

PTZ Virtual USB Driver OperationsManual

Introduction

PTZ Virtual USB Driver is a software program that runs on Windows.

By running this software on a Windows computer, you can let Windows recognize the Panasonic camera connected to the computer on network (hereinafter referred to as the “Network Camera”) as the virtual USB camera, and you can use this camera.

Main features

Features of this software program are as follows:

- **Converts the Network Camera into the virtual USB camera**

Let Windows recognize the Network Camera as the virtual USB camera. This makes it possible to use video and audio of the Network Camera in various Windows applications such as video distribution and video recording of the USB camera.

- **Supports video and audio of H.264 stream**

You can receive video and audio of H.264 stream on the Network Camera, and use them in Windows applications.

- **You can register up to five Network Cameras**

You can register up to five Network Cameras.

- **Automatic detection of Network Cameras**

You can automatically detect and register cameras connected on the network.

Operating environment

The following environment is required for using this software.

- OS

Windows 8.1 64bit

Windows 10 64bit

- Computer

CPU: Core i5-7300U (2.60 GHz) and above

Memory: 4GB and above

The software supports the following camera products (As of June 2021).

* For the latest support models, please check the PTZ Virtual USB Driver product page on the following website.

<https://pro-av.panasonic.net/en/>

- Panasonic's network compliant cameras

PTZ camera

- AW-UE150/155
- AW-UE100
- AW-HE130/AW-HN130
- AW-HR140
- AW-UE70/AW-UN70
- AW-HE40/70/65, AW-HN40/70/65
- AW-HE42/75/68
- AW-UE4

POVCAM

- AG-UMR20/AG-UCK20
- AG-MDR25/AG-MDC20

CX Camera Recorder

- AJ-CX4000 / AJ-UPX900
- AG-CX350 / AG-CX200 / AJ-UPX360
- AG-CX10 / AG-CX98

<Notes>

- Please update the firmware of the camera to the latest version before using it. You can download the firmware from the following website.

<http://pro-av.panasonic.net/en/>

Description given in this file

- Illustrations and images shown in this file may differ from the actual images.
- In this file, personal computer is mentioned as "PC".

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Initial settings of the camera

Before using this software, it is necessary to appropriately make the H.264 stream settings on the Web screen of the Network Camera.

Parameters to be set may differ depending on the model of the Network Camera.

This section shows setting procedure of various models.

- The models listed in this manual are as of June 2021.

Please check the PTZ Virtual USB Driver product page on the following website for the setting procedure of the latest model.

<https://pro-av.panasonic.net/en/>

H.264 setting conditions (PTZ camera, POVCAM)

This software receives H.264 stream of the Network Camera and fetches video and audio.

When using this software, H.264 stream settings should satisfy all of the following conditions.

- H.264 transmission

Out of H.264 (1) through H.264 (4), one or more should be turned on.

- Image capture size

It should be set to either of the following.

3840x2160 / 1920x1080 / 1280x720 / 640x360 / 320x180

- Transmission priority

It should be set to the following.

Frame rate

- Frame rate

It should be set to either of the following.

60fps / 50fps / 30fps / 25fps / 24fps / 15fps / 12.5fps / 5fps

- Audio encoding format (Only in the case of AW-HE130/AW-HN130, AW-HR140)

It should be set to the following.

AAC-LC (High quality)

H.264 setting conditions (CX Camera Recorder)

This software receives H.264 stream of the Network Camera and fetches video and audio.

When using this software, H.264 stream settings should satisfy all of the following conditions.

- NETWORK -> NETWORK FUNC

It should be set to “STREAMING”.

- NETWORK -> STREAMING -> STREAMING FORMAT

It should be set to either of the following.

1920x1080 / 1280x720 / 640x360 / 320x180

- NETWORK -> STREAMING -> START TRIGGER

It should be set to “RECEIVER”.

- NETWORK -> STREAMING -> RTSP PORT

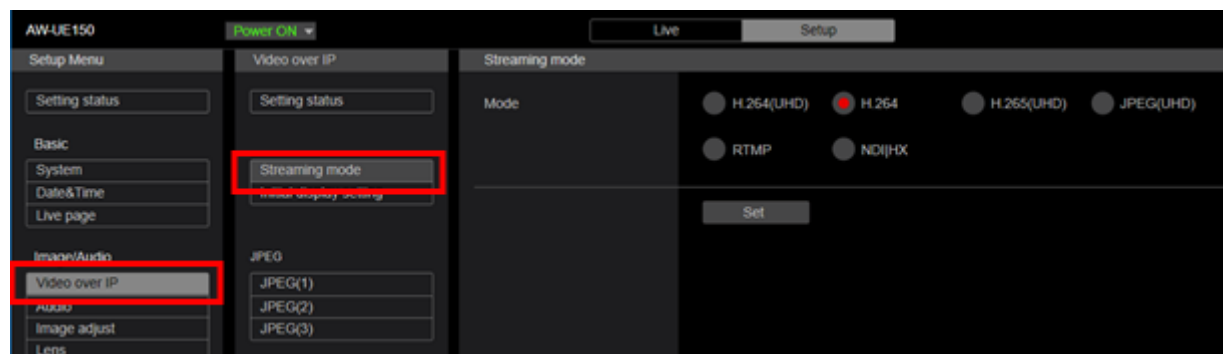
It should be set to “554”.

Settings of AW-UE150/155, AW-UE100

1. Start web browser.
2. In the URL field of web browser, enter the IP address of the Network Camera.
3. The Web screen of the Network Camera will open. Click the Setup button located on top center.

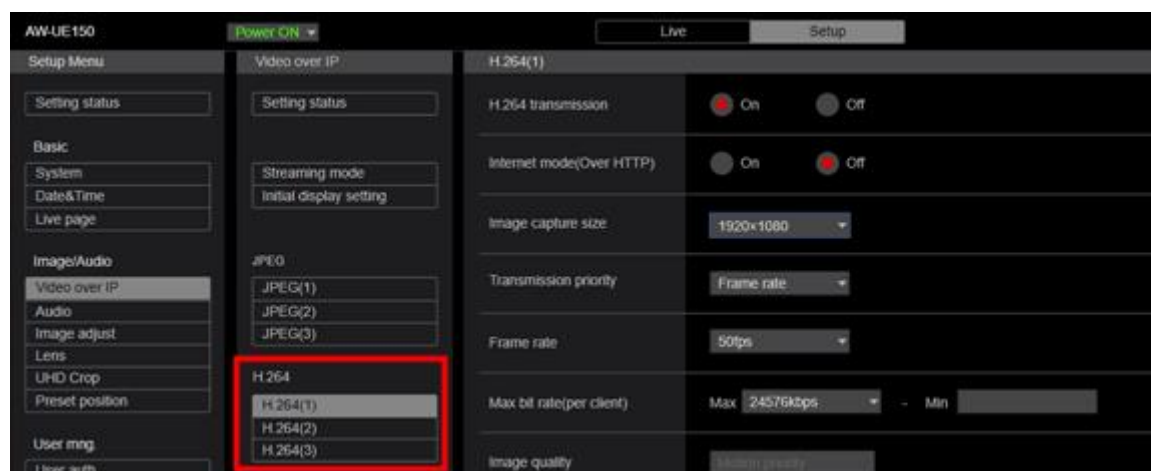


4. Camera's account and password confirmation screen will appear. Enter your account name and password.
5. Click the [Video over IP] button on the left side of the Setup screen and click the [Streaming mode] button in the [Video over IP] menu. The Streaming mode setting screen is displayed. Set either "H.264 (UHD)", "H.264", "JPEG (UHD)", "NDI | HX". After setting the parameters, click the Set button and save the settings.



6. Set the operation of H.264 (1) through H.264 (4) or NDI | HX stream in the [Video over IP] menu. After setting the parameters, click the Set button and save the settings.

- When Streaming mode is "H.264 (UHD)", "H.264", "JPEG (UHD)"



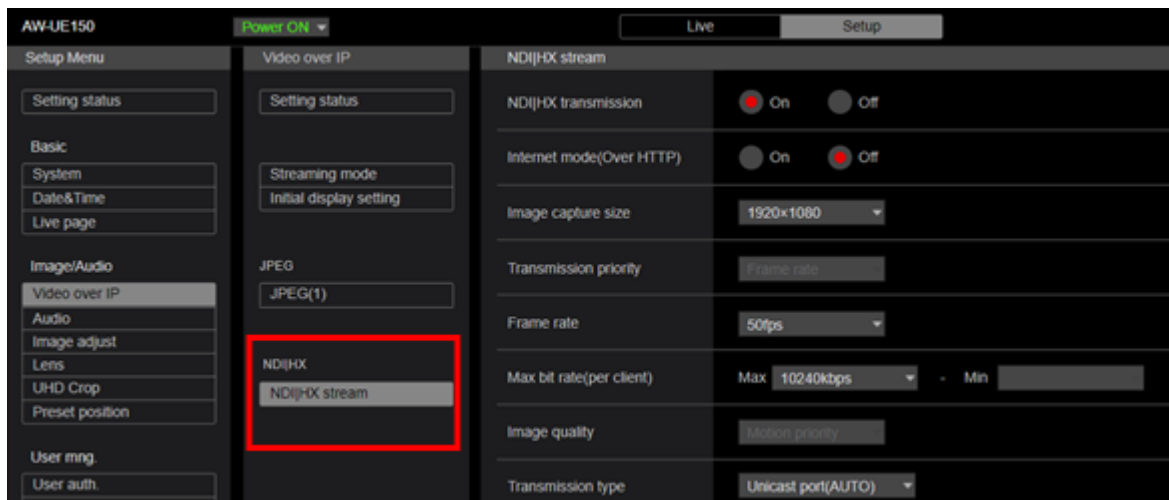
H.264 transmission: Turns on the stream you want to use.

Image capture size: Sets the resolution within the range that satisfies the conditions described in "H.264 setting conditions" in this section.

Transmission priority: Set it to "Frame rate".

Frame rate: Sets the frame rate within the range that satisfies the conditions described in “H.264 setting conditions” in this section.

- When Streaming mode is "NDI|HX"



NDI|HX transmission : Set it to On.

Image capture size: Sets the resolution within the range that satisfies the conditions described in “H.264 setting conditions” in this section.

Frame rate: Sets the frame rate within the range that satisfies the conditions described in “H.264 setting conditions” in this section.

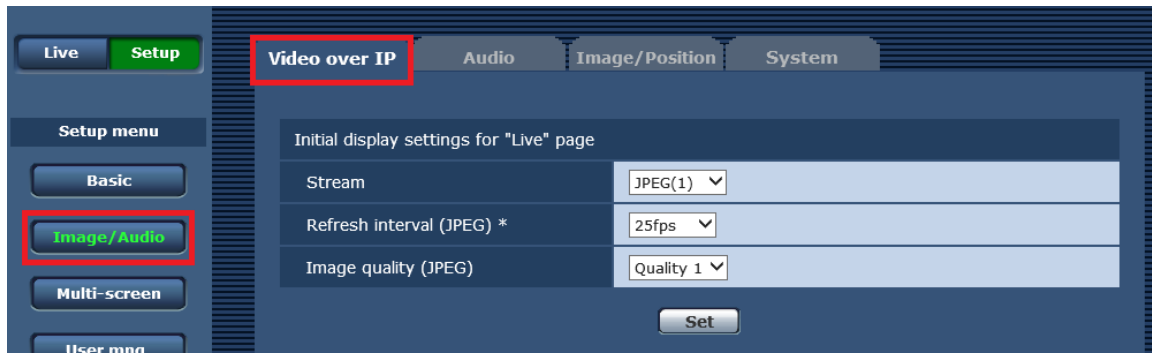
7. With this, the setting is complete.

Settings of AW-HE130/AW-HN130, AW-HR140

1. Start Internet Explorer.
2. In the URL field of Internet Explorer, enter the IP address of the Network Camera.
3. The Web screen of the Network Camera will open. Click the Setup button located on top left.



4. Camera's account and password confirmation screen will appear. Enter your account name and password.
5. Click the [Image/Audio] button on the left side of the Setup screen and select the [Video over IP] tab located at the top of the screen that appears.



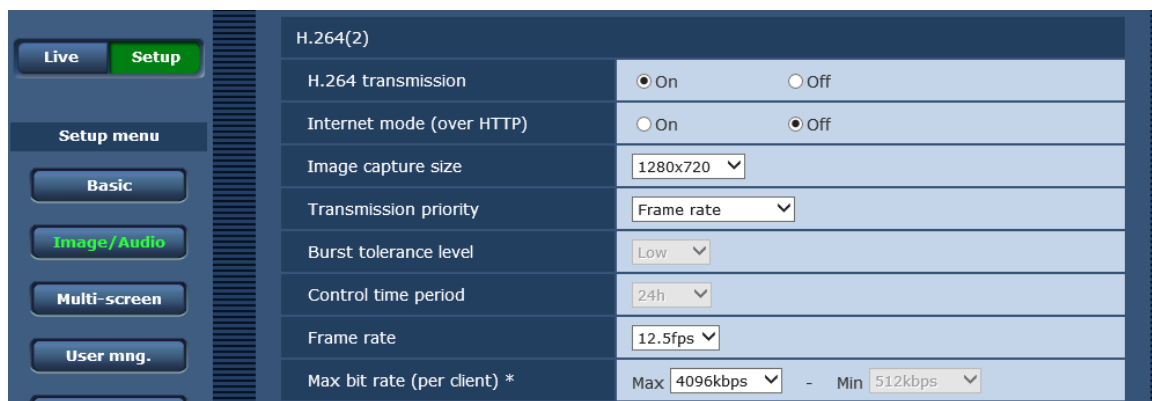
6. Set the operation of H.264 (1) through H.264 (4) in the [Video over IP] tab. When using this software, it is necessary to make settings so that the following parameters satisfy the conditions described here. After setting the parameters, click the Set button and save the settings.

H.264 transmission: Turns on the stream you want to use.

Image capture size: Sets the resolution within the range that satisfies the conditions described in “H.264 setting conditions” in this section.

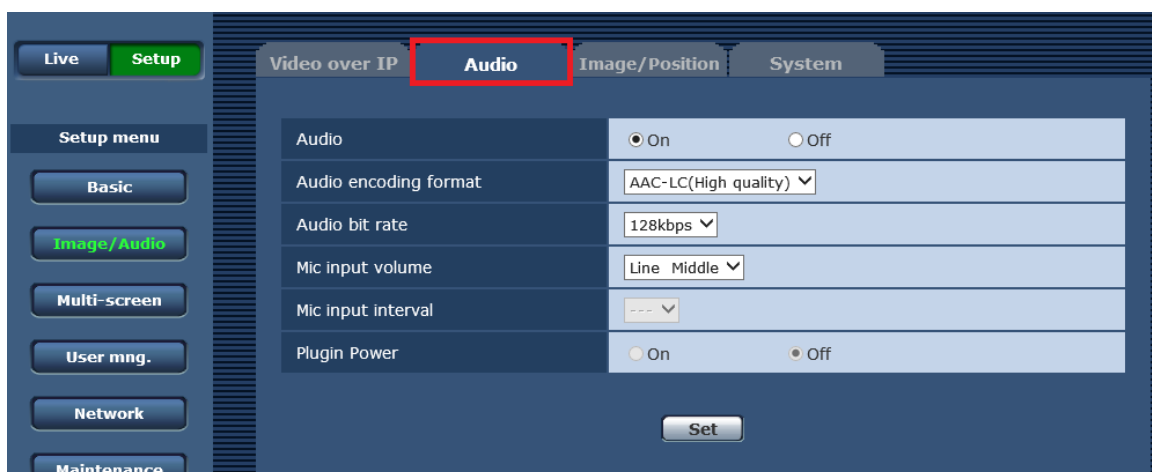
Transmission priority: Set it to “Frame rate”.

Frame rate: Sets the frame rate within the range that satisfies the conditions described in “H.264 setting conditions” in this section.



7. Select the [Audio] tab located at the top of the screen and set the Audio parameters. When using this software, it is necessary to make settings so that the following parameters satisfy the conditions described here. After setting the parameters, click the Set button and save the settings.

Audio encoding format: Set to “AAC-LC (High quality)”.



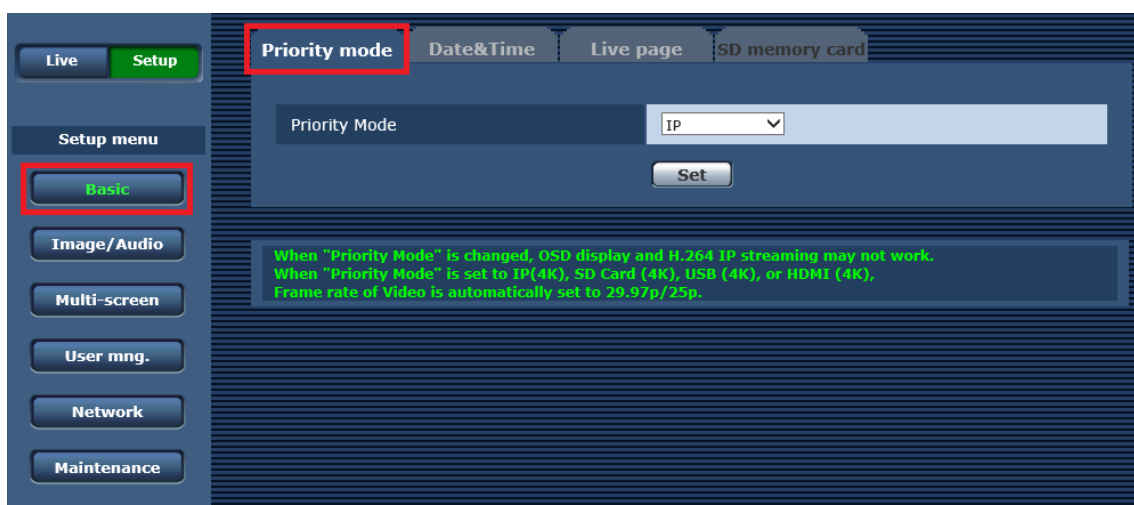
8. With this, the setting is complete.

Setting of AW-UE70/AW-UN70

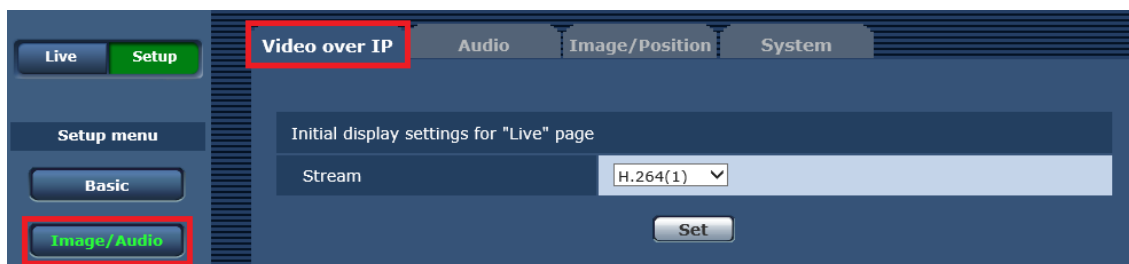
1. Start Internet Explorer.
2. In the URL field of Internet Explorer, enter the IP address of the Network Camera.
3. The Web screen of the Network Camera will open. Click the Setup button located on top left.



4. Camera's account and password confirmation screen will appear. Enter your account name and password.
5. Click the [Basic] button on the left side of the Setup screen and select the [Priority mode] tab located at the top of the screen that appears.



6. Set the Priority Mode setting to either of the following. After setting the parameters, click the Set button and save the settings.
 - IP
 - IP (4K)
 - NDI|HX *AW-UN70 only
7. Click the [Image/Audio] button on the left side of the Setup screen and select the [Video over IP] tab located at the top of the screen that appears.



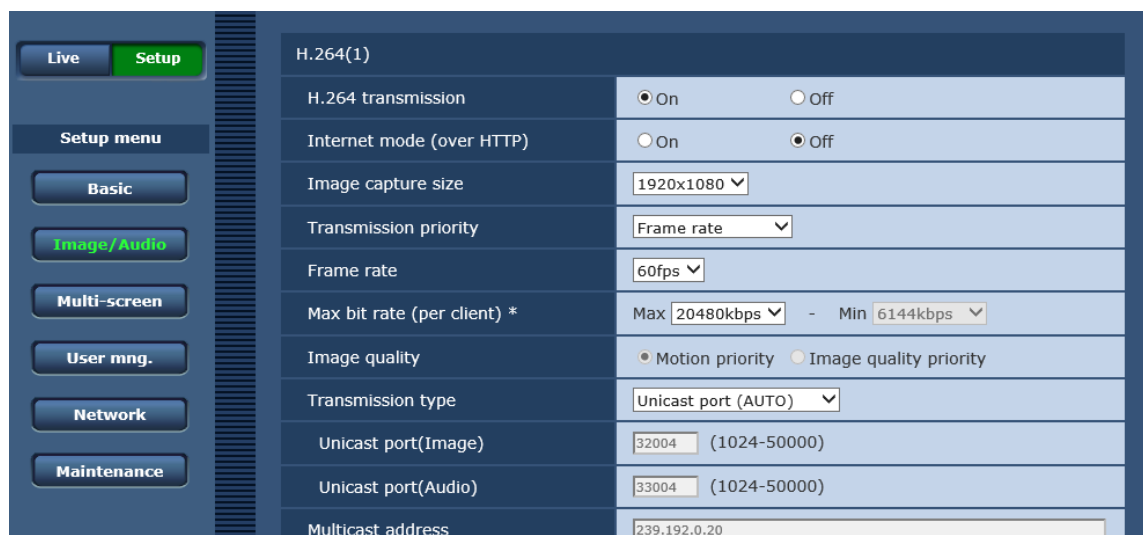
8. Set the operation of H.264 (1) through H.264 (4) in the [Video over IP] tab. When using this software, it is necessary to make settings so that the following parameters satisfy the conditions described here. After setting the parameters, click the Set button and save the settings.

H.264 transmission: Turns on the stream you want to use.

Image capture size: Sets the resolution within the range that satisfies the conditions described in “H.264 setting conditions” in this section.

Transmission priority: Set it to “Frame rate”.

Frame rate: Sets the frame rate within the range that satisfies the conditions described in “H.264 setting conditions” in this section.



9. With this, the setting is complete.

Setting of AW-HE40/70/65, AW-HN40/70/65, AW-HE42/75/68

Setting parameters are same as AW-UE70/AW-UN70.

Refer to “Setting of AW-UE70/AW-UN70” and make the settings.

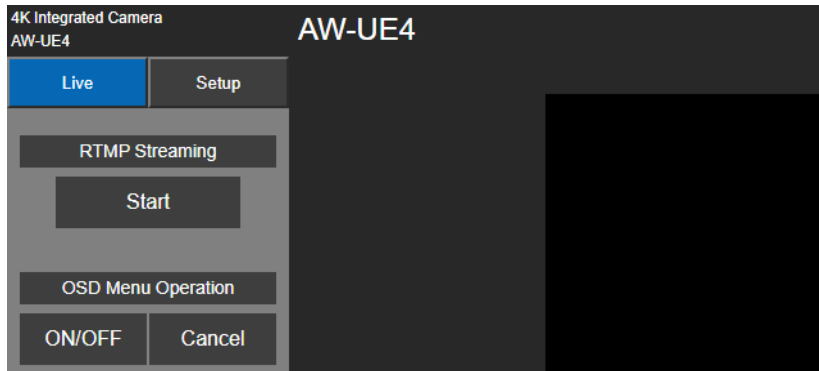
<Notes>

- IP (4K) will not appear in Priority Mode setting.

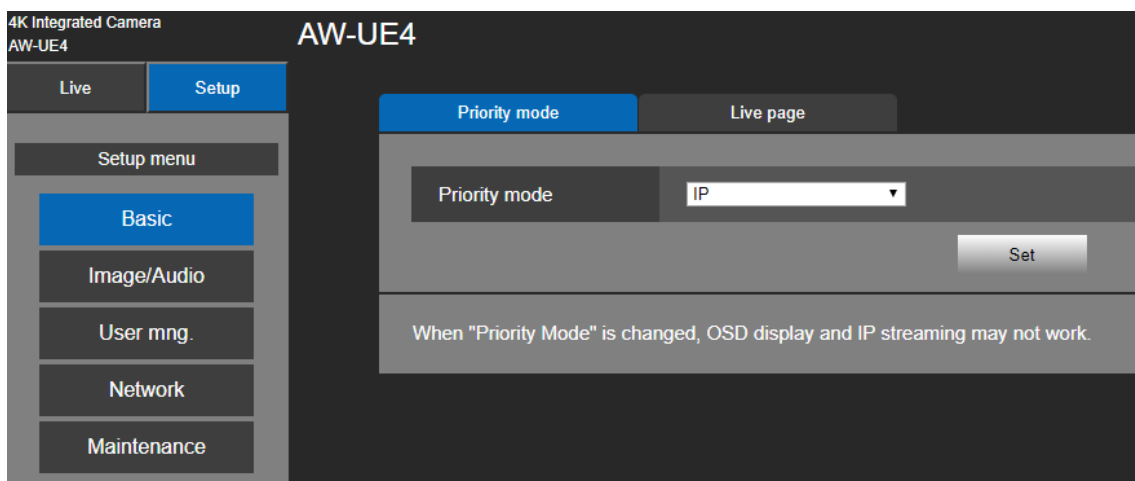
Set the Priority Mode setting to “IP” or “NDI | HX”. “NDI | HX” will appear only in the case of AW-HN40/70/65.

Setting of AW-UE4

1. Start Internet Explorer.
2. In the URL field of Internet Explorer, enter the IP address of the Network Camera.
3. The Web screen of the Network Camera will open. Click the Setup button located on top left.



4. Camera's account and password confirmation screen will appear. Enter your account name and password.
5. Click the [Basic] button on the left side of the Setup screen and select the [Priority mode] tab located at the top of the screen that appears.



6. Set the Priority Mode setting to either of the following. After setting the parameters, click the Set button and save the settings.
 - IP
 - IP (4K)
7. Click the [Image/Audio] button on the left side of the Setup screen and select the [Video over IP] tab located at the top of the screen that appears.
8. Set the operation of H.264/H.265 in the [Video over IP] tab. When using this software, it is necessary to make settings so that the following parameters satisfy the conditions described here. After setting the parameters, click the Set button and save the settings.

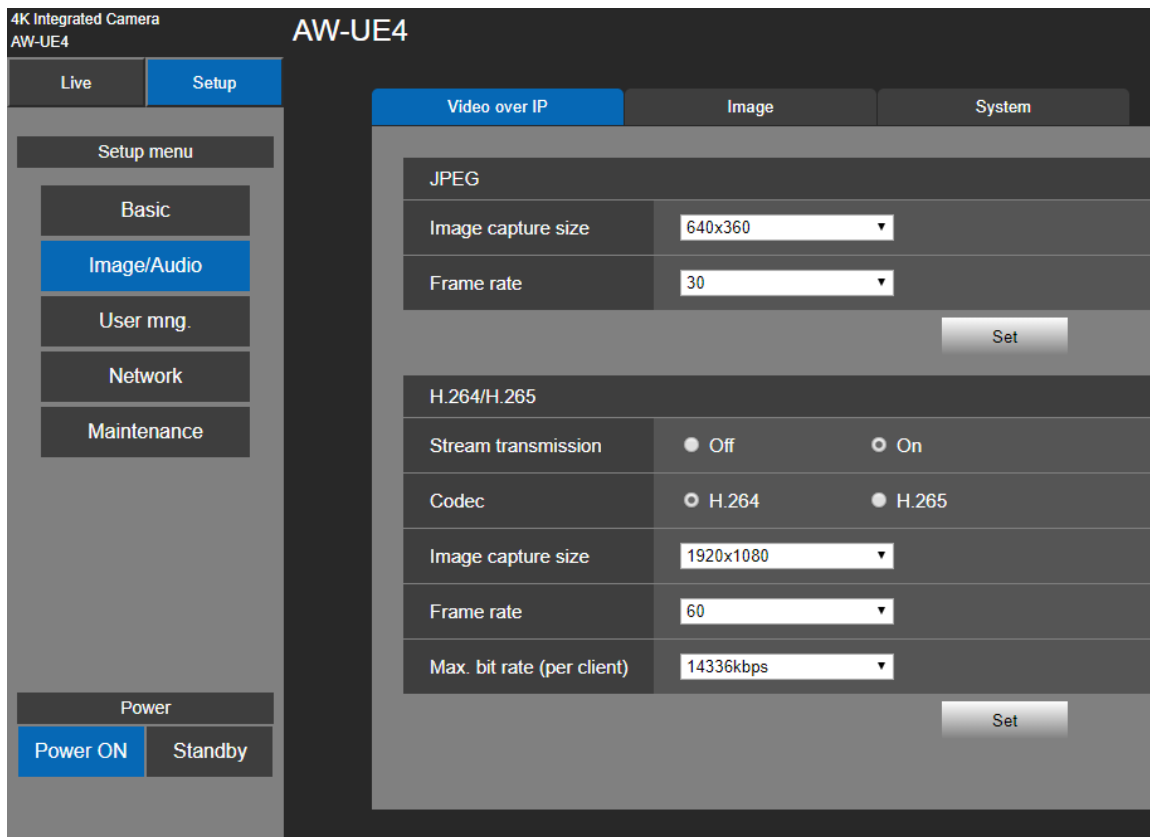
Stream transmission: Set it to "On".

Codec: Set it to "H.264".

Image capture size: Sets the resolution within the range that satisfies the conditions described in "H.264 setting conditions" in this section.

Frame rate:

Sets the frame rate within the range that satisfies the conditions described in “H.264 setting conditions” in this section.



9. With this, the setting is complete.

Settings of AG-UMR20/AG-UCK20, AG-MDR25/AG-MDC20

Setting parameters are same as AW-UE70/AW-UN70.

Refer to “Setting of AW-UE70/AW-UN70” and make the settings.

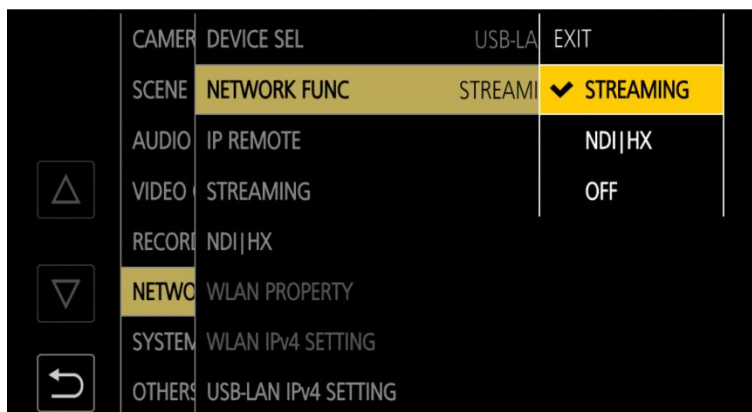
<Notes>

- “NDI | HX” will not appear in Priority Mode setting.

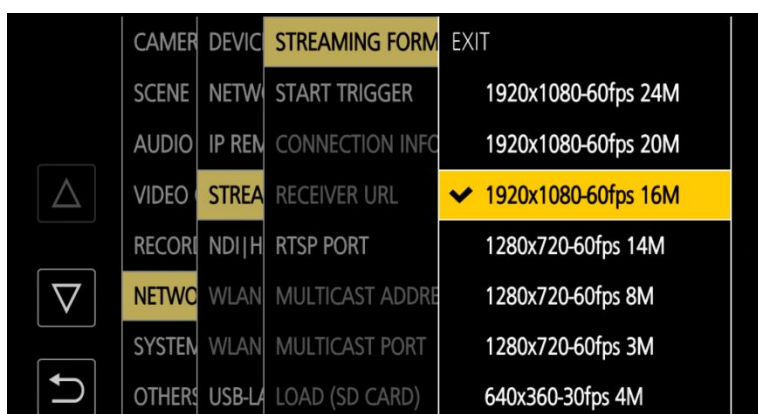
Set the Priority Mode setting to “IP” or “IP (4K)”.

Settings of CX Camera Recorder

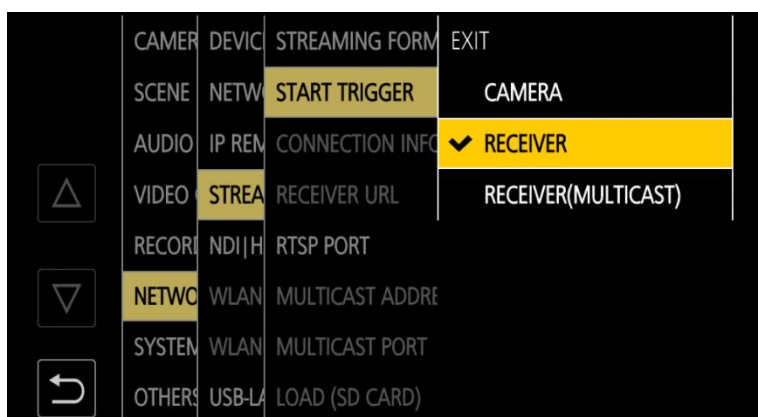
1. Open the “NETWORK -> NETWORK FUNC” menu on the camera and set it to “STREAMING”.



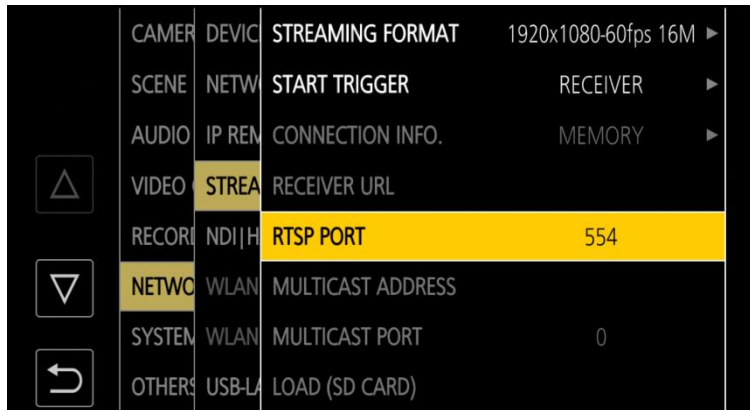
2. Open the “NETWORK -> STREAMING -> STREAMING FORMAT” menu. And set the resolution within the range that satisfies the conditions described in “H.264 setting conditions(CX Camera Recorder)” in this section.



3. Open the “NETWORK -> STREAMING -> START TRIGGER” menu and set it to “RECEIVER”.



4. (CX10 series only) Open the “NETWORK -> STREAMING -> RTSP PORT” menu and set value to 554.



The screenshot shows a menu interface with a dark background and white text. On the left side, there are four navigation icons: an upward arrow, a downward arrow, and a curved arrow pointing right, each inside a square box. The menu is organized into columns. The first column contains category labels: CAMER, SCENE, AUDIO, VIDEO, RECORD, NETWORK, SYSTEM, and OTHERS. The second column contains sub-category labels: DEVIC, NETW, IP REN, STREA, NDI|H, WLAN, WLAN, and USB-L. The third column contains specific settings: STREAMING FORMAT, START TRIGGER, CONNECTION INFO., RECEIVER URL, RTSP PORT, MULTICAST ADDRESS, MULTICAST PORT, and LOAD (SD CARD). The fourth column contains values: 1920x1080-60fps 16M, RECEIVER, MEMORY, (blank), 554, (blank), 0, and (blank). The 'RTSP PORT' row is highlighted in yellow, and the 'STREA' sub-category is also highlighted in yellow.

CAMER	DEVIC	STREAMING FORMAT	1920x1080-60fps 16M ▶
SCENE	NETW	START TRIGGER	RECEIVER ▶
AUDIO	IP REN	CONNECTION INFO.	MEMORY ▶
VIDEO	STREA	RECEIVER URL	
RECORD	NDI H	RTSP PORT	554
NETWORK	WLAN	MULTICAST ADDRESS	
SYSTEM	WLAN	MULTICAST PORT	0
OTHERS	USB-L	LOAD (SD CARD)	

5. With this, the setting is complete.

Description of functions

Starting and closing the software

Starting the software

The software will automatically start after you login to Windows.

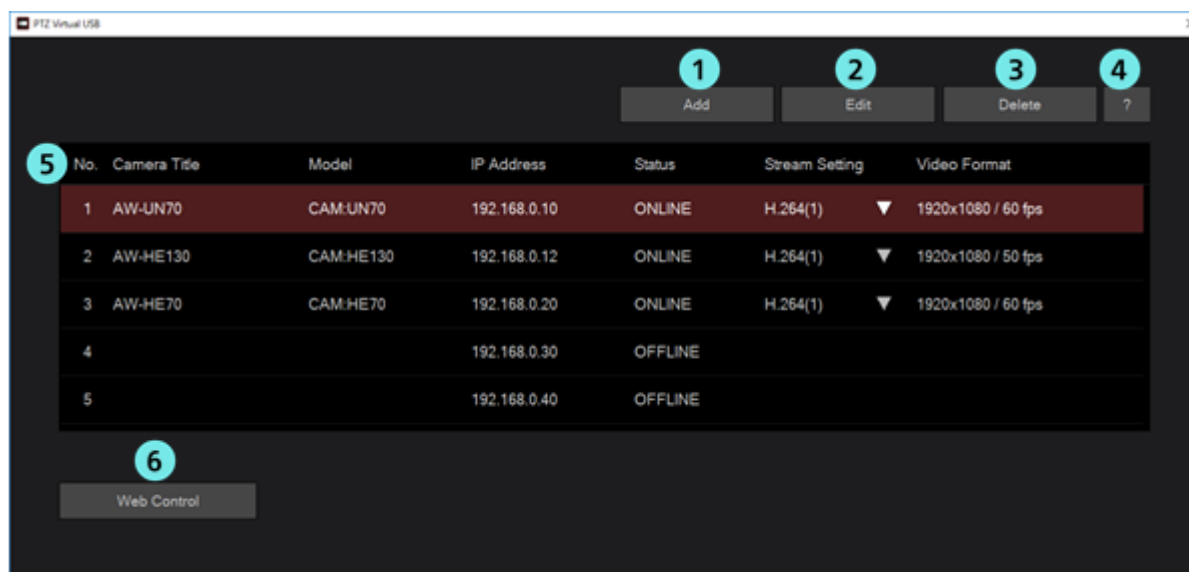
Closing the software

To close this software, click the X button at the top right of the window.

A confirmation screen for closing the software will be displayed. Select "Yes" to close this software.

Description of the Main screen

This section explains each element of the Main screen of this software.



① Register Camera button

You can newly register a Network Camera and add it to the list.

② Edit Camera button

You can edit the settings of the Network Camera selected from the list.

③ Delete Camera button

You can delete the Network Camera selected from the list.

④ Help button

It will show the help file (this document) of the software.

⑤ Camera list

It will show the list of Network Cameras that are registered.

The following details will appear in each column.

No.: Control number of the camera.

Camera Title: Title set on the Web screen of the camera. And this will be “CX Camera Series” with the CX Camera Recorder.

Model: Type and model number of the camera.

IP Address: IP address of the camera.

Status: Status of the camera. For the details of each state, please refer to “Status display of camera” given below.

Stream Setting: Number of the selected H.264 stream.

By clicking the ▼ button, you can select H.264 stream to be used.

Video Format: Resolution and frame rate of the selected H.264 stream.

⑥ Display camera web screen button

Displays the web screen of the Network Camera selected from the list in the web browser.

On the Web screen displayed from this button, some functions such as file download may not operate normally.

Status display of camera

This section explains about the status display of camera that appears in the Main screen. List of status that appears and respective state are as follows:

- **ONLINE**

Network Camera is recognized, and video and audio can be received normally.

- **OFFLINE**

Network Camera is not recognized. Either of the following could be the root cause.

- Power supply of the Network Camera is switched off, or it is in the standby mode
- PC and the Network Camera are not connected with the network cable

Check that the power supply of the Network Camera is ON, and PC and the Network Camera are correctly connected with the network cable.

- **UNSUPPORT**

Although the Network Camera is recognized, settings of the Network Camera are not supported by the software. Therefore, it cannot be used.

Set H.264 stream according to the procedure of “Initial settings of the camera” given in this document.

- **DISCONNECTED**

Connection of the Network Camera is disconnected.

Check that the network connection between the PC and the Network Camera is correctly done.

- **AUTH FAIL**

User authentication of the network camera is failed.

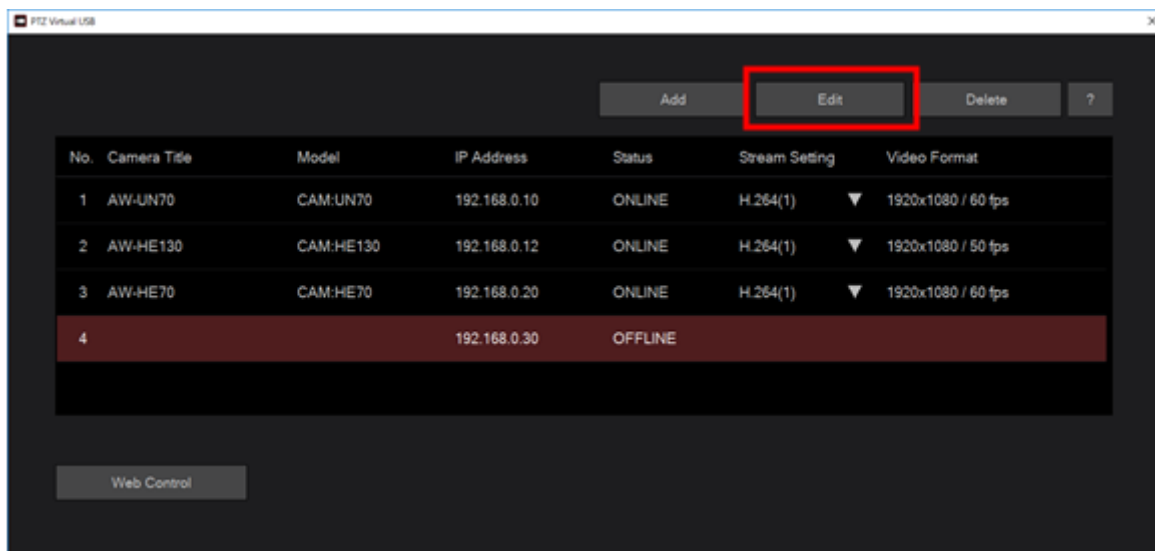
Check that the account and password you entered when registering the camera are correct.

Changing network settings(only for PTZ camera, POVCAM)

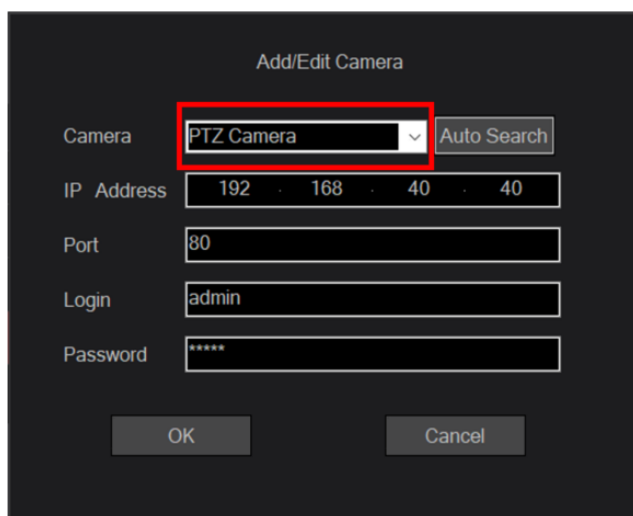
You can change the network settings of the Network Camera from this software.

Make settings as per the following steps.

1. Click the Edit button in the Main screen.



2. Select “PTZ Camera” on the Camera section on the Add/Edit Camera screen that appeared.



3. Click the “Auto Search” button on the Add/Edit Camera screen that appeared.

Add/Edit Camera

Camera Auto Search

IP Address

Port

Login

Password

4. The Auto Search screen will appear, and the Network Cameras present on the network will appear in the list.

Auto Search

No.	Client MAC	IPv4 Address	Port	Name	Model	IP Address Dup.
1	20-C6-EB-EF-03-10	192.168.0.20	80	AW-HE70	CAM:HE70	
2	20-C6-EB-EF-41-06	192.168.0.10	80	AW-UN70	CAM:UN70	
3	00-80-45-0D-00-02	192.168.0.12	80	AW-HE130	CAM:HE130	

5. From the list of Network Cameras, select the camera whose settings you want to change, and then click the Network Setting button.
6. The Network Settings screen will open. Changing the respective parameter and clicking the OK button will change the network settings of the camera.

Network Setting

① Network Settings ☒ StaticIP ☐ DHCP

② Port No.

③ IPv4 Address . . .

④ Subnet Mask . . .

⑤ Default Gateway . . .

⑥ DNS ☐ Auto ☒ Manual

⑦ Primary DNS . . .

⑧ Secondary DNS . . .

⑨ OK ⑩ Cancel

① Network Settings

Select the setting method of IP address.

Static IP: Setting will be done with static IP.

DHCP: Setting will be done with DHCP.

② Port No.

It sets the port number to be used by the camera.

③ IPv4 Address

It sets the IP address of the camera.

It can be only set when Static IP is selected in Network Settings.

④ Subnet Mask

It sets the subnet mask of the camera.

It can be only set when Static IP is selected in Network Settings.

⑤ Default Gateway

It sets the gateway of the camera.

It can be only set when Static IP is selected in Network Settings.

⑥ DNS

Select the setting method of DNS server.

Auto: It automatically sets the DNS server.

Manual: You can directly specify the address of the DNS server.

⑦ Primary DNS

It sets the address of primary DNS.

It can be only set when Manual is selected in DNS.

⑧ **Secondary DNS**

It sets the address of secondary DNS.

It can be only set when Manual is selected in DNS.

⑨ **OK button**

It enables the settings and closes the screen.

⑩ **Cancel button**

It cancels the settings and closes the screen.

<Notes>

- For simultaneously using the EasyIpSetup software and this software, you cannot make network settings from this software.

Flow until using the virtual USB camera

This section explains the flow from registering the Network Camera / Camera Recorder with this software until using it as a virtual USB camera in the Windows applications.

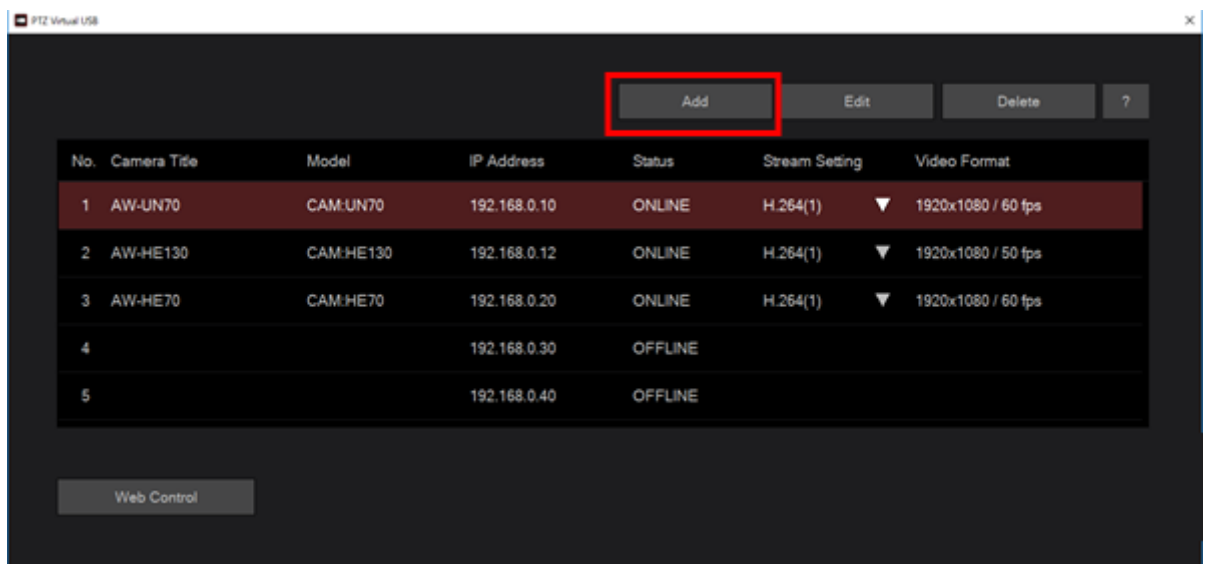
The broad flow is given below:

1. Register the Network Camera
2. Set the H.264 stream to be used
3. Use the virtual USB camera device in Windows application

1. Register the Network Camera

When using this software for the first time, register the Network Camera as per the following steps.

1. Click the Add button on the Main screen of the software.



2. The Add/Edit Camera screen will appear. Enter the information of each parameter.

Camera: Select camera type

PTZ Camera: in the case of PTZ camera or POVCAM.

CX Camera Series: in the case of CX Camera Recorder.

IP Address: IP address of the Network Camera

Port: Port number of the Network Camera(Only for PTZ camera or POVCAM)

Login: Account of the Network Camera(Only for PTZ camera or POVCAM)

Password: Password of the Network Camera(Only for PTZ camera or POVCAM)

Resolution: Image resolution which set on the camera(Only for CX Camera)

As for the input method, you can manually enter the parameters or you can search the Network Camera and automatically enter the parameters.

- When manually entering

Move to the box of each parameter, and enter a value.

- When automatically entering

Clicking the Auto Search button will show the list of the Network Cameras present on the network. Selecting any one camera from the list and closing the window with the OK button will automatically populate some of the parameters.

3. Click the OK button and close the Add/Edit Camera screen.
4. A new network camera will be added to the camera list on the Main screen.

<Notes>

When adding a network camera, installation confirmation screen of "Panasonic AV Stream Camera" device and "Panasonic Virtual Microphone" device may be displayed. In that case please allow installation.

5. Few seconds after the Network Camera is added, the Status display on the Main screen will change according to the state of the camera.

When the Network Camera is recognized and when it can be used in the software program, the Status display will become "ONLINE". Therefore, check that the Status display becomes "ONLINE". When the Status display is not "ONLINE", refer to "Status display of camera" in this manual and check the network connection and the settings of the Network

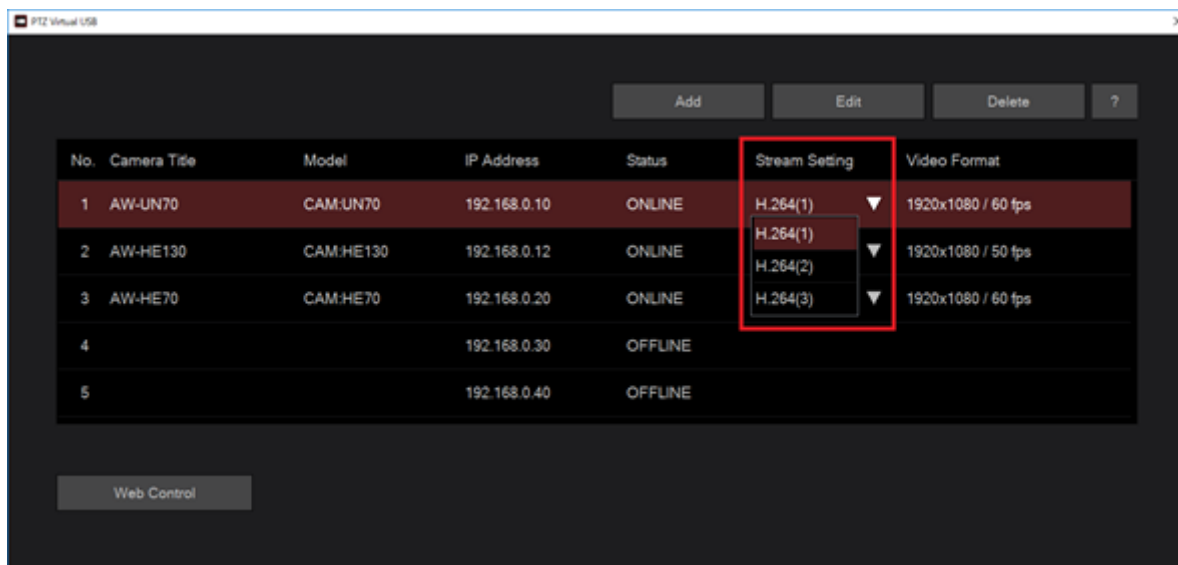
Camera.

6. Repeat steps 1 through 5 above for the number of Network Cameras that are used.

2. Set the H.264 stream to be used

Network Cameras who status is “ONLINE” can receive the H.264 stream in this software. Network Cameras can normally distribute multiple H.264 streams. Therefore, if required, with the following procedure, set the H.264 stream to be used by this software.

1. From the camera list on the Main screen, select the Network Camera to be set.
2. Click the ▾ part in the Stream Setting column will show a list of H.264 streams that can be set. Then, select the H.264 stream to be used.



3. If the settings are reflected, the display in the Video Format column will change.

<Notes>

- FPS information is not showed in the case of CX camera Recorder.

3. Use the virtual USB camera device

Registering a Network Camera in this software will create a virtual USB camera device on Windows corresponding to the registered Network Camera. Virtual USB camera device is made of the virtual video device meant for fetching video and the virtual audio device meant for fetching audio.

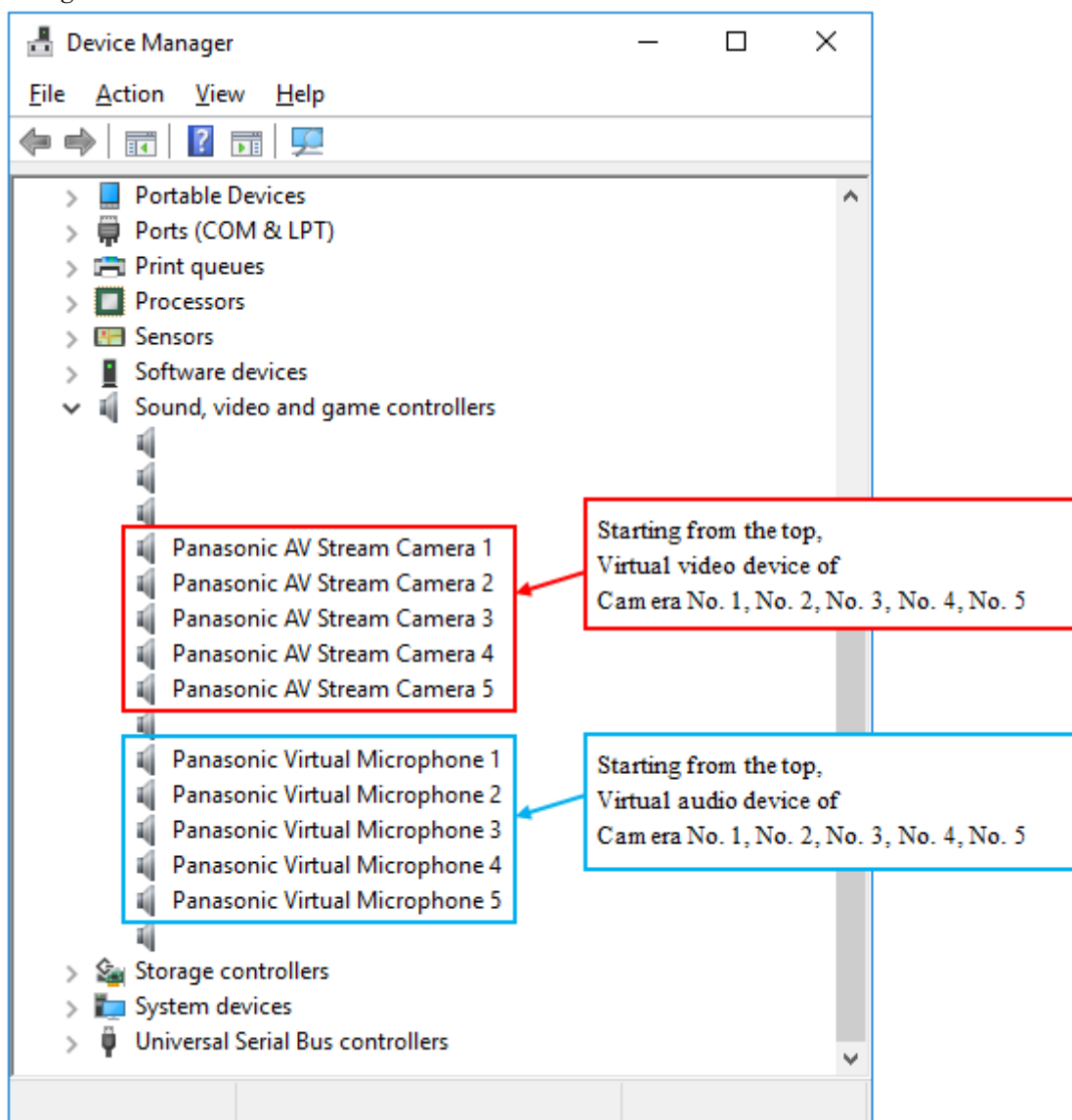
Name of the virtual USB camera device created will be as follows. In *, a numerical value corresponding to the Camera No. in the camera list on the Main screen will be entered.

Virtual video device: Panasonic AV Stream Camera *

Virtual audio device: Panasonic Virtual Microphone *

If the virtual USB device is created correctly, below “Sound, video, and game controller” in the Device Manager, virtual video device and virtual audio device will appear.

The following is an example of how Device Manager will appear when five Network Cameras are registered.



For using the video of the Network Camera in the Windows application corresponding to the USB camera, selecting Panasonic AV Stream Camera * in video device settings of the Windows application will output the video of Network Camera in the Windows application, which can be used in the Windows application.

Similarly, for using the audio of the Network Camera in the Windows application corresponding to the USB camera, selecting Panasonic Virtual Microphone * in audio device settings of the Windows application will output the audio of Network Camera in the Windows application, which can be used in the Windows application.

<Notes>

- It may take about a few seconds until the video actually appears after selecting Panasonic AV Stream Camera * in video device settings.
- When multiple virtual USB devices are used simultaneously, symptoms such as frame dropping of video may occur depending on the performance of the PC. When such symptoms have occurred, reduce the number of virtual USB devices that simultaneously used.
- When changing the H.264 stream setting on the network camera, it takes about 5 seconds for the setting to be reflected in this software. After changing the H.264 stream setting, please allow at least 5 seconds before using the network camera with the Windows application.

Appendix

Troubleshooting

This section explains the root cause of symptoms that occur when the software is running and how to address these symptoms.

I registered a Network Camera, but its Status is OFFLINE.

Cause 1:

- Connection between the PC and the Network Camera is not correct.

Solution 1:

- Check that the PC and the Network Camera are connected correctly with the network cable.

Cause 2:

- Power supply of the Network Camera is switched off, or it is in the standby mode

Solution 2:

- Check that the power supply of the Network Camera is turned on.

I registered a Network Camera, but its Status is UNSUPPORT.

Cause1:

- H.264 stream setting of the Network Camera is not supported by the software.

Solution1:

- Refer to “Initial settings of the camera” in this manual and set H.264 stream of the Network Camera.
- In Stream Setting on the Main screen, select another H.264 stream except the H.264 stream that is selected at present.

Cause 2:

- The account or password entered when registering the network camera is incorrect.

Solution 2:

- Check that the account or password is correct.

When displaying the video of the Network Camera in the Windows application, symptoms such as frame dropping and image distorting occurs.

Cause:

- Decoding process of the video is not completing on time because of inadequate CPU performance of the PC, etc.

Solution:

- Check the behavior of the software after changing the PC to another PC having high performance CPU.
- If you are using multiple virtual USB devices simultaneously, reduce the number of virtual USB devices used simultaneously.
- Reduce the resolution / frame rate / bit rate of the H.264 stream of the network camera.

I was trying to output the audio of Network Camera in the Windows application; however, I didn't get any audio.

Cause:

- Audio output setting of the Network Camera is not enabled.

Solution:

- Check that the audio output setting is enabled on the Web screen of the Network Camera. For details, refer to the instructions manual of the respective Network Camera.

Image from CX Camera Rrcorder is "Error".

Cause:

- Image resolution on the camera side and on this application is not match.

Solution:

- Check the resolution settings on both side and match them for the same value.

Uninstallation Procedure

1. Select "Program and functions" in the Control Panel of Windows.
2. Selecting "Panasonic PTZVirtualUsbDriver" from the list of programs and clicking "Uninstall" will show the confirmation screen.
3. Clicking "Yes" on the confirmation screen will uninstall the software.

Software Information Relating to This Product

This product includes the following open source software.

FFmpeg Ver. 4.1.3

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Version 2.1, February 1999

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- source code

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