Instruction Manual

Rev. 1.3   2024/2/27

Rooftop type 360° Panorama Camera

PLC220-12M

A application software for high-resolution fisheye images, dewarping shooting, and playback

PLCViewer

Contents

1. General

PLC Viewer is a Windows software that allows you to view the live video through the PLC220-12M rooftop type 360-degree panorama camera. It can shoot the omnidirection images, dewarp the fisheye image, record the live view, save still images, and playback recorded videos/still images with dewarping.

2. Constitution

PLCViewer.exe ⋯ An execution file only.

3. Install and uninstall

(1) Operational Environment of the PC

OS: Windows 8.1、10 and 11

PC: to be performed with the above OS

(2) Installation

Copy PLCViewer.exe to any folder on your PC.

Create a shortcut of PLCViewer.exe on the desktop if necessary.
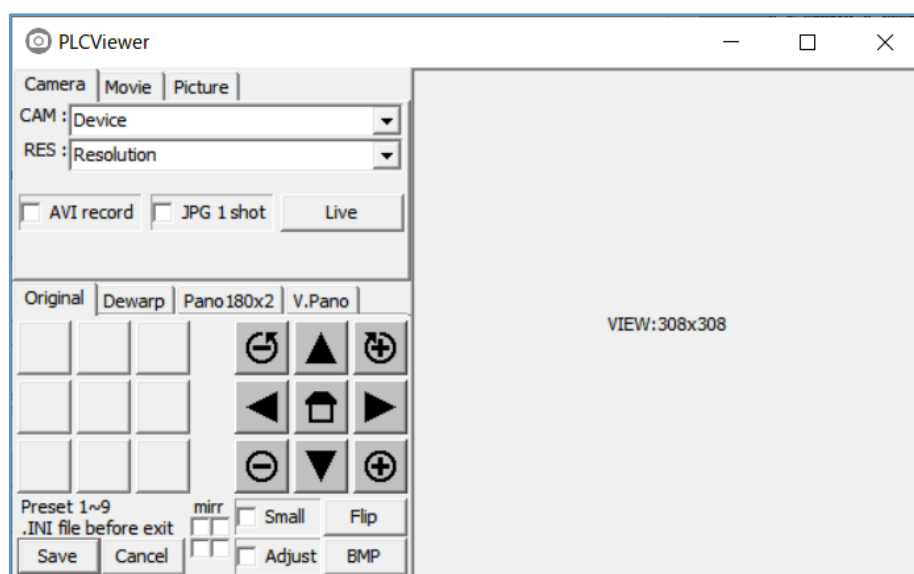
(3) Uninstallation

Delete PLCViewer.exe, PLCViewer.INI, and the shortcut from the PC.

4. Start and Exit

(1) Start PLCViewer.exe

Double-click PLCViewer.exe or its shortcut icon to launch the PLCViewer.

The initial screen will open as shown below. If the setting information (PLCViewer.INI) is saved, it will be opened with that setting information after the second startup.

(2) Exit PLCViewer

There are the following methods to exit the PLCViewer.

When you exit the PLCViewer, all playback and recording operations that are being performed at that time will also be terminated.

Method 1: Click [X] in the upper right to exit the PLCViewer. The setting information at this time is not newly saved.

Method 2: If you have changed settings such as the display mode and want to save the settings before exiting, click [Save] at the bottom left of the screen. Save (overwrite) the setting information and exit the PLCViewer.

Method 3: If you do not want to save the changed settings, click [Cancel] at the bottom left. The PLCViewer exits without newly saving the changed setting information. It works the same as Method 1.
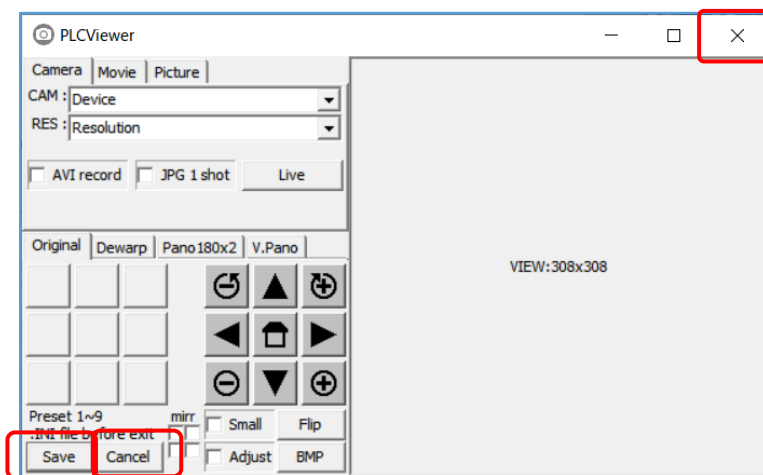
Method 4: Click the PLCViewer icon on the upper left of the screen and select [**Close**] from the displayed menu. It works the same as Method 1.
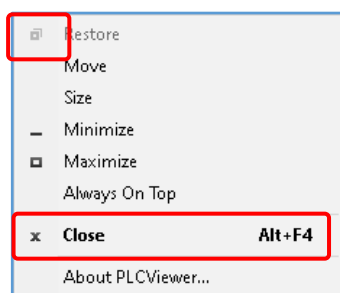
Note :

・ The settings to be saved are camera information, resolution, and preset button memory contents.

・ It is recorded as PLCViewer.INI in the same folder as PLCViewer.exe.

・ PLCViewer.INI will be overwritten each time [Save] is clicked.

5. Names and functions of Operation Panel

5.1. [Camera] screen

When you start PLCViewer, the following operation panel will be displayed.

With the camera tab clicked, the following screen for shooting live video will be displayed.

The names and functions of each part are shown in the table below.

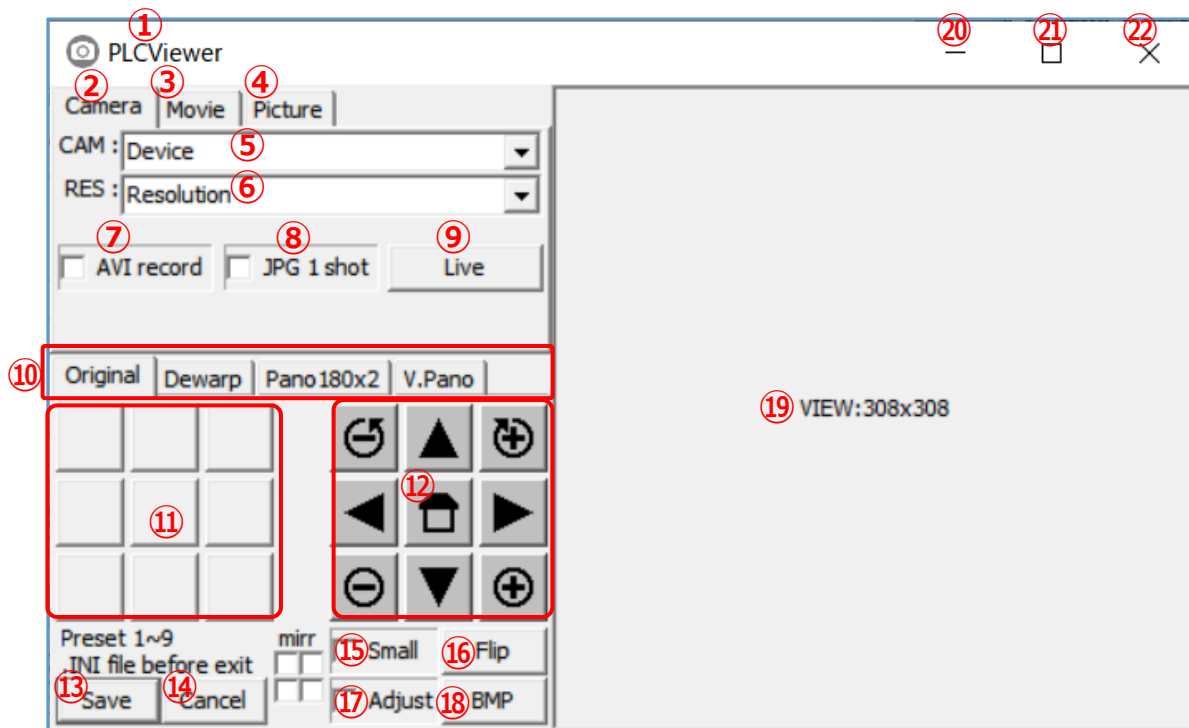| No.	Label	Name	Function
①	PLCViewer	Title	Name of the application. Click to open the pop-up menu.
②	Camera	Camera tab	Displays the operation panel screen during live video shooting.
③	Movie	Video playback tab	Displays the operation panel screen during playback of recorded videos.
④	Picture	Still image playback tab	Displays the operation panel screen during playback of recorded still images.
⑤	CAM : Device	Device selection area	Click ▼ on the right to display the USB cameras connected to the PC in the pull-down menu, so specify the camera to capture the video. Please select PLC220-12M.
⑥	RES : Resolution	Resolution setting area	Click ▼ on the right to display the resolutions of the selected camera in the pull-down menu, so specify the resolution. This is available after selecting the camera.
⑦	□AVI record	Video record button	If you click the button, ☑ will be entered and the video will be recorded during video shooting. During recording, "REC" is displayed to the right of ④.
⑧	□JPG 1 shot	Still image record button	If you click the button, ☑ will be entered, the non-dewarped fisheye image right after clicking will be saved as a still image, and then the check will be removed to return to □.

| No.	Label	Name	Function
⑨	Live	Shoot button	Click the button to display live video. The button changes to [Stop] while shooting. Clicking [Stop] stops shooting and the button returns to [Live].
⑩	Original／ Dewarp／ Pano180x2／ V.Pano	Display mode buttons	**Fisheye**: a fisheye 360° view is displayed. **Dewarp** : a dewarped partial image is displayed **Pano 180x2** : Divides the entire circumference into two halves by 180° and displays them side by side. **V.Pano** : 220° full wide panorama view with dewarping.
⑪	Preset 1～9	Pre-set buttons	Each of nine blocks can memorize the video information (expansion processing), and clicking of each can reproduce the setting information.
⑫	Image processing buttons		
	[Home icon]	Home button	If you click this while displaying in a dewarp mode, it will return to the initial state of each mode.
	[Zoom − +icons]	Zoom buttons	You can zoom in/out the displayed image. A long press will change the magnification continuously. The operation differs depending on the display mode. ・**Fisheye** : The displayed image is enlarged/reduced. ・**Dewarp** : The displayed image is enlarged/reduced. ・**Pano 180x2** : Enlarges/reduces the displayed screen vertically. ・**V.Pano** : Enlarges/reduces the displayed screen vertically.
	[Rotate icons]	Rotate buttons	You can rotate the displayed image. The operation differs depending on the display mode. ・**Fisheye** : Rotate around the center of the displayed screen. ・**Dewarp** : Rotate around the center of the displayed screen. ・**Pano 180x2** : Zoom in/out horizontally on the displayed screen. ・**V.Pano** : Zoom in/out horizontally on the displayed screen.
	[◀ ▶ ▲ ▼ icons]	Arrow keys	You can move the viewpoint of the displayed image. The operation differs depending on the display mode. ・**Fisheye** : Move the viewpoint in the direction of the arrow button. ・**Dewarp**: Move the viewpoint in the direction of the arrow button. ・**Pano 180x2** : Move the viewpoint in the direction of the arrow button. But, ▲▼buttons are available only when the image is expanded by zoom-in. ・**V.Pano** : the viewpoint moves in the panning direction with ◀ ▶ buttons and in the tilting direction with ▲▼ buttons.
⑬	Save	Setting save button	Click to update and save the camera information, resolution, preset button memory contents to the PLCViewer.INI file and exit PLCViewer.
⑭	Cancel	Cancel button	Click to exit PLCViewer without updating and saving camera information, resolution, and preset button memory contents to the PLCViewer.INI.
⑮	□Small	Sub-screen button	If you click it, a ☑ will be entered and a whole fisheye image will be displayed as a sub-screen on the upper left of the screen. If you click the button again, the sub-screen disappears, the check is removed, and the box returns to □.

No.	Label	Name	Function
⑯	Flip Floor/Ceil	Flip button	**Fisheye／V.Pano** : Click [Flip] to flip the displayed image horizontally. **Dewarp／Pano 180x2** : The displayed image is flipped vertically as if the camera faces upward or downward. View becomes comfortable to see according to the installation posture of the camera. **Note:** It is not flipped in the ⑰ adjustment mode.
⑰	Adjust	Adjust mode button	Click to get into the fine-tuning screen of the dewarping processing range. Normally no adjustment is necessary.
⑱	BMP	Still image record button (BMP)	Click the button to save the image displayed on the image display screen as a still image.（BMP format）
⑲	VIEW ···x···	Display	An area that displays live or playback video from the camera. ···x··· represents the size of the display area.
⑳	―	Minimize button	Minimize the appearance of PLCViewer. It's running in the background.
㉑	□	Maximize button	Maximize the appearance of PLCViewer and display it in full screen. You can also double-click around the letters PLCViewer by TSP to display it in full screen.
㉒	X	Exit button	Click to exit PLCViewer without updating and saving camera information, resolution, and preset button memory contents to the PLCViewer.INI.

5.1.1. Display Live View

(1) Procedure to display a live view

① Click ▼ on the right of the device selection area and select the camera to shoot from the pull-down menu.
Select "PLC220-12M" as the 360-degree camera for the car.
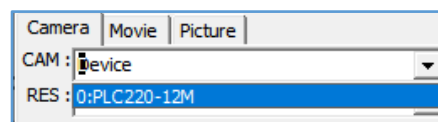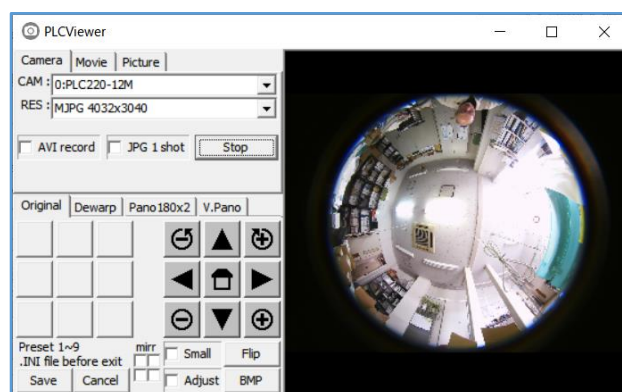
② Click the ▼ on the right of the resolution setting area and select the resolution from the pull-down menu. In the image below, MJPEG 4032x3040 is selected.
Note: The resolution will be displayed after selecting the device.
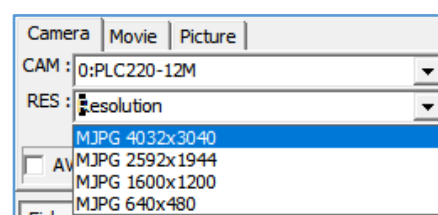
③ When you click [Live] (⑨), the live image will be displayed on the display (⑲) as shown below, and the button will change to [Stop].

(2) Dewarping of Live View

The displayed live image can be panned, tilted, zoomed, rolled, expanded, sub-screen displayed, image reversed, preset, etc. by operating each of ⑩⑪⑫⑮⑯ buttons while "shooting" or "pausing".

※ **Panning, tilting, zooming, and rolling can be performed with a mouse on the video screen for better operability.**

Partial dewarp while shooting

Pre-setting while shooting

Indicate the sub-screen while shooting

Dewarp in 180°x2 panoramas while shooting

Please understand
Inset pictures used in this book may be from older versions of the screens for parts that are not directly related to the explanation.

Scroll while shooting
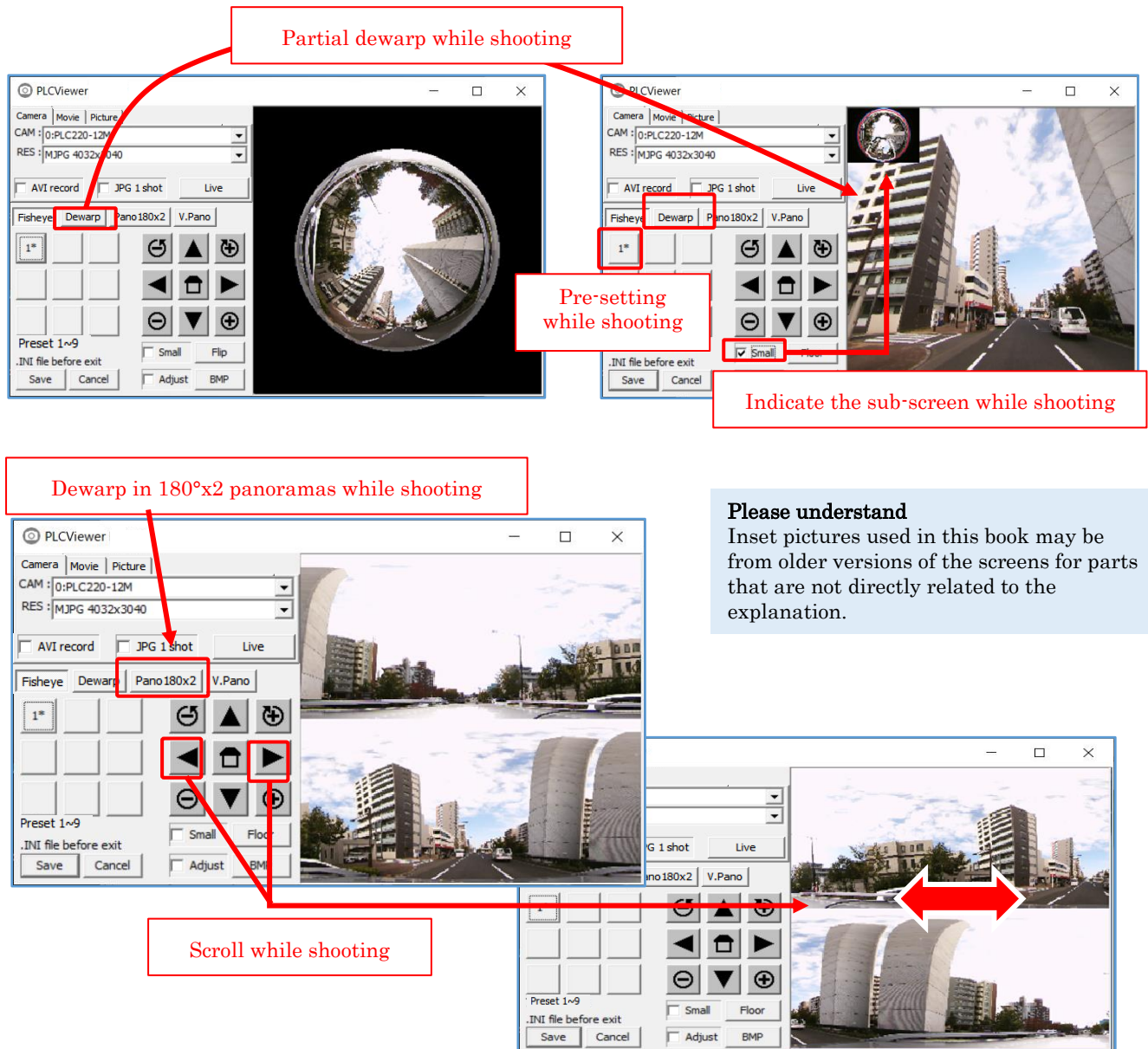
※ **About the moving direction of the image using the arrow keys** ◀ ▶ ▲ ▼

You can go to see the video in the direction the arrow key is aiming. The image itself moves in the opposite direction of the arrow.

Ex : With the arrow ▶ , the image moves to left, and the image in the right becomes in view.

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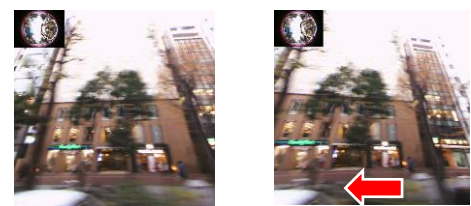
(3) Sub-screen

Click [□Small] (⑮) to enter ☑, and the fisheye image will be displayed as a sub-screen on the upper left of the screen. If you click the button again, the sub- screen disappears, the check is removed, and the box returns to □.

【Sub-screen】

The part surrounded by the white frame is dewarped and expanded in the full of display area..

(4) Vertical Panorama

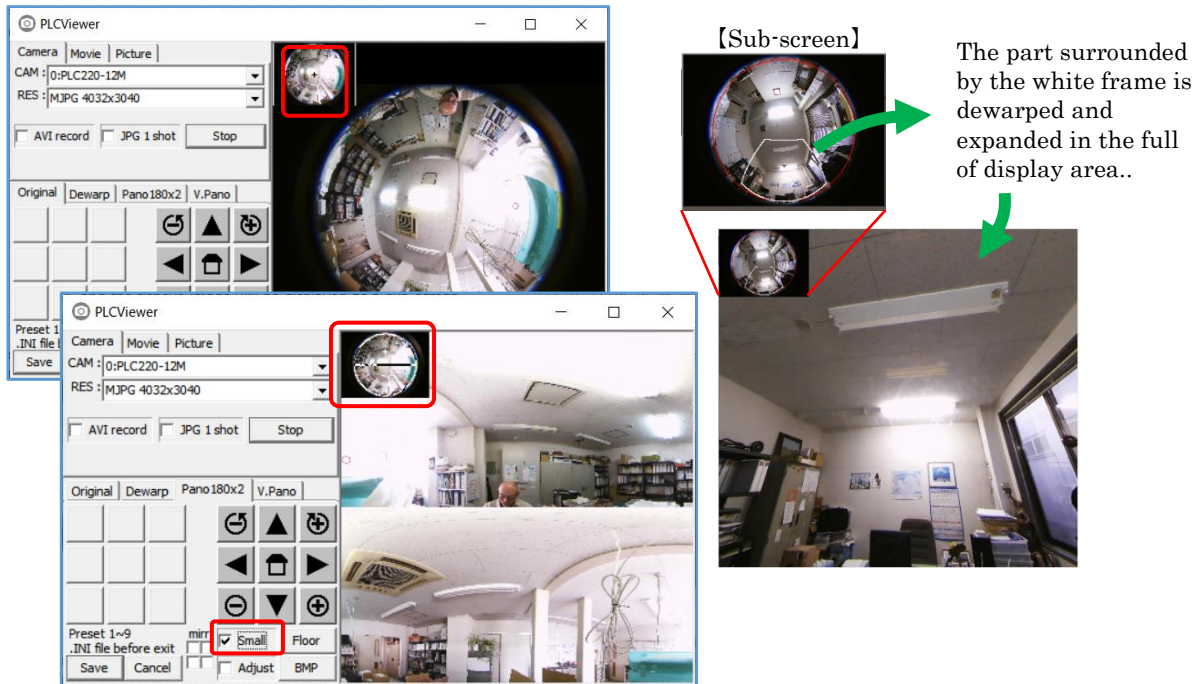For example, this mode displays a 220° panoramic view of the top of the vehicle while driving through a tunnel.

220°

A   B

The image is cut and displayed in an arch shape that crosses directly above the vehicle.

The ceiling area is expanded flat and photographed as a continuous rectangular image.

B   A
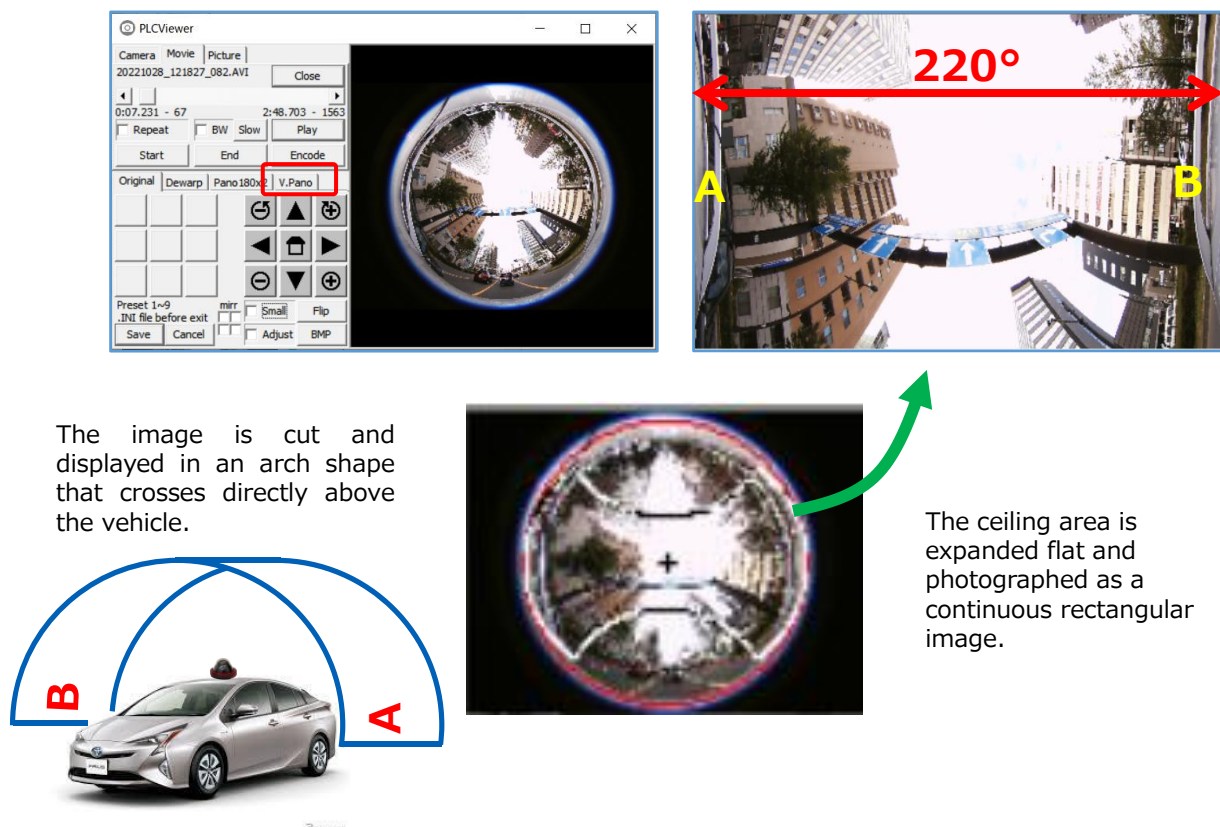
(5) "Partial expansion + 360° panorama" display

If you click the [Shift] key + [Home] in the Dewarp mode during live video shooting or video playback, you can display a partially expanded video and a 360° panorama video at the same time. By repeating this operation, you can turn ON/OFF the 360° panorama image.
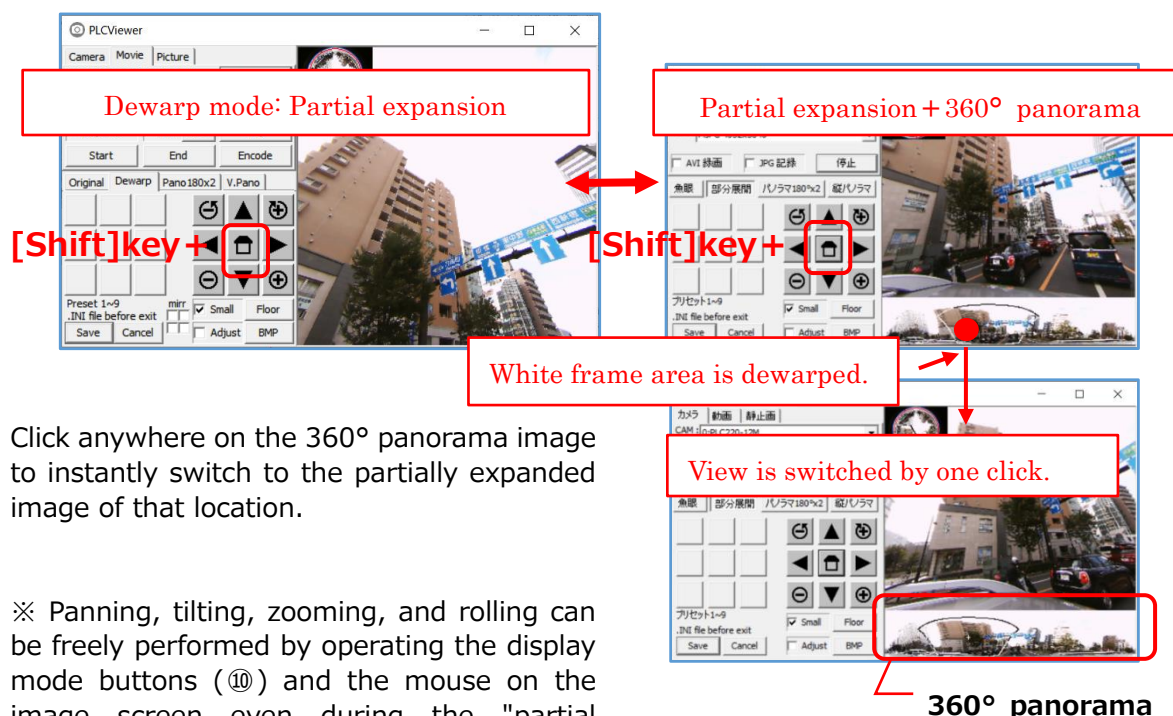

Dewarp mode: Partial expansion

Partial expansion＋360° panorama

[Shift]key＋

[Shift]key＋

White frame area is dewarped.

View is switched by one click.
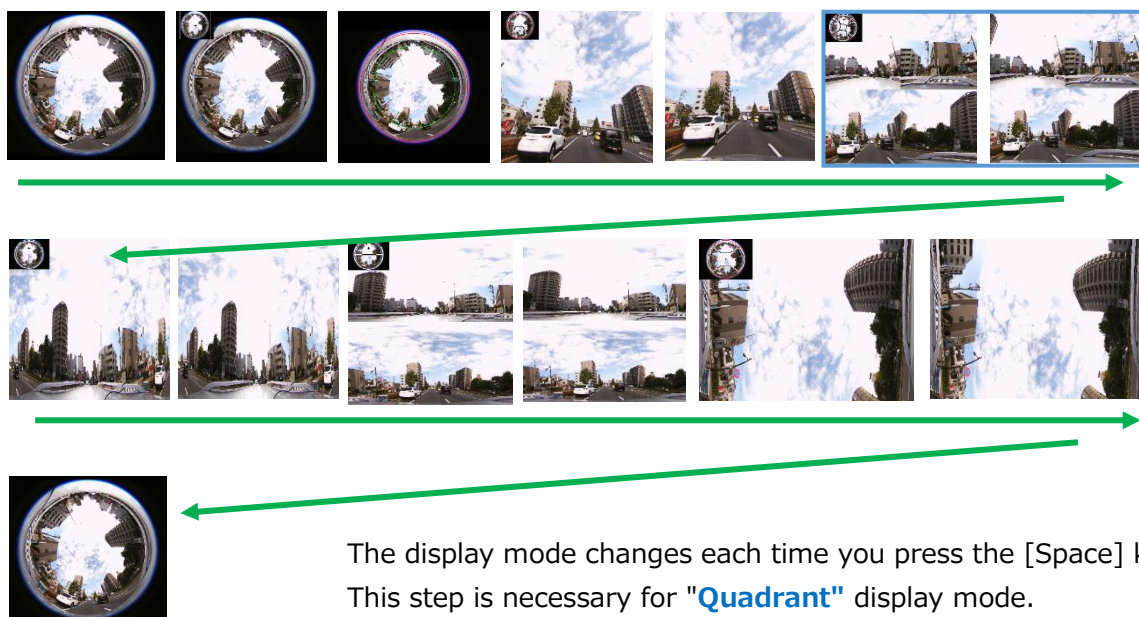
360° panorama

Click anywhere on the 360° panorama image to instantly switch to the partially expanded image of that location.

※ Panning, tilting, zooming, and rolling can be freely performed by operating the display mode buttons (⑩) and the mouse on the image screen even during the "partial expansion + 360° panorama" display.

(6) Switching the display mode

In addition to switching using **Display mode button⑩**, you can also switch sequentially using the [Space] key.

Once placing the mouse pointer on **Display (⑲)**, click the [Space] key on the keyboard to change the dewarp mode to: Original (fisheye) image → Original image + Sub-screen → Adjustment screen → Partial expansion + Sub- screen → Partial expansion → **Quadrant + Sub-screen** → **Quadrant** → 360° panorama + Sub-screen → 360° panorama → 180° x 2 panorama + Sub-screen → 180° panorama → Vertical panorama + Sub-screen → Vertical panorama → Original image.

The display mode changes each time you press the [Space] key.

This step is necessary for "**Quadrant**" display mode.
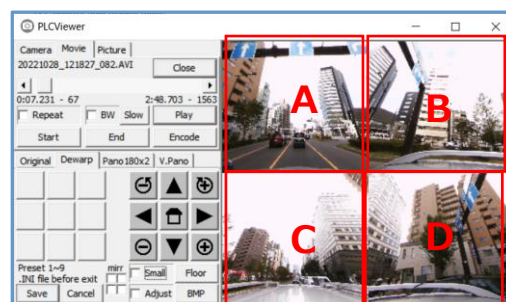
(7) Quadrant mode

The Quadrant mode is prepared for special applications such as displaying the front, rear, right, and left images of the vehicle on separate screens.

Switch to Quadrant mode by referring to the process in the section **(6) Switching the display mode** above.

The positional relationship of the divided images with respect to the original fisheye image is represented by A, B, C, and D as shown in the figure below.


【enlarged image of Sub-screen】　　　　　【position of quadrant images】

※ The size of each area (=enlargement/reduction of the image) of A, B, C, and D can be changed with ⊕⊖, but they all change at the same time and cannot be adjusted individually. Individual placement changes are also not possible.

※ The arrangement of A, B, C, and D can be changed using the left and right arrow keys ◄ ► of the ⑫ image processing buttons. The positional relationship of A, B, C, and D remains unchanged.
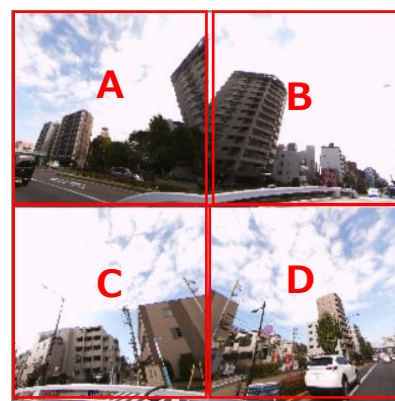
Use the arrow keys ◄ ► to change the positions of A, B, C, and D relative to the whole, and change the images displayed in sections A, B, C, and D on the ⑲ Display.
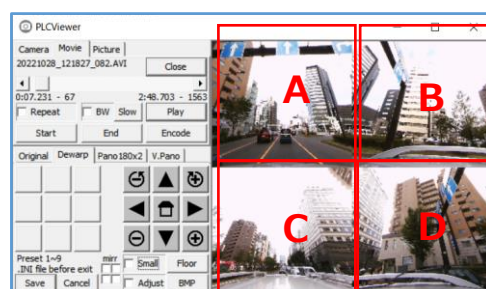
Convenient ways to use Quadrant mode

Tips

Quadrant mode is useful when you want to display the front, rear, right, and left images of the vehicle on separate screens.

It is a good idea to remember which image is displayed in which position of A, B, C, and D. In the example below, A: Front, B: Right, C: Back, D: Left.
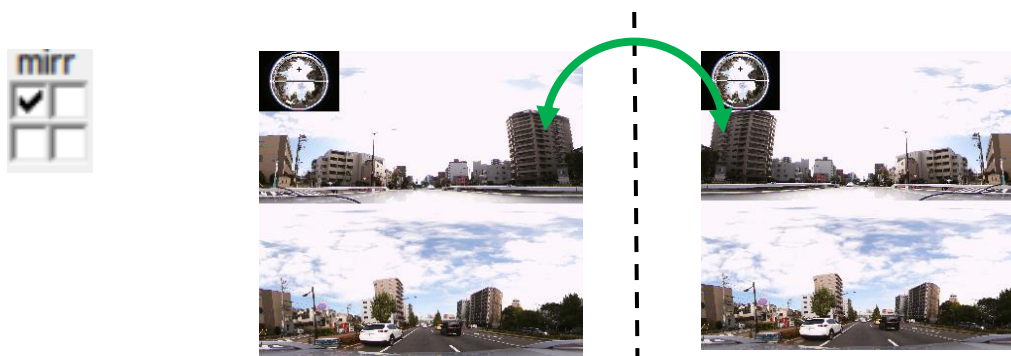
(8) Mirroring mode

For special purposes, a mirror inversion display function is available.

There are 4 mirror buttons, but their functions differ depending on the display mode. However, there are only a limited number of situations in which mirror inversion is useful, so we will only discuss those cases.
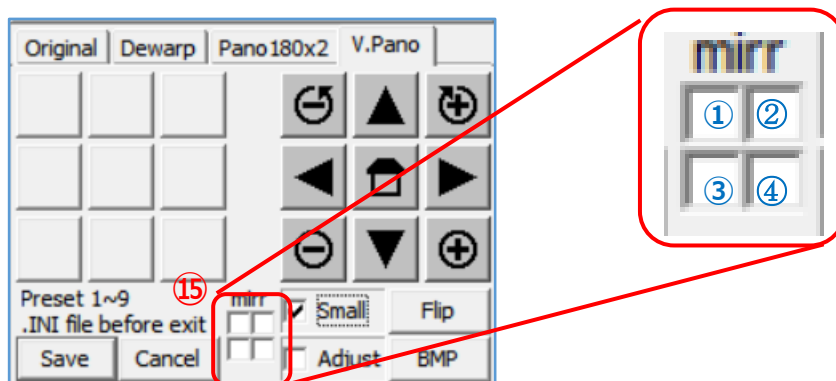
◆ **180°x 2 panorama mode :** (You can display the rear image as if it were reflected in a rearview mirror.) ① square is valid for the upper row.

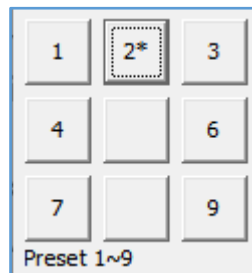③ square is valid for the lower row.

The mirroring function has no meaning outside of this state. In particular, in Quadrant mode, it is possible to mirror in the squares corresponding to each split screen, but please avoid using the mirroring function as it complicates the positional relationship of the images.

(9) Preset

You can register up to 9 patterns of image display information (dewarp mode, pan/tilt/zoom/roll values, sub-screen display, image flip status) as preset values. The memorized image display information can be reproduced at the push of a button.

1) Registering Preset Values and applying Preset Values
  ① Set the screen display of the camera to the display screen (⑩⑫⑮⑯) that you want to register as a preset.
  ② Click a button where you want to register the preset value.
    A preset number will appear on it.
  ③ If you want to register multiple preset values, repeat ① and ②.
  ④ After registration, just click the registered preset number and the recorded preset value will be immediately reflected on the video screen.
    An asterisk (*) is displayed next to the preset number currently in use.
    In the example on the right, preset information is registered to buttons 1, 2, 3, 4, 6, 7, and 9, and images are displayed with the settings registered in 2 marked with an asterisk (*).

2) Delete the preset
  Double-click the number button that stores the preset value you want to delete.
  Then the preset value is deleted and the number display disappears.

Note :
  The recorded preset values are saved in the PLCViewer when [Save] (⑬) is clicked, and the PLCViewer exits.
 However, if you exit the PLCViewer without doing this, the newly registered preset values will not be saved in the PLCViewer, so please register again if necessary. (See (6) below)

(10) Save the setting information

Image display information (camera information, resolution, preset button information) can be saved.

When you click [Save] (⑬) , the image display information at that time will be saved in the PLCViewer.INI file and the PLCViewer will exit.
The INI file is created and saved in the same folder as the PLCViewer.
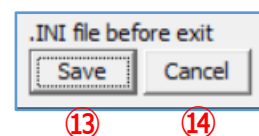
If you click [Cancel] (⑭), the PLCViewer will exit without saving the image display information at that time.

5.1.2. Recording live videos and saving still images

The PLCViewer can record live video and save still images.

(1) Video Recording

If [AVI record] (⑤) is clicked and checked ☑ during live video display (i.e. shooting), the video will be recorded. During recording, "REC" is displayed on the right side of the [Picture] tab（④）.

To end the recording, click [AVI record]（⑤）again (the check is removed) or click [Stop]（⑨）to stop the video display.
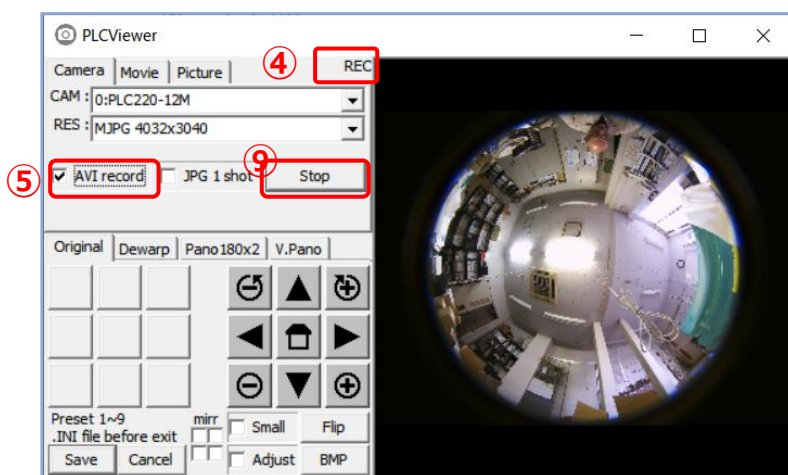
- The recorded video will be saved as an AVI file as a fisheye image, which is the raw video (non-dewarped fisheye image) from the camera (even if the dewarped image is displayed). The file name is "Year/Month/Day_Hour/Minute/Second Millisecond.AVI".

 ※ Even if you are browsing while dewarping, the recorded video is a fisheye image.

- The recorded AVI file is saved in the PLCViewer.exe working folder (usually the same folder as PLCViewer.exe). The work folder can be set/confirmed in the properties of the PLCViewer.exe shortcut created on the Windows PC.

- Recording is continuous recording. A new file is created every about 4.2 GB of file capacity. This will increase or decrease depending on the image. Shooting with a resolution of 4032x3040 takes about 5-6 minutes.

⚠ **Note** : The remaining storage capacity of the PC is not taken into consideration, so please ensure sufficient free space before recording continuously.

(2) Save still images

① When [☐ JPG 1 shot] (⑧) is clicked while the image is being displayed, a ☑ check is put in, and a single non-dewarped fisheye image is saved as a still image, and the ☐ check is removed.
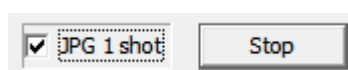
- Saved still images are saved as JPEG files as fisheye images, which are raw images from the camera (even if the dewarped image is displayed). The file name is "Year/Month/Day_Hour/Minute/Second_Millisecond.JPG".

※ Even if you browse while dewarping, the image that is saved is a fisheye image.

② If [BMP] (⑱) is clicked while an image is being displayed, one displayed image will be saved as a still image.

BMP

- For still images to be saved, the image displayed in the image display area is saved as a BMP file. The file name is "Year/Month/Day_Hour/Minute/Second_Millisecond.BMP"

  ※ If the dewarped image is displayed, the image to be saved is also the dewarped image.

※ The recorded JPEG/BMP file is saved in the PLCViewer.exe working folder (usually the same folder as PLCViewer.exe). The work folder can be set/confirmed in the properties of the PLCViewer.exe shortcut created on the Windows PC.

【Difference in recorded still images depending on the saving method】
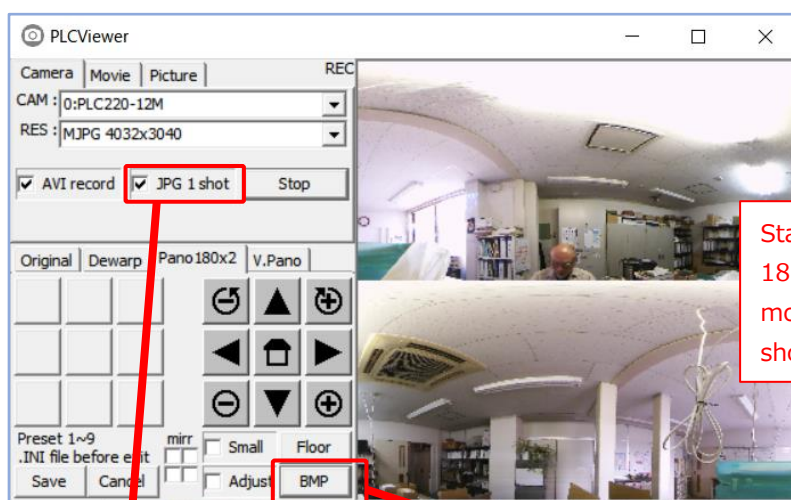
Status: monitoring in 180° x2 panorama mode during live video shooting.

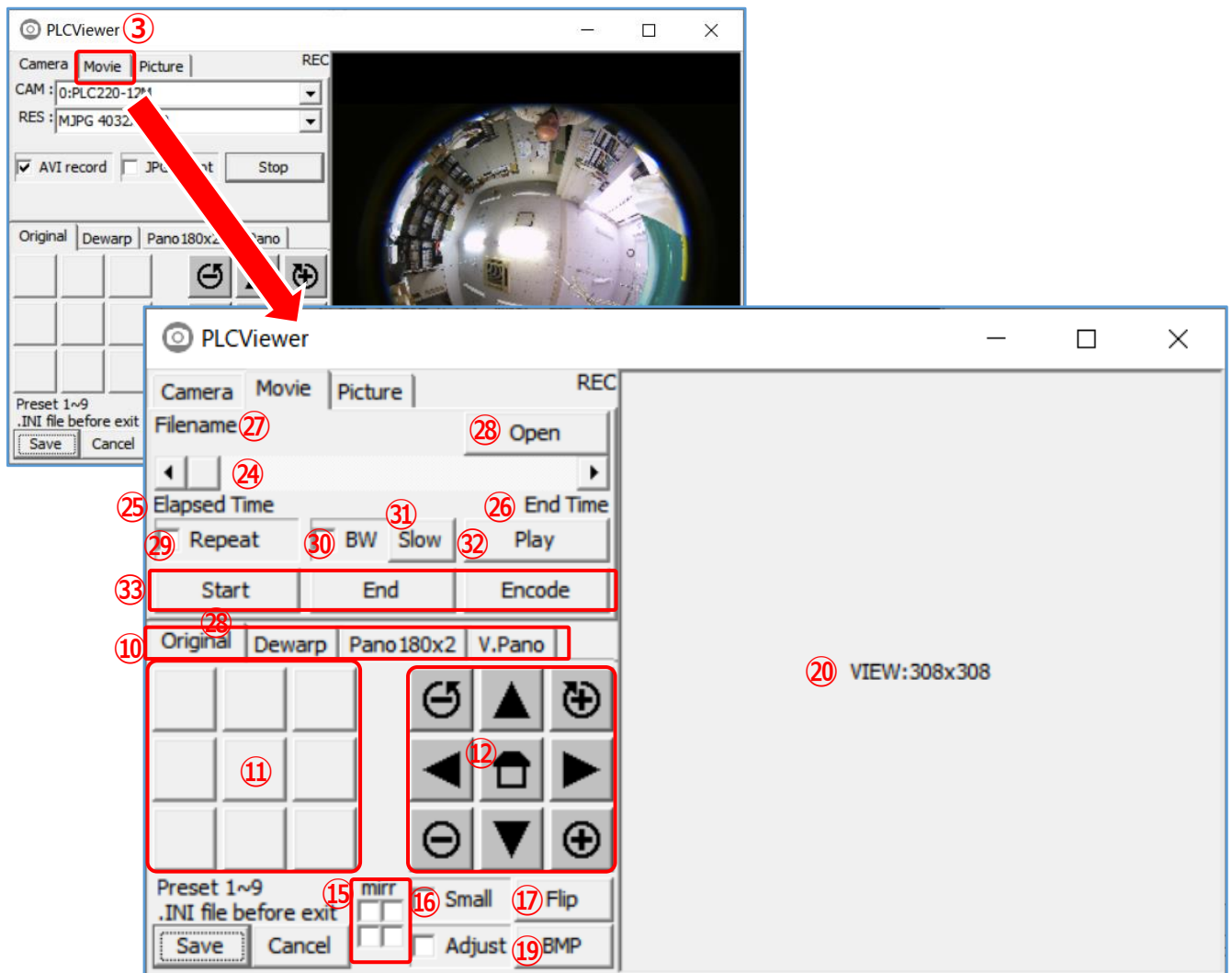If you save with [JPG 1 shot] (⑧) during live video shooting, the non-dewarped fisheye video will be recorded.

If you save with [BMP] (⑱) during live video shooting or video playback, a still image is recorded in the dewarped status.

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5.2. [Movie] playback screen

Clicking the ［Movie］tab（③）displays the screen for playing the recorded video.

The names and functions of each part are shown in the table below.

No.	Label	Name	Function
㉔	□	Position bar	Represents the position of the video being played relative to the entire video file. With the ◀ ▶ buttons on both ends, you can go backwards and forwards one frame at a time. You can also grab the slider and move it left or right to change the display position.
㉕	Elapsed Time	Elapsed time	When you click [Play] (㉜), the notation changes to numbers and displays the elapsed time and number of frames from the beginning of the video. The display is expressed in hours: minutes: seconds - number of frames.
㉖	End Time	End Time	Displays the file size in terms of recording time and number of frames. The display is expressed in hours: minutes: seconds - number of frames.
㉗	Filename	File name	Displays the file name of the video to play.

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㉘	Open/Close	File Select button	When you click it, the folder where the recorded video is saved (usually the working folder) will open and the video file name will be displayed, so select the file you want to play. When you select a file and click [Open] in the window, the file name will be displayed in ㉖, and the button will change to [Close]. Click [Close] to close the file.
㉙	□Repeat	Repeat button	If you click the button, a ☑ check will be entered and the repeat playback mode will be entered. If you click again, the □ check will be removed and the playback will not be repeated.
㉚	□BW	Reverse playback button	If you click the button, a ☑ check will be entered and the reverse playback mode will be entered. If you click again, the □ check will be removed and the forward playback mode will be set.
㉛	Slow	Slow playback button	You can slow down the playback speed. Each time you click the button, the playback speed changes from 1/2 → 1/4 → 1/8 → 1. If you want to make it slower than this, use the ◀ ▶ buttons at both ends of the position bar ㉔ to play one frame by each click.
㉜	Play	Playback button	When you click [Play], the video file selected in ㉘ will start playing, and the notation of the button will change to [Stop]. Click Stop to pause playback and change the button label to Play. By clicking [Play] again, you can start playing from the stopped position.
㉝	Start End Encode	Video Cutout button	You can cut out any part of a recorded video file and create a file. While playing the video file, press the [Start] button at the point you want to start cut out, set the end with the [End] button, and then create a file with the [Encode] button. The button display changes to the frame number representing each position.

5.2.1. Playback of recorded video

(1) How to playback recorded video

① Click [Open] (㉘) to open the folder in which the recorded video is saved (usually the working folder) and the video file name will be displayed. Select the file you want to play. When you select a file and click [Open] in the window, the file name will be displayed in ㉗ and the notation of the button ㉘ will change to [Close].
Click [Close] to close the file.
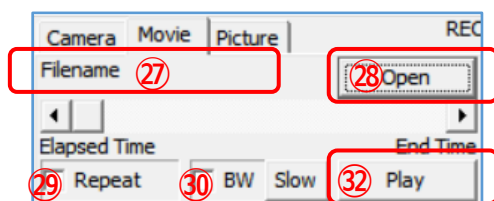
② With the recorded file selected, click [Play] (㉚) to start playing the recorded video. When a recording file is selected,

◆The [Elapsed time] notation changes to a number and displays the elapsed time and number of frames from the beginning of the video.
　　Display is expressed in hours: minutes: seconds - number of frames.
◆The [End Time] displays the file size in terms of recording time and number of frames.
　　Display is expressed in hours: minutes: seconds - number of frames.

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③ If you want to play repeatedly, click [Repeat] (㉙) to put a ☑ check and enter repeat play mode. When the video is played to the end, it starts playing the video from the beginning and repeats this.

If you want to stop the repeat playback mode, click [Repeat] (㉙) to uncheck the box and return to normal mode.
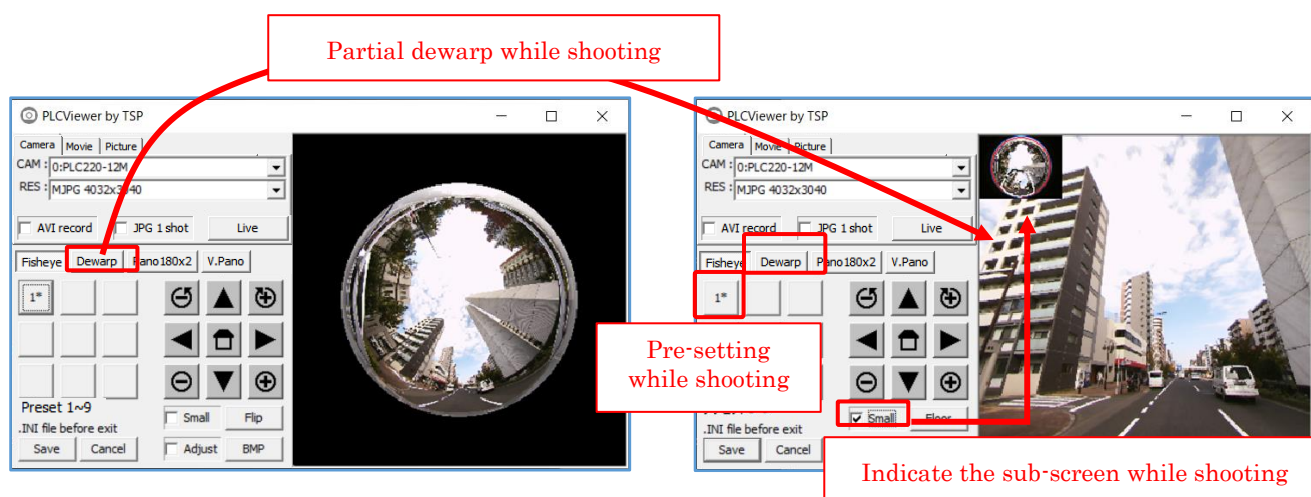
④ To reverse playback, click [BW] (㉚). Then ☑ will be checked and it will be in reverse playback mode.

If you want to stop the reverse playback mode, click [BW] (㉚) to uncheck the box and return to normal mode.
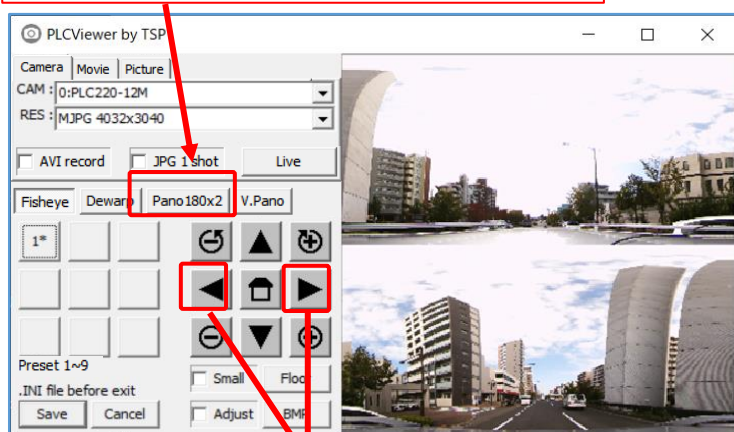
(2) Dewarping of Live View

The displayed live image can be panned, tilted, zoomed, rolled, expanded, sub-screen displayed, image reversed, preset, etc. by operating each of ⑩⑪⑫⑮⑯ buttons while "shooting" or "pausing".

※ Panning, tilting, zooming, and rolling can be performed with a mouse on the video screen for better operability.
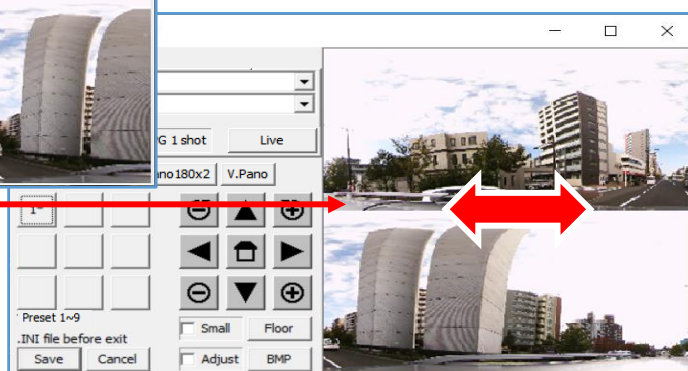

Partial dewarp while shooting

Pre-setting while shooting

Indicate the sub-screen while shooting

Dewarp in 180°x2 panoramas while shooting

Please understand
Inset pictures used in this book may be from older versions of the screens for parts that are not directly related to the explanation.

Scroll while shooting

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(3) Other playback operations

Sub-screen display, "partial expansion + panorama" display, preset, and saving image information are the same as 5.1.1. Live image display, so please refer to them.

(4) Brightness level adjustment

You can adjust the brightness level when playing back recorded video.

You can brighten images that feels too dark to make them easier to see.

Since the output level of the display (⑳) is only changed, the raw video being recorded remains unchanged.

The same effect can be achieved with both videos and still images.

Note: Using this function for a live view is not suitable because the brightness of circumstances is frequently changing.

① Hold down [Ctrl] on your keyboard and click the ▲ or ▼ button.

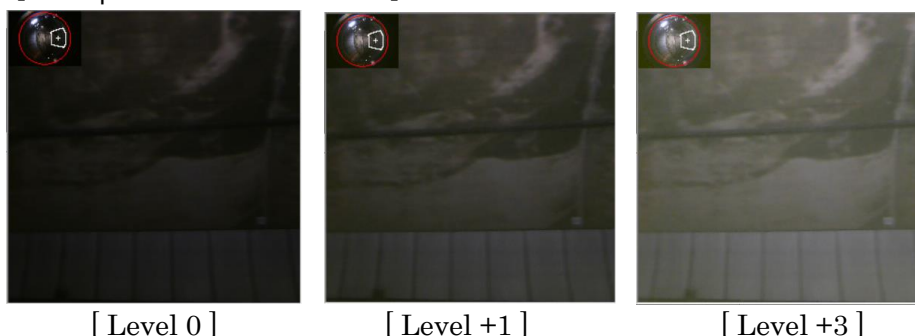Each click changes 1 level, allowing for 5 levels of adjustment.

② Hold down [Ctrl] on the keyboard and press his home button 🏠 to return to the original level.
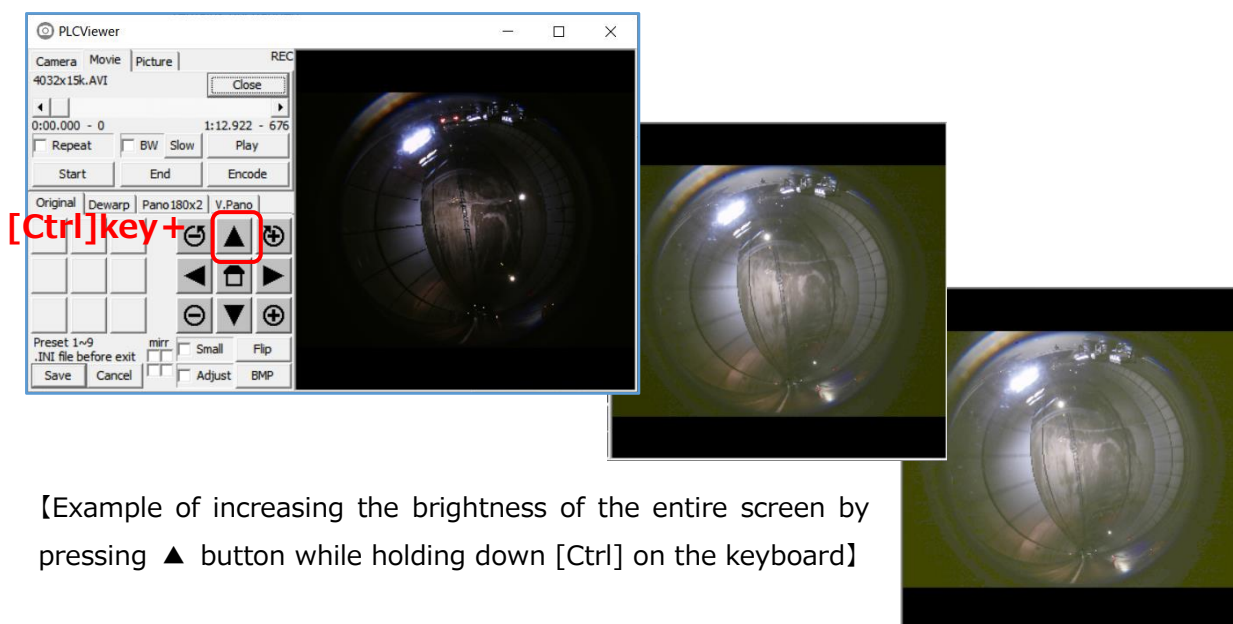
【Example of increasing the brightness of the entire screen by pressing ▲ button while holding down [Ctrl] on the keyboard】

③ The same effect is available on a dewarped image.

【Example of inside of tunnel.】

| [Level 0] | [Level +1] | [Level +3] |

"Partial expansion + panorama" display, presets, and saving video information are the same as 5.1.1. Live video display, so please refer to it.

### 5.2.2. Save in a still image from the recorded video

If [BMP] (⑲) is clicked while playing back or pausing a recorded video, one displayed image will be saved as a still image.

BMP

- For still images to be saved, the image displayed in the display area (⑳) is saved as a BMP file. The file name is "Year/Month/Day_Hour/Minute/ Second_Millisecond.BMP"

   ※ If the dewarped image is displayed, the image to be saved is also the dewarped image.

※ The recorded BMP file is saved in the PLCViewer.exe working folder (usually the same folder as PLCViewer.exe). The work folder can be set/confirmed in the properties of the PLCViewer.exe shortcut created on the Windows PC.
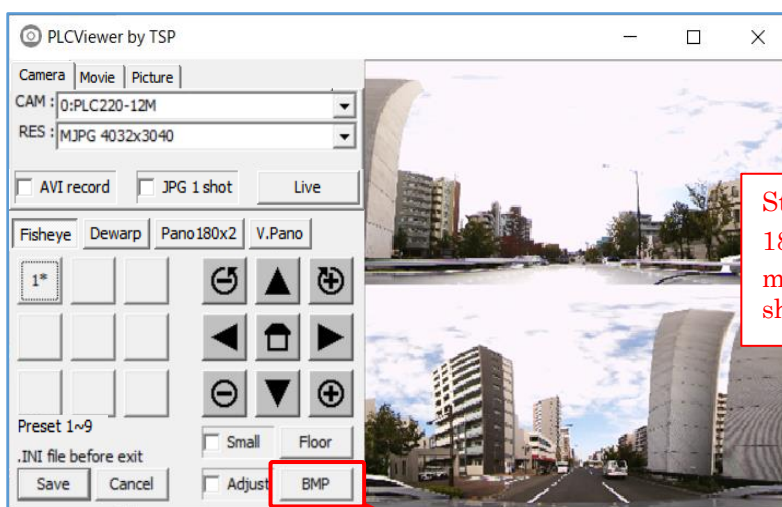
Status: monitoring in 180° x2 panorama mode during live video shooting

If you save with [BMP] (⑲) during live video shooting or video playback, a still image is recorded in the dewarped status.

Please understand
Inset pictures used in this book may be from older versions of the screens for parts that are not directly related to the explanation.

5.2.3. Cut out from a recorded video

(1) Cut out a file

There is a function to <u>create a new file by cutting out only the necessary parts</u> from one continuous video file.

① While playing the video file, press the [Start] button at the point you want to cut out and decide the starting point.
**Note:** You can quickly check the video using the slider on the position bar (㉔)on the video playback screen.

② While playing the video file, select the end with the [End] button.
The button display changes to the frame number representing each position.
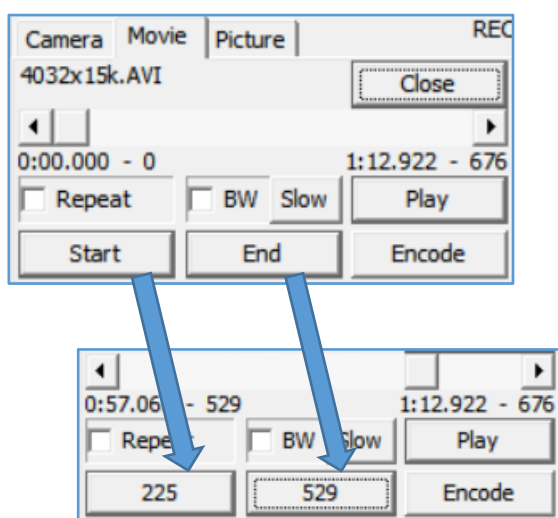
③ Once the start and end points are determined, press the [Encode] button.
The Encode menu shown below will be displayed, allowing you to set the file status.
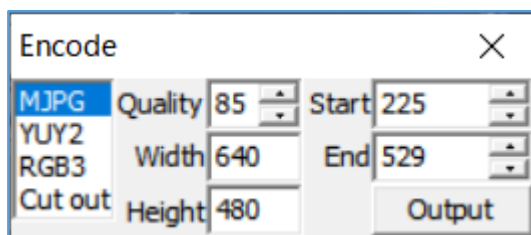
◆ MJPG/YUY2/RGB3: Specify the format of the generated file.
◆ Quality: Indicates the quality of JPEG. Default is "85"
◆ Width/Height: Represents the file size. Default is VGA size (640x480)
   You can specify it manually.
◆ Start point/End point: Frame number of the original video file. You can tweak it here.
◆ It is played as generated in expanded mode. Please play and generate it as a original fisheye image so that you can expand it later.

(2) Creating a new file (encoding)

　① Once the file status is determined, press the [Output] button to create a new file.

　② You will be asked for the storage location of the file, so specify it.

② Specify file storage location

③ Decide the file name
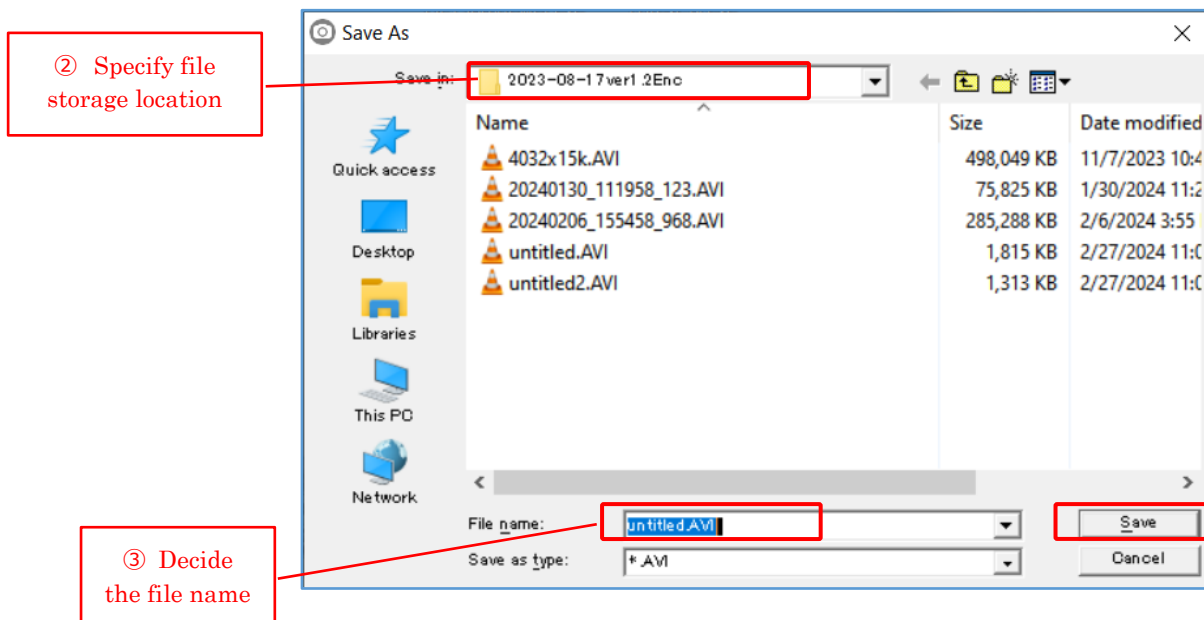
　③ Give the file a name and click [Save].

　④ The Encode menu will display the specified file name, the [Output] button will become a counter, and then the frame number in the current is displayed. In the example below, it starts from 559 and changes rapidly to 1507.
　The number displayed on the [Output] button (1295 in the example below) is the time (in seconds) that has passed until the file was generated. Generally you can ignore it.

Decided file name

① Click [Output]

② Time counter
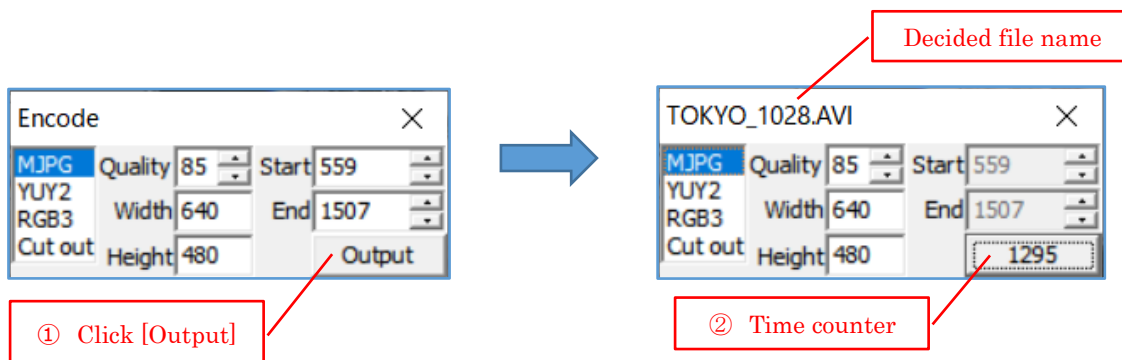
　⑤ When the number displayed on the [Output] button stops, file generation is complete.

　⑥ Click "X" in the upper right corner to exit.

5.3. [Picture] playback screen

Click the [Picture] tab（④）to display the screen for playing back the recorded still image.
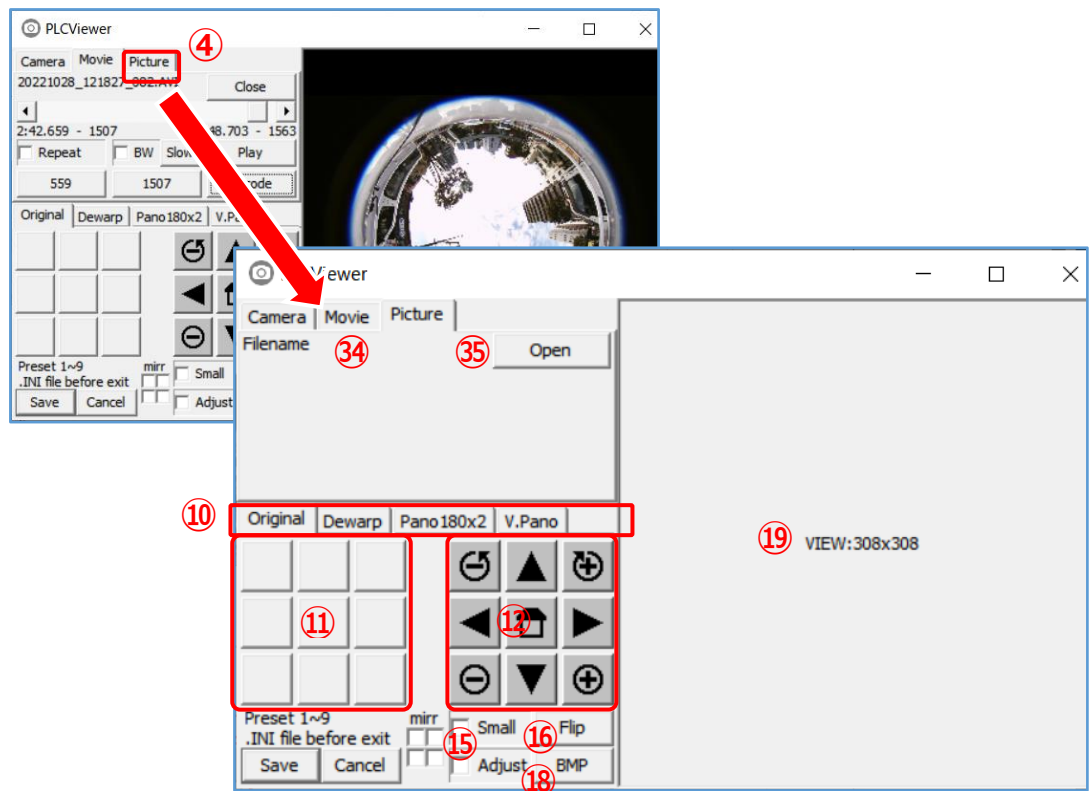

The names and functions of each part are shown in the table below.

No.	Label	Name	Functions
㉞	Filename	File name	Indicate the name of file to be displayed.
㉟	Open Close	File select button	Select a still image file (JPEG or BMP).

(1) How to playback still images

Click [Open] (㉜) to open the folder in which the images are saved (usually the work folder) and display the still image file name. Select the file you want to playback.

Select the file and click [Open] in the window, the file name will be displayed in ㉛, and the notation of the button will change to [Close].

Click [Close] to close the file.
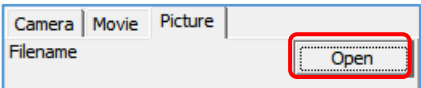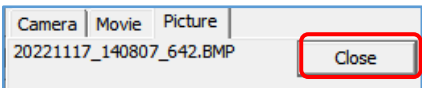
【when open a file】 　　　　　　　　　【when close the file】

(2) Dewarping of Live View

The playing back image can be panned, tilted, zoomed, rolled, expanded, sub-screen displayed, image reversed, preset, etc. by operating each of ⑩⑪⑫⑮⑯ buttons.
As the operation is the same, please refer to 5.2.1.

※ **Panning, tilting, zooming, and rolling can be performed with a mouse on the video screen for better operability.**

(3) Other operation during playback

Sub-screen display, preset, and saving image information are the same as **5.1.1. Display Live View**, so please refer to them.

(4) How to save a still image with dewarping

The operation is the same as **5.2.2. Save in a still image from the recorded video**, so please refer to it.

6. Version

You can view the version of PLCViewer in the following ways:
① Click the application icon at the upper left of screen and click [About PLCViewer...].
② The version of PLCViewer is displayed. "Click [OK] to close."