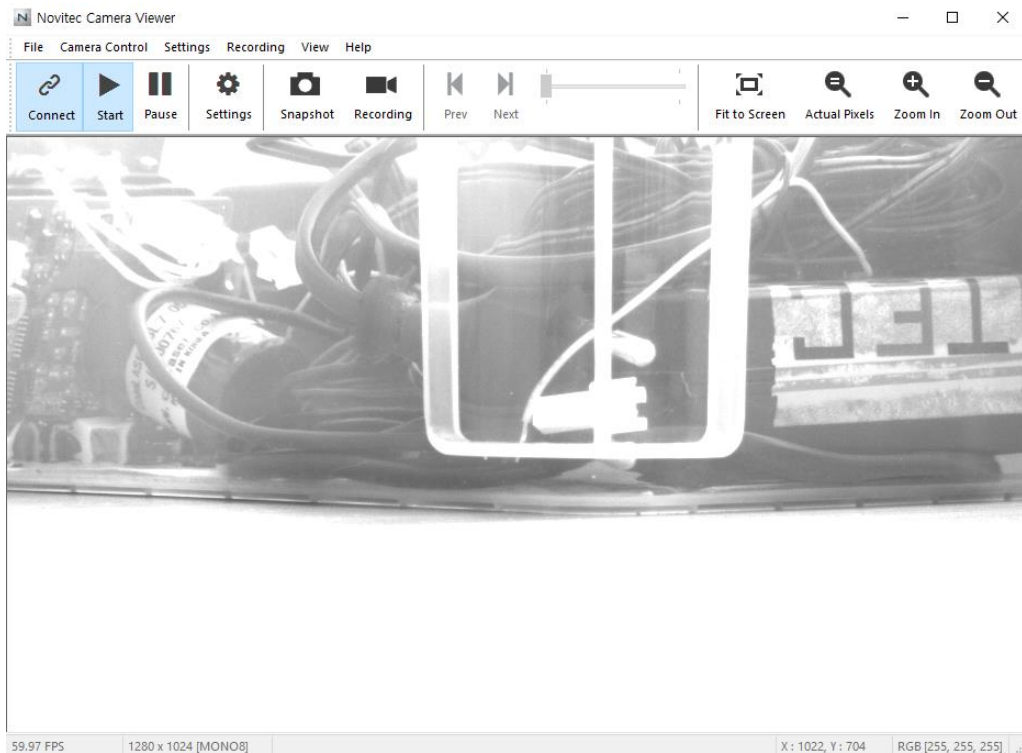
- c. Check that [Connect] at the top is activated in blue



<image> 23. Status of Connect after camera selection image

5.6. Get the Image

Click [Start] at the top of the viewer to check the image.



<image> 24. Running video image

6. Physical Interface

6.1. Power/Voltage

The USB3.0 connector provides a power connection between the camera and the PC.

The ideal input voltage is 5V DC.

To power the camera, the interface card must be connected to the PC's power supply.

6.2. USB3.0 Connector

The USB 3.0 Micro-B jack is equipped with two M2 screwholes for secure connection.

Pin assignments conform to the USB 3.0 Micro-B standard.

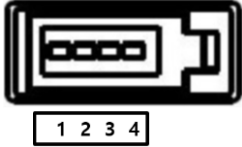


<image> 25. USB3.0 Micro-B image

6.3. GPIO Connector

The camera is equipped with a 4-pin GPIO connector on the back of the case for using external triggers or lights.

Refer to the diagram for the number of each pin.

Diagram	Pin	Function	Description
	1	Trigger In	Trigger Input (Low voltage: 0~0.8V / High level: 2~5V)
	2	Strobe Out	Strobe Output (3.3V LVTTTL)
	3	GP Out	General purpose output (3.3V LVTTTL)
	4	GND	TTL Ground

<Table> 1. GPIO Connector table

7. Troubleshooting

7.1. Upgrading Camera Firmware

Users can download the latest version of firmware from Novitec website.

- a. Go to u-Nova product page on Novitec website.

- u-Nova product page : <https://www.novitec.co.kr/sub/view.php?idx=26>



<image> 26. Enter the product page address image

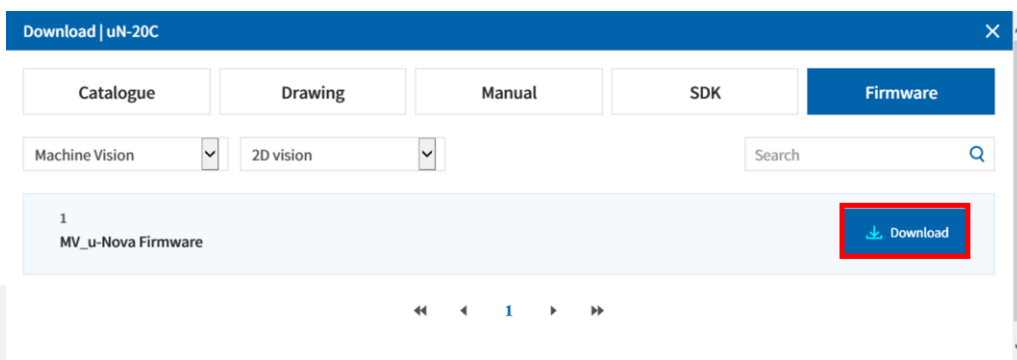
- b. Click [Download] of Firmware in the download field at the bottom.

Download

Catalogue	Detailed Product Information	Download
Drawing	Detailed Product Drawing and CAD file	Download
Manual	Downloadable product Manual	Download
SDK	Downloadable Product Software Development Kit	Download
Firmware	Download Latest Product Firmware	Download

<image> 27. Download section on product page image

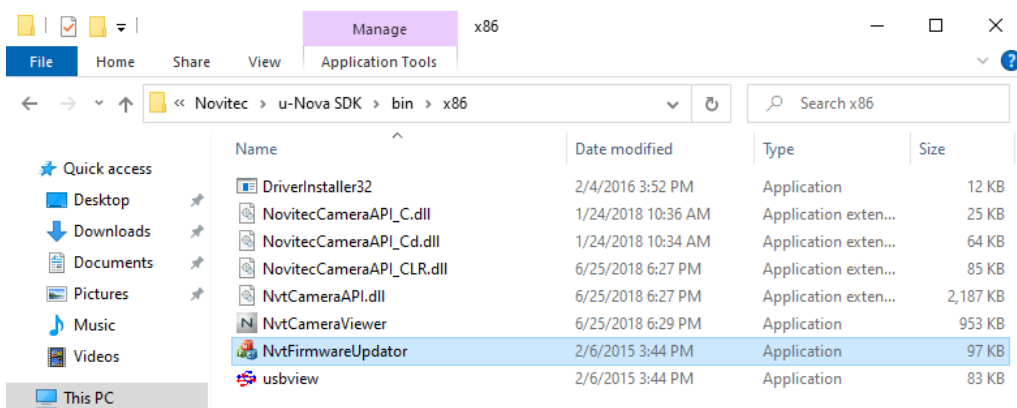
- c. Click [Download] of MV_u-Nova Firmware to download the firmware file.



<image> 28. Firmware download window image

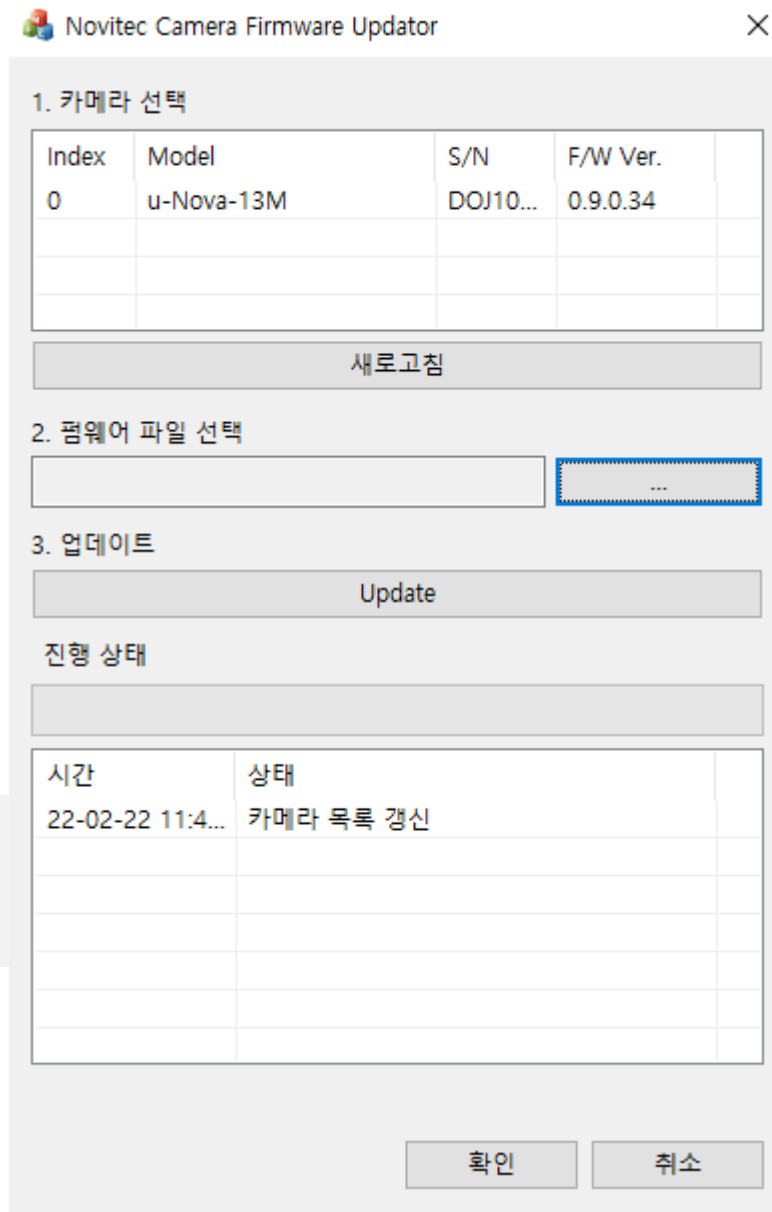
- d. Go to the path below in the File Explorer and run the NvtFirmwareUpdater.exe.

- Default Path : C:\Program Files (x86)\Novitec\U-Nova SDK\bin\X86



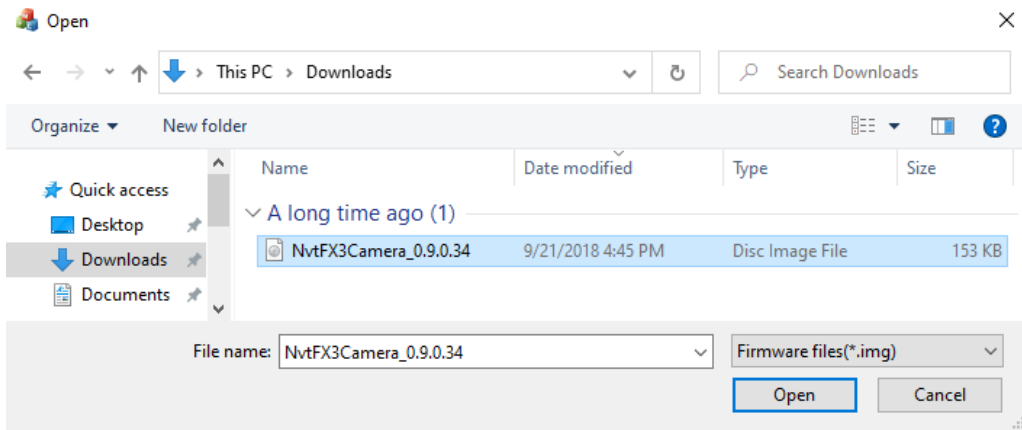
<image> 29. Location of the firmware updater image

- e. Click [...] of "2. 펌웨어 파일 선택".



<image> 30. Choose firmware file location image

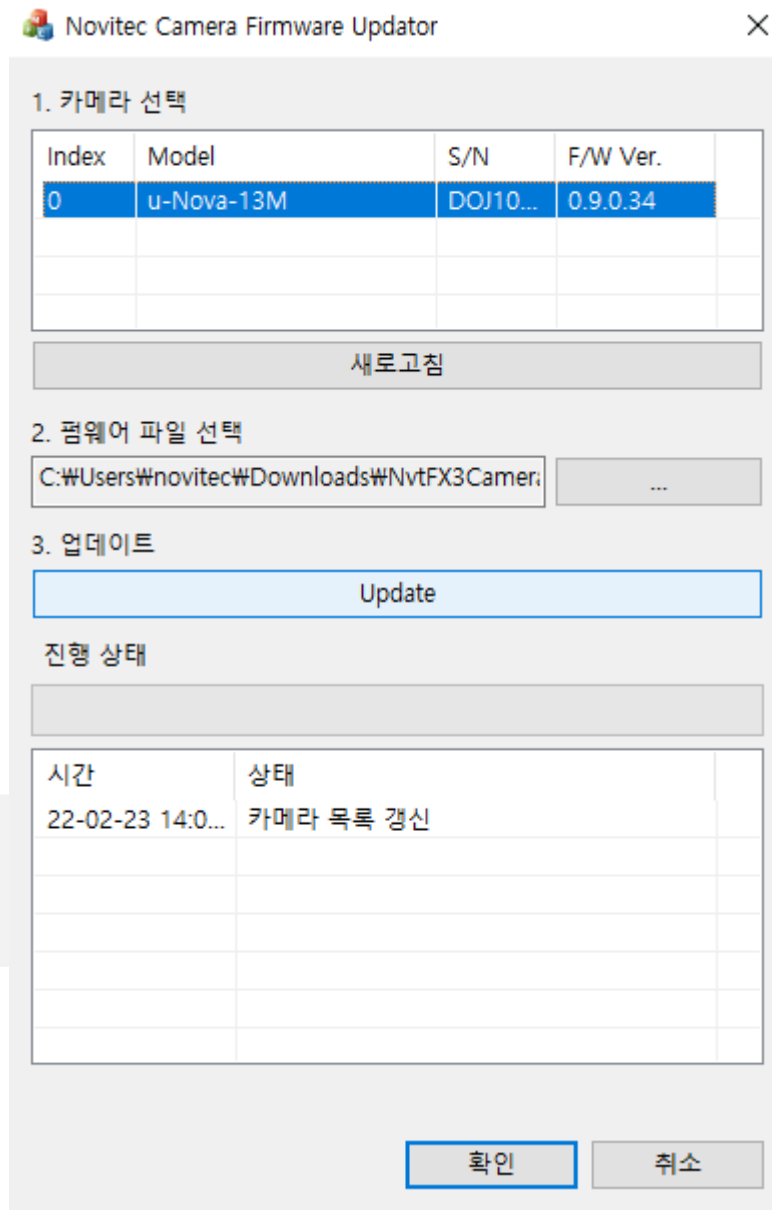
- f. Select the downloaded firmware file of u-Nova and click [Open].



<image> 31. Choose firmware file image

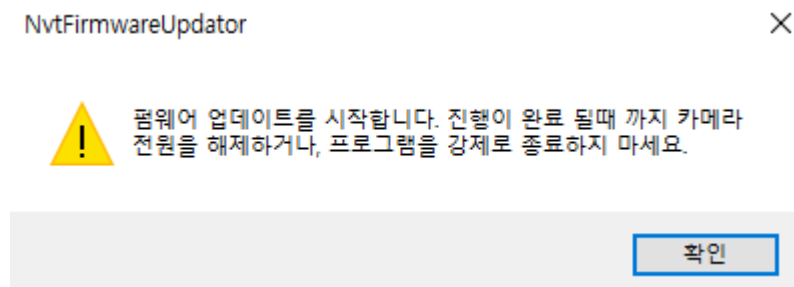
- g. Select the camera to update firmware in "1. 카메라 선택" and Click [Update] in "3. 업데이트".

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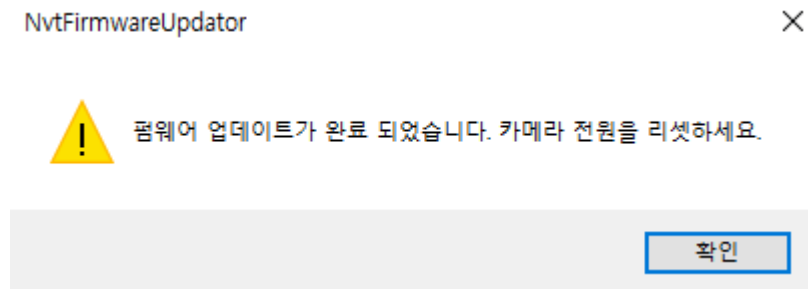
<image> 32. Select camera and start update image

- h. Check the cautions in the warning window and click [확인].



<image> 33. Firmware update warning image

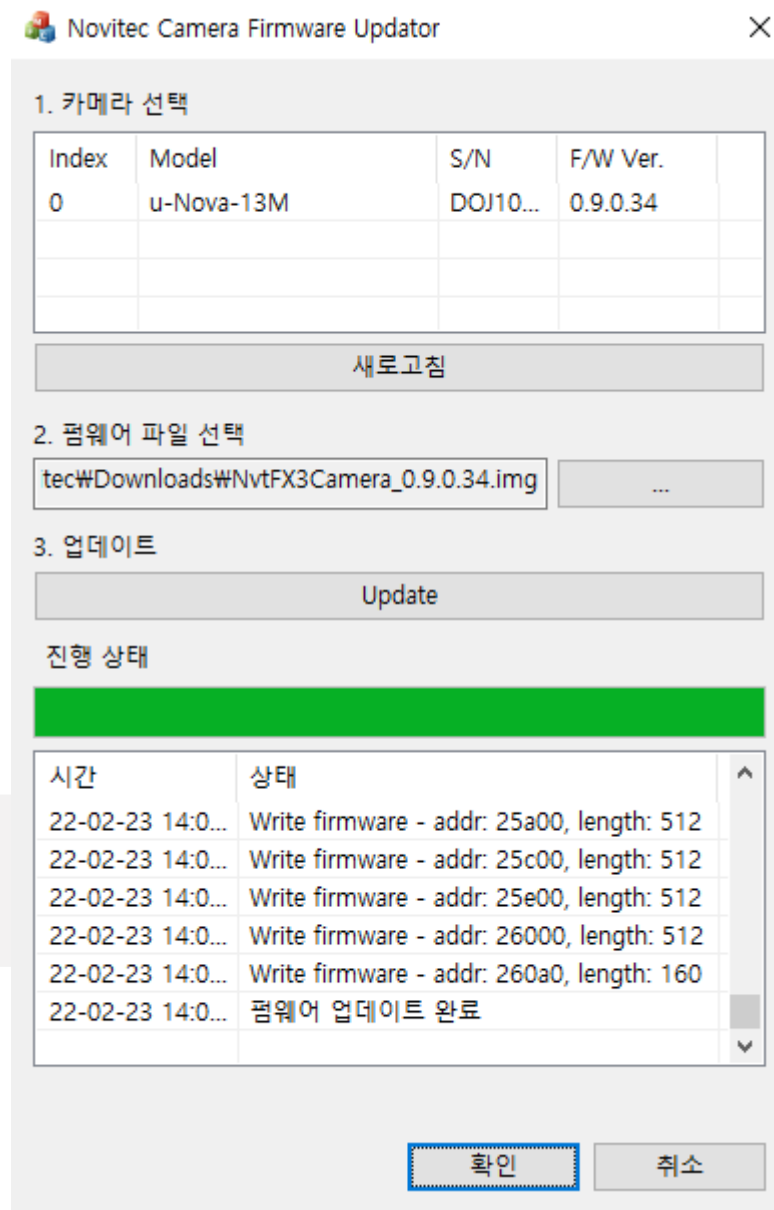
- i. When the firmware update is complete, click [확인].



<image> 34. Complete update image

- j. Click [확인] to exit the updater.

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<image> 35. Program after completion image

- k. Reconnect the camera's power cable.

7.2. System Error: MSVCR110.dll & mfc110u.dll

If a system error of "MSVCR110.dll" or "mfc110u.dll" occurs when running the firmware updator, follow the steps below.

NvtFirmwareUpdator.exe - 시스템 오류 ×



mfc110u.dll이(가) 없어 코드 실행을 진행할 수 없습니다. 프로그램을 다시 설치하면 이 문제가 해결될 수 있습니다.

확인

<image> 36. mfc110u.dll error image

NvtFirmwareUpdator.exe - 시스템 오류 ×



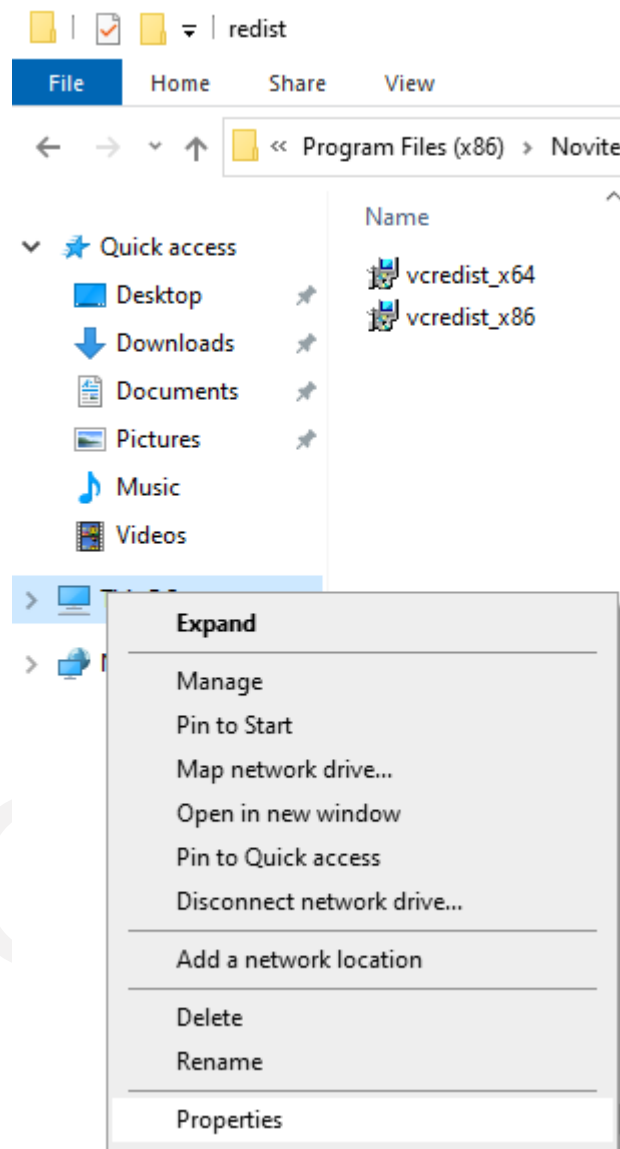
MSVCR110.dll이(가) 없어 코드 실행을 진행할 수 없습니다. 프로그램을 다시 설치하면 이 문제가 해결될 수 있습니다.

확인

<image> 37. MSVCR110.dll error image

- a. Right-click on "This PC" in File Explorer and click [Properties].

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<image> 38. This PC properties image

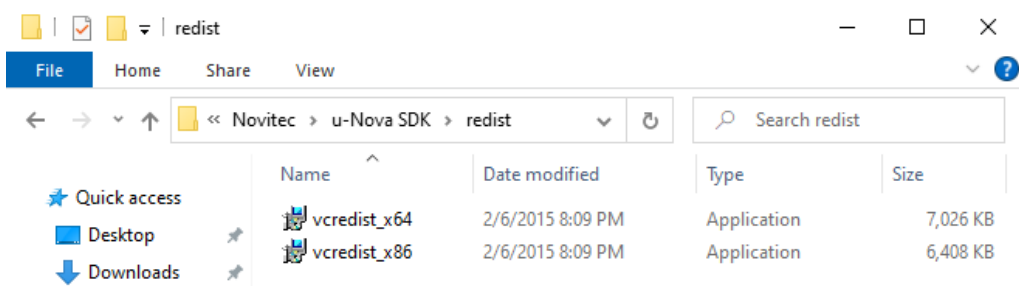
- b. Check if the "System type" in the Device specifications is 64-bit(x64) or 32-bit(x86).

System type 64-bit operating system, x64-based processor

<image> 39. System type image

- c. Go to the path below in the File Explorer

- Default Path : C:\Program Files (x86)\Novitec\Wu-Nova SDK\Wredist



<image> 40. Location of the vcredist installation file image

d. If the PC is 32-bit(x86), install "vcredist_x86.exe", and if the PC is 64-bit(x64), install both "vcredist_x86.exe" and "vcredist_x64.exe".

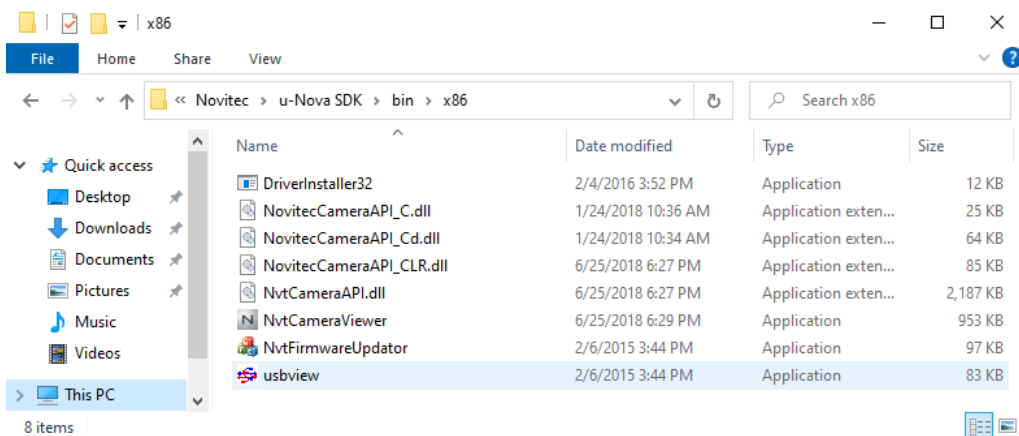
- PC 32bit-vcredist_x86
- PC 64bit-vcredist_x86 & vcredist_x64

7.3. Check the Version of the USB Port

If the version of the USB port to which the camera is connected is lower than 3.0, the camera may not operate normally.

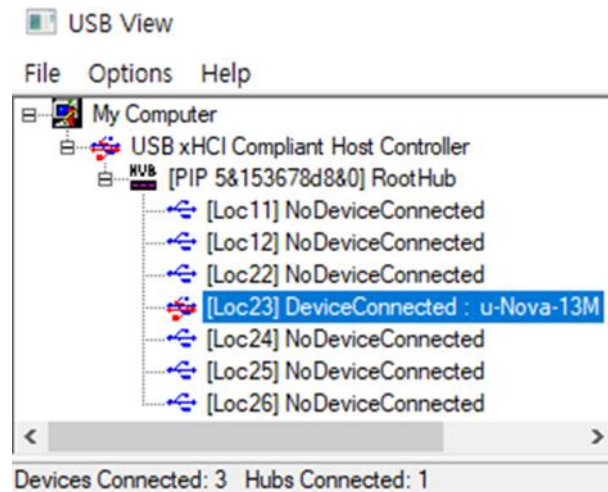
a. Go to the path below in the File Explorer and run usbview.exe.

- Default Path : C:\Program Files (x86)\Novitec\U-Nova SDK\bin\x86



<image> 41. Location of the usbview image

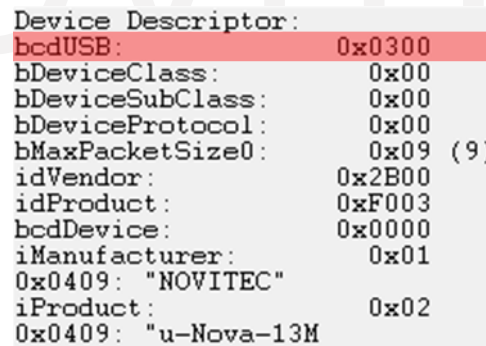
b. Select "DeviceConnected : u-Nova" from the list on the left.



<image> 42. DeviceConnected image

c. Check the USB version by looking at the bcdUSB in the content on the right.

- 0x0300 : USB3.0
- 0x0310 : USB3.1
- 0x0200 : USB2.0



<image> 43. Check bcdUSB version image

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10. Revision History

Date	Version	Description	SDK / Firmware Version
2022.01.14	V1.0	Initial Version	

<Table> 2. Revision History table

11. Contacting Us

- Address : 30-18, Baekjegobun-ro 39-gil, Songpa-gu, Seoul, South-Korea
- Tel : +82-70-7122-1000
- Fax : +82-70-7159-1315
- Website : <http://www.novitec.co.kr>
- Email : Technical support – support@novitec.co.kr
Sales Inquiries – sales@novitec.co.kr