



Web Guide

WV-S15701-Z3L/ WV-S15701-Z3LN/
WV-X15701-Z3L/ WV-X15701-Z3LN/
WV-S15501-Z3L/ WV-S15501-Z3LN/
WV-S15501-Z1L/ WV-S15501-Z1LN/
WV-X15501-Z3L/ WV-X15501-Z3LN/
WV-X15501-Z1L/ WV-X15501-Z1LN/
WV-X15502-Z1L/ WV-X15502-Z1LN/
WV-S15301-Z1L/ WV-S15301-Z1LN/
WV-X15301-Z1L/ WV-X15301-Z1LN/
WV-X15302-Z1L/ WV-X15302-Z1LN

Contents

1. Set up	1
1.1 Recommended Procedures for Installing this product	1
2. Connect to the camera	2
2.1 i-PRO Configuration Tool (iCT)	2
2.2 IP Setting Software	2
2.3 Access the camera	2
2.4 About Live image pages	4
3. Set the camera	6
3.1 Check whether the object is of the proper size.	6
3.2 Adjust the image quality	6
3.2.1 Set the light intensity control mode depending on the installation location and installation area.	6
3.2.2 Set white balance depending on the lighting environment you install.	7
3.2.3 Sets night time black-and-white switching mode	8
3.3 About LPR settings	9
3.3.1 Adjusting the angle of view	9
3.3.2 Adjusting the image settings	10
3.3.3 Register a preset	11
3.3.4 Use VaxALPR(Vaxtor LPR MMC)	11
3.4 Recording setting (SD Memory Card)	13
3.4.1 Install the SD Memory Card	13
3.4.2 Record using SD Memory Card	13
3.4.3 Play back images stored on the SD Memory Card	13
3.5 Adjust the zoom/focus	14
3.6 Set the preset position	14
3.7 Take pictures around the designated area	15
3.8 Hide some of the images	15
3.9 Identify sounds with AI	16

3.10	Record sound	.....	17
3.11	Set up events	.....	17
3.11.1	Detect object movements	.....	17
3.12	Enhance communication security	.....	18
3.13	Detect data falsification	.....	18
3.14	Set the Image capture size and frame rates	.....	19
3.15	Set the overlay image function	.....	19
3.16	Set the image stream	.....	19
3.16.1	About the Setting of Stream	.....	19
3.16.2	About delivery volume control (bit rate)	.....	20
3.16.3	Reducing Data Capacity with Smart Coding	.....	20
4.	Clean up	.....	22
4.1	Cleaning of lenses	.....	22
4.2	Cleaning the front panel	.....	22
5.	Specifications	.....	24
5.1	PC environment required	.....	24
5.2	About Image capture mode and Image capture size	.....	25
5.2.1	Image capture size	.....	25
5.2.2	Restrictions	.....	31
5.3	DORI	.....	35
5.4	Streaming performance	.....	36
5.5	Extension software (AI application)	.....	36
5.6	Lamp	.....	39
5.6.1	Lighting of the lamp	.....	39
5.7	Button	.....	40
5.8	Cable	.....	41
6.	Other	.....	43
6.1	Initialize	.....	43
6.2	Check the software version	.....	43
6.3	Upgrade software	.....	44
6.4	Order of setting when adjusting image quality	.....	44

6.5	Adjusting object brightness (bright scenes)	45
6.5.1	Adjusting brightness	45
6.6	Adjusting object brightness (dark scenes)	45
6.6.1	Adjust the maximum gain	45
6.6.2	Adjust the maximum shutter	46
6.7	Reducing white flickering and blacking on the screen	46
6.7.1	Set Super Dynamic	46
6.7.2	Set the backlight compensation	47
6.7.3	Set the high light compensation	48
6.7.4	Adjust the adaptive black stretch	48
6.7.5	Adjust the [Pedestal level]	49
6.8	Adjust the object contrast	49
6.8.1	Adjust the contrast	49
6.9	Reduce flicker	50
6.10	Reducing the blur of object (bright scenes)	50
6.10.1	Set intelligent auto (motion priority level)	50
6.10.2	Adjust the maximum shutter	51
6.11	Reducing object blur (dark scenes)	52
6.11.1	Adjust digital noise reduction	52
6.12	Sharpen the outline of the subject	52
6.12.1	Adjust the sharpness level	52
6.13	Adjust the color	53
6.13.1	Adjust color density	53
6.13.2	Adjust the white balance	53
6.14	Reducing object noise (bright scenes)	54
6.14.1	Adjust the sharpness level	54
6.15	Reducing object noise (dark scenes)	54
6.15.1	Adjust digital noise reduction	54
6.16	Set focus when switching between black and white.	55
6.16.1	Focus adjustment method for switching between black and white	55
6.17	Troubleshooting	58
6.18	Precautions pertaining to usage	61
6.19	Disclaimer	64
6.20	NETWORK RELATIONSHIP	65

1. Set up

1.1 Recommended Procedures for Installing this product

1. Set up



For detailed installation instructions, refer to the following:

[Installation section](#)

1.1 Recommended Procedures for Installing this product

The URL of the movie is as follows.

<https://www.youtube.com/playlist?list=PLTQfv0fJHvCg5zJZuOG7hGmSVyAMr8Eu>

2. Connect to the camera

2.3 Access the camera

2. Connect to the camera

2.1 i-PRO Configuration Tool (iCT)

This is a tool for managing the image monitoring system at a glance.



For more information about i-PRO Configuration Tool (iCT), see the Technical Information website at <Control No.: C0133>.

→[Click here for more information about i-PRO Configuration Tool](#)

2.2 IP Setting Software

Cameras or recorders on the same network can be automatically detected and set up in the network.



For more information on the IP Setting Software, see the Technical Information website at <Control No.: C0123>.

→[Click here for more information on the IP Setting Software](#)

2.3 Access the camera

1. Launch a IP Setting Software

- The model number and MAC address of the detected camera are displayed.
- The default for [Network Settings] is [DHCP].

• If you cannot obtain an IP address from the DHCP server, set the IP address to 192.168.0.10.

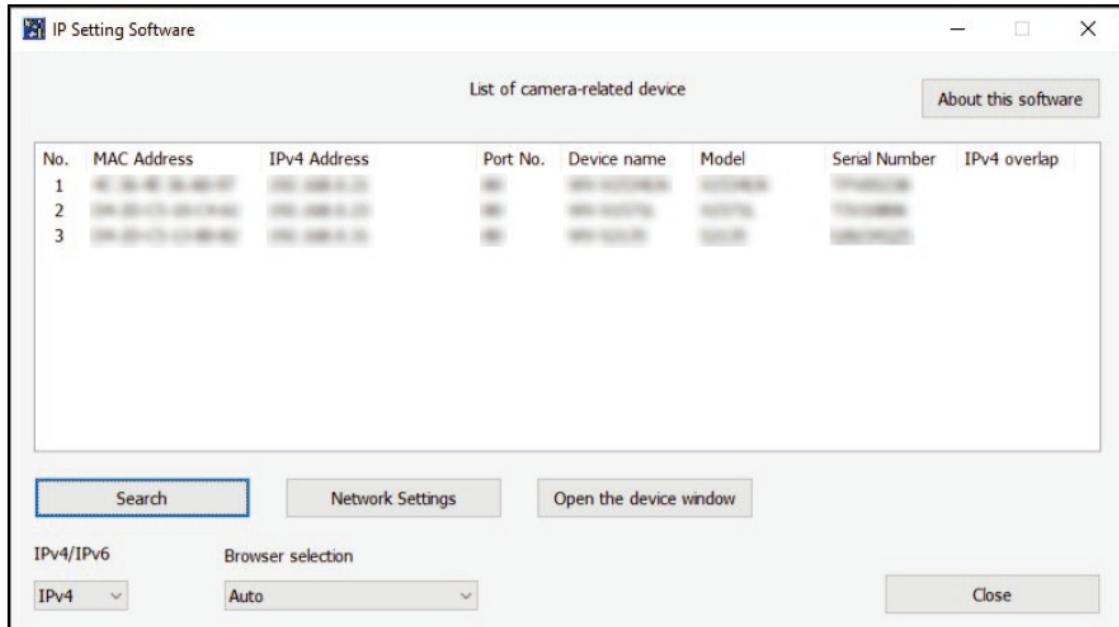


2. Connect to the camera

2.3 Access the camera

2. Double-click on the camera's IP address

- The browser starts and the administrator registration screen is displayed.
- You need to register as an administrator.



3. Enter administrator username and password

- The screen for setting the language and date and time is displayed.

4. Set the language, date and time, and screen

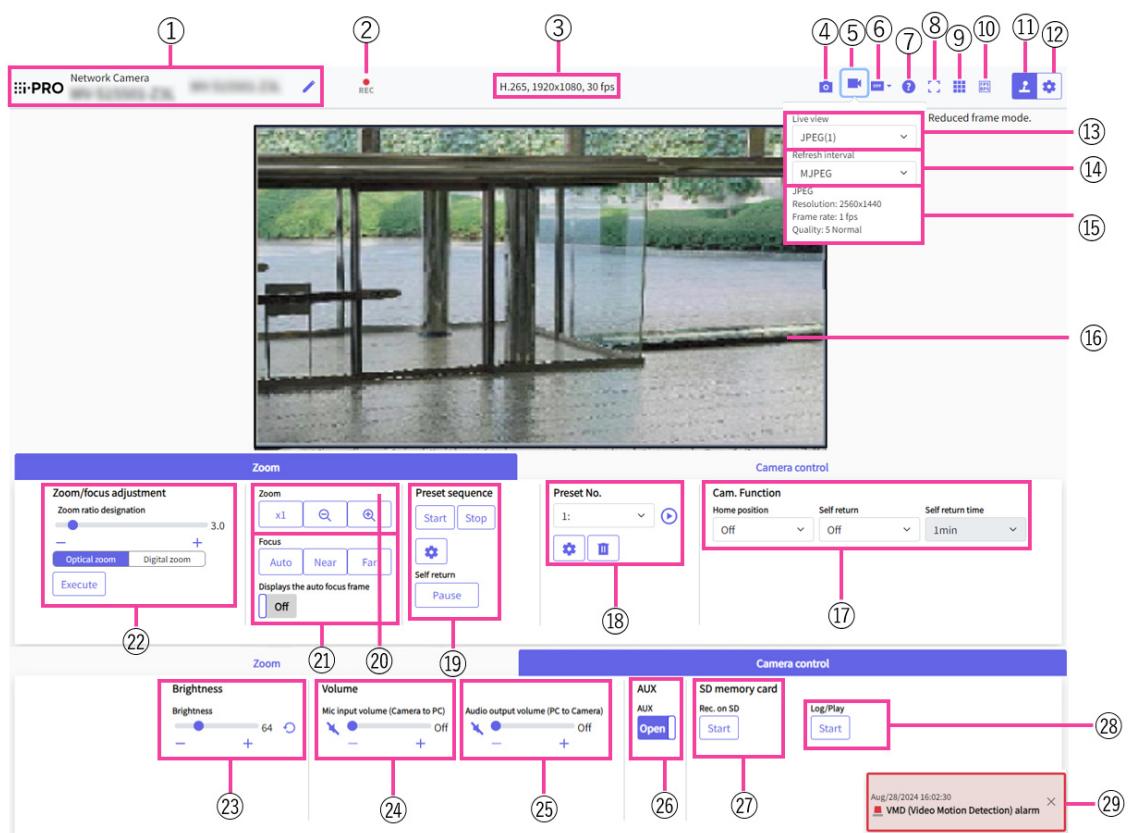
- You can set the language and date and time and change the background color of the screen and the layout of the operation panel.

5. Press [Set]

- Live image pages is displayed.

2. Connect to the camera

2.4 About Live image pages



- ① Camera title
- ② SD Storage Status Display
- ③ Stream information display
- ④ Snapshot button
- ⑤ Stream selection display button
- ⑥ Before/after image comparison switching button
- ⑦ Support button
- ⑧ Full Screen View button
- ⑨ Grid view button
- ⑩ Frame rate/bit rate display button
- ⑪ Camera control panel display button
- ⑫ [Setup] buttons (Settings panel display button)
- ⑬ Select Streams-[Live only] pull-down menu
- ⑭ Select Streams-[Refresh Rate] pull-down menu
- ⑮ Select Stream-Display Stream Information

2. Connect to the camera

2.4 About Live image pages

- ⑯ Main area
- ⑰ Zoom panel-[Cam. Function]
- ⑱ Zoom panel-[Preset No.]
- ⑲ Zoom panel-[Preset sequence]
- ⑳ Zoom Panel-[Zoom] buttons
- ㉑ Zoom Panel-[Focus] buttons
- ㉒ Zoom panel-[Zoom ratio designation]
- ㉓ Camera Control Panel-[Brightness]
- ㉔ Camera Control Panel-[Mic input volume (Camera to PC)]
- ㉕ Camera control panel-[Audio output volume (PC to Camera)]
- ㉖ Camera control panel-[AUX]
- ㉗ Camera Control Panel-SD Memory Card-[Rec. on SD] button
- ㉘ Camera Control Panel-SD Memory Card-[Log/Play] button
- ㉙ Alarm notification

3. Set the camera

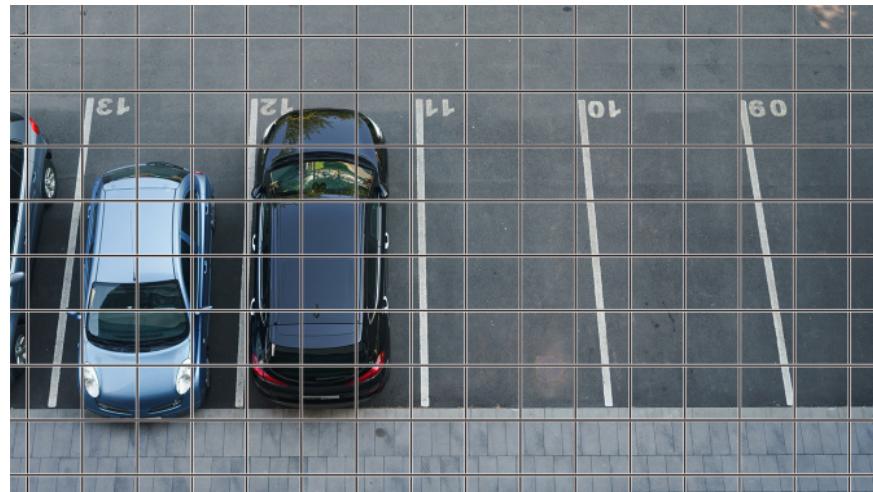
3.2 Adjust the image quality

3. Set the camera

3.1 Check whether the object is of the proper size.

When using our Extension software, you can check the number of grids to see if it is the right size to recognize object. Refer to <Control No.: C0320> on the following technical information website.

→[For more information about the recommended sizes of Extension software](#)



3.2 Adjust the image quality

This section explains how to adjust the image quality when installing the camera.

3.2.1 Set the light intensity control mode depending on the installation location and installation area.

Use [Light control mode] to set the light intensity appropriate for the installation location and area.

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.

3. Set the camera

3.2 Adjust the image quality

1. Select [Light control mode]

- To install outdoors: Set [Outdoor scene].
- For indoor installation: Set [Indoor scene(50Hz)] or [Indoor scene(60Hz)].
50 Hz/60 Hz can be used differently depending on the region.

• Basically, [Fix shutter] is not used.

• For more information about the light control mode, refer to the User Manual.



3.2.2 Set white balance depending on the lighting environment you install.

Use [White balance] to set the white balances appropriate for the installation location and area.

➤ Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>When [Setup] is clicked, the image quality adjustment setting window is displayed.

1. Select [White balance]

- Select from [ATW1], [ATW2], and [AWC].

[ATW1]

Set the automatic color temperature tracking mode. The camera continuously checks the color temperature of the light source and automatically adjusts the white balance.

The operating range is about 2700 K to 6000 K.

[ATW2]

Set the automatic color temperature tracking mode. The camera automatically adjusts the white balance under a sodium lamp.

The operating range is from about 2000 K to 6000 K.

[AWC]

Set the automatic white balance control mode. Since the light source is fixed, it is suitable for shooting in a place where the lighting environment does not change.

The operating range is from approximately 2000 K to 10000 K.



Colors may not be reproducible faithfully if the following conditions are met: In such cases, set it to [AWC].

- Largely dark object
- Clear blue sky or the sun at dusk

3. Set the camera

3.2 Adjust the image quality

- Object with too low illumination

3.2.3 Sets night time black-and-white switching mode

You can switch to color or black-and-white images by using [Day & Night(IR)] when shooting at night.

- Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>Advanced menu on the left, or [Image adjust]>[Advanced settings] on [Image/Audio]>[Image quality] tab. The Adjust Picture Settings window appears.
- 1. Select [Day & Night(IR)]
 - Select [Off], [On(IR Light Off)], [On(IR Light On)], [Auto1(IR Light Off)], [Auto2(IR Light On)], [Auto3(SCC)], and [Auto4(LPR)].

[Off]

This function is used for shooting colored images at night as well.

[On(IR Light Off)]

The picture is always taken in black and white.

[On(IR Light On)]

The picture is always taken in black and white. This setting is used when near-infrared lighting is used at night.

[Auto1(IR Light Off)]

The color image and black-and-white image are automatically switched depending on the brightness (illumination) of the image.

[Auto2(IR Light On)]

The color image and black-and-white image are automatically switched depending on the brightness (illumination) of the image. This is set when the near-infrared illumination is used at night.

[Auto3(SCC)]

Set this when you want to maintain a color image even when the light source is dark. The Super Chroma Compensation (SCC) function maintains the color image to low illumination.



- [Auto3(SCC)] of [D&N] can be set only for the 10x model.
(WV-S15501-Z1L/ WV-S15501-Z1LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN/
WV-S15301-Z1L/ WV-S15301-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN)

[Auto4(LPR)]

The color image and black-and-white image are automatically switched depending on the brightness (illumination) of the image. To make the numbered plate easier to identify, when it starts to darken, it switches to a black-and-white image early.



- If [Day & Night(IR)] is set to [Auto4(LPR)], [Day & Night(IR)] > [Level] cannot be set or changed.
- To use [Auto4(LPR)] of [Day & Night(IR)], apply [LPR capture mode]*.
*[LPR capture mode] can be set in [2. Adjust the image settings] that is displayed by clicking Live image pages settings panel> [LPR settings] tab.
- Since [Auto4(LPR)] of [Day & Night(IR)] setting assumes high-speed shutter operation, switching between black-and-white and color images may be repeated when Maximum shutter is set to a shutter setting of [Max. 1/120s] or less ([Max. 1/30s], etc.).

3.3 About LPR settings

The [LPR settings] window allows you to set the image angle and image quality appropriate for license plate recognition, register presets, and check the operation of VaxALPR(Vaxtor LPR MMC). Turning [On] the camera's installation (Vertical angle, Roll angle) and [Pixel counter] displays the number of pixels (horizontal width) and Y (vertical width) during 1920x1080 conversion and the number of pixels (horizontal width) and Y (vertical width) during 1280x720 conversion, respectively.

3.3.1 Adjusting the angle of view

Adjust the angle of view when installing the camera.

By setting [Pixel counter] to [On], you can move the frame in the main area freely and resize the frame.

You can adjust the angle of view to fit object by setting a pixel-count frame appropriate for the VaxALPR(Vaxtor LPR MMC) you use.

- Live image pages configuration panels>Clicking the [LPR settings] tabs allows you to set the angle of view in [1. Adjust the angle of view].
 1. Adjust the camera Installation status so that the Vertical angle of the camera installation is between 0° and 30° and the Roll angle is between 0° and 25° .
 2. Setting the Pixel counter Display Frame to Enclose the Number Plate
 3. Adjust the angle of view so that [Pixel count] is the number of pixels suitable for license plate recognition



- Adjust by moving the camera vertically and horizontally so that the license plate is at the center of the angle of view. For the center of the angle of view, refer to the center line of the crosshair displayed in the main area when clicking the [LPR settings] tab. After setting the number plate so that it is at the center of the angle of view, adjust the zoom magnification and focus position with the Zoom and Focus buttons so that it fits within the frame displayed in the main area by setting the number plate to [Pixel counter] to [On].
- For more information about zooming and focus, see the User Manual.
- For more information about VaxALPR(Vaxtor LPR MMC), see Support for Vaxtor Technologies.



- The analog-output video at MONITOR OUT terminal also displays the required info for LPR installation.
- If you select 150% to 200% for the character size in the basic settings, the angle-display of MONITOR OUT jack's analog-output video is not displayed.
- For details on the analog-output video of MONITOR OUT terminal, refer to the Instruction Manual Installation.

3.3.2 Adjusting the image settings

Adjusts the image quality for LPR cameras.

- Live image pages configuration panels>Clicking the [LPR settings] tabs allows you to set the Image quality in [2. Adjust the image settings].
 1. Selecting [Height] from the pull-down menu
 - When [Meters] is selected for [Meters/feet], select from [3.0m], [3.5m], [4.0m], [4.5m], [5.0m], [5.5m], [6.0m], [6.5m], [7.0m], [7.5m], [8.0m], [8.5m], [9.0m], [9.5m], [10.0m].

3. Set the camera

3.3 About LPR settings

- When [Feet] is selected for [Meters/feet], select from [10ft.], [12ft.], [14ft.], [16ft.], [18ft.], [20ft.], [22ft.], [24ft.], [26ft.], [28ft.], [30ft.], [32ft.].
- 2. Selecting [Speed] from the pull-down menu
 - When [Meters] is selected for [Meters/feet], select from [30km/h], [60km/h], [90km/h], [120km/h].
 - When [Feet] is selected for [Meters/feet], select from [20mi/h], [40mi/h], [60mi/h], [75mi/h].
- 3. Select [Set] from [LPR capture mode].
 - Sets the image quality suitable for license plate recognition.
- 4. Setting Image adjust
 - Click this button to display the Image adjust menu window, where you can perform detailed Image adjust.
 - [Height], [Speed], [Meters/feet], and [LPR capture mode] can only be set for X Series models.
(WV-X15701-Z3L/ WV-X15701-Z3LN/ WV-X15501-Z3L/ WV-X15501-Z3LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN)
 - For more information about the Adjust Picture menu, see the User Manual.



3.3.3 Register a preset

- Live image pages configuration panels>Clicking the [LPR settings] tabs allows you to set the Preset in [3. Register a preset].
- 1. Select [Set] from [Preset].
 - The current settings are registered in the Preset Position No1.

3.3.4 Use VaxALPR(Vaxtor LPR MMC)

- Clicking Live image pages Settings panel > [LPR settings] tab displays a link to VaxALPR (Vaxtor LPR MMC) setting window.
<WV-X15701-Z3L/ WV-X15701-Z3LN/ WV-X15501-Z3L/ WV-X15501-Z3LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN>
(X Series models only)

3. Set the camera

3.3 About LPR settings

1. Installing VaxALPR(Vaxtor LPR MMC)
2. Click the link to VaxALPR(Vaxtor LPR MMC) setting window on the [LPR settings] tab.
3. Configure settings related to VaxALPR(Vaxtor LPR MMC).



- If VaxALPR(Vaxtor LPR MMC) is not installed, [4. Check the operation of LPR App] is not displayed.



- For more information about VaxALPR(Vaxtor LPR MMC), see Support for Vaxtor Technologies.



- VaxALPR(Vaxtor LPR MMC) is a Third Party Application. Note the following points when using Third Party Application.

Terms and Conditions on Installation of Third Party Application

You may install a third party's application ("Third Party Application") on your i-PRO Product ("Product") and you are starting to install Third Party Application.

You agree on the following terms and conditions upon commencement of use of Third Party Application or completion of installation thereof;

1. All rights including intellectual property rights and ownership of or relating to Third Party Application belong to the proprietor of such Third Party Application and are not assigned to you.
2. You may use Third Party Application only combined or connecting with Product.
3. TO THE EXTENT ACCEPTED BY THE LAWS OF RELEVANT JURISDICTION, i-PRO DOES NOT REPRESENT AND WARRANT ON (i) PERFORMANCE OR BEHAVIOR OF PRODUCT RELATING TO USE OF THIRD PARTY APPLICATION; (ii) SPECIFICATION OR QUALITY OF THIRD PARTY APPLICATION; AND (iii) NON-INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHT OF ANY THIRD PARTY.
4. To the extent accepted by the laws of relevant jurisdiction, i-PRO gives no indemnification for any direct or indirect damages caused by or relating to use or installation of Third Party Application.
5. In addition to this terms and conditions, your use of Third Party Application may be subject to other terms and conditions or limitations provided by the proprietor of Third Party Application.

3. Set the camera

3.4 Recording setting (SD Memory Card)

3.4 Recording setting (SD Memory Card)

3.4.1 Install the SD Memory Card

1. Insert a microSD memory card into the slot



Use the SD Memory Card formatted on this product.



To remove the SD Memory Card, [Basic] the Advanced menu.>On the [SD memory card] tab, select [SD memory card] as [Not use]. Remove the SD Memory Card from this product.

3.4.2 Record using SD Memory Card

This section describes the procedures for turning [Save trigger] to [Manual].

- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]> [Basic] of the Advanced menus on the left>When [SD memory card] tab is clicked, the SD Memory Card setup page is displayed.
 - (1) Select [Recording format] streams
 - (2) Select [Save trigger] and click [Set].
 - (3) Click [Live] in the upper left corner and click the camera control panel display button.
 - The camera control panel is displayed.
 - (4) Clicking [Start] on [Rec. on SD]
 - Start recording to the SD Memory Card manually.
 - You can stop recording by clicking [Stop]. After stopping, you can resume recording by clicking [Start].

3.4.3 Play back images stored on the SD Memory Card

You can play back images stored on the SD Memory Card.

- Live image pages cameras control panels>Clicking [Log/Play] displays the log list.

1. View Live image pages and click the camera control panel display button.

3. Set the camera

3.6 Set the preset position

2. Press the [Start] on [Log/Play] button
 - The Log List screen is displayed in a separate window.
3. Press the shooting date and time displayed below [Time & date]
 - The playback page is displayed and the saved image is played.

3.5 Adjust the zoom/focus

You can manually or automatically adjust the zoom or focus of the displayed image.

- You can set zoom and focus by clicking [Camera control] on the Live image pages.
1. Configuring [Zoom ratio designation], [Zoom], [Focus], and [Displays the auto focus frame] on the [Zoom] tabs
 - For more information about zoom and focus, refer to the User Manual.



3.6 Set the preset position

Make settings related to preset position.

- Clicking [Zoom]>[Position]>[Preset position]>[Setup] in Live image pages Settings panel>[Detail setting]>[Camera detailed setting]>Advanced menu on the left will open the Preset Position Settings window.
1. Select the position number from [Preset] pull-down menu and enter [Preset ID] to register the preset position.



- When you adjust the focus/brightness/zoom, etc., the picture on [Position] is reflected at the same time.

3. Set the camera

3.8 Hide some of the images

3.7 Take pictures around the designated area

Move the preset position registered as the area you want to shoot in order from the lowest preset number.

- Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>[Zoom] of the Advanced menus on the left>[Position] tabs>Clicking [Advanced settings] on the [Preset sequence setting] displays the preset sequence setting window.
 1. Select [Preset sequence 1]
 - The preset position selection screen is displayed.
 2. Select the number of the preset position to shoot and set it.

3.8 Hide some of the images

- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]> [Basic] of the Advanced menus on the left>When [Basic] tab is clicked, the privacy zone display format setup page is displayed.

<WV-X15701-Z3L/ WV-X15701-Z3LN/ WV-X15501-Z3L/ WV-X15501-Z3LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN>
(X series models only)

1. Select [Privacy zone Display type]
 - Select from [Filling] and [Blurring].

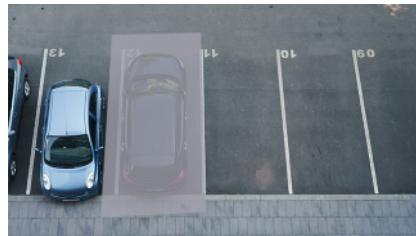
• For more information about the privacy zone display format, refer to the User Manual.



- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]> [Image/Audio] of the Advanced menus on the left>[Privacy zone] in the [Image quality] tabs> When [Setup] is clicked, the Privacy Zone setting window is displayed.

3. Set the camera

3.9 Identify sounds with AI



1. Set [Privacy zone].
 - Set the Privacy zone Display type to [On]/[Off].
2. Select the number of the zone you want to set from [Zone No] pull-down menu.
3. Specify four vertices on the image and press [Set] button.

3.9 Identify sounds with AI

Image monitoring can be enhanced by identifying and detecting human cries, broken glass sounds, horns, guns, and other sounds.

➤ Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>[Alarm] of the Advanced menus on the left>Clicking on the [Audio detection] tabs displays the configuration pages.



AI Sound ClassificationSee below for more information.

→[WHITE PAPER](#)

1. Set [Audio detection] to [On] to set sound detection.
2. Select Sensitivity of Detection with [Detection sensitivity].
3. Select the sound to be detected by [AI analytics target].
 - Selection of [Other] is not recommended in conjunction with other sounds detected. For example, when a gun sound is detected with the settings for detecting two sounds: [Gunshot] and [Other], it is detected as two sounds.



For validated external microphones, see below.

→[Verification result of external microphones](#)

3.10 Record sound

Audio data can be recorded to SD recording when alarm is detected.

1. Select whether to record audio data in the SD Memory Card setup page.
 - [On] saves audio data in a movie (MP4 format).
 - [Off]: Audio data is not saved in movies (MP4 format).

3.11 Set up events

You can set the alarm to detect the operation of an area or interference to the camera, or the operation when the alarm is detected.

- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Easy Setup] of the Advanced menus on the left>Clicking on the [Event action] tabs displays the configuration pages.

- Refer to the User Manual for instructions on configuring events.
- Refer to the User Manual for instructions on how to configure Internet disclosure.



3.11.1 Detect object movements

When an alarm is activated, the camera operates as set. There are patterns for the alarms when the specified area moves and when the camera is blocked.

- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Alarm] of the Advanced menus on the left>Clicking on the [VMD area] tabs displays the configuration pages.

Refer to the user manual for details of all alarms.



3. Set the camera

3.13 Detect data falsification

3.11.1.1 Set the area for detecting the movement of an object

Set the area for detecting the movement of an object using the motion detection function using video images.



1. Drag through the image to set the area.
 - You can set the areas in order.
2. Adjust the [Detection area] and [Detection sensitivity] using the slider bar and then press [Set].

3.12 Enhance communication security

Setting up HTTPS encrypts camera access and enhances communication security.

- Refer to the following support videos for the HTTPS setting method (pre-installation).
→[Support video](#)
- For information about how to configure HTTPS (CA certificate), refer to the following supported videos.
→[Support video](#)

3.13 Detect data falsification

If you set Falsification Detection, you can detect the falsified data on the SD Memory Card using the dedicated software.

Refer to the following support videos for how to set up tampering detection.

→[Support video](#)

3.14 Set the Image capture size and frame rates

➤ Live image pages configuration panels>[Stream] tabs>Set in [Image capture mode] of [Common].



- For details on the settings and frame rates, refer to the user manual.
- For details on the resolution, see the following:
→[About Image capture mode and Image capture size](#)

3.15 Set the overlay image function

You can specify the position to overlay the uploaded image or specify the color to be transmitted. In the model where the SD Memory Card can be recorded, the overlay displayed images are recorded during recording.

Refer to the User Manual for details on how to configure the settings.

- Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>[Basic] of the Advanced menus on the left>Configure in the [Overlay image] tabs.
1. Select an image with [Overlay] set to [On].
 2. Set [Position], [Permeation], and [Selection of color to be penetrated]
 3. Press [Set]

3.16 Set the image stream

3.16.1 About the Setting of Stream

You can configure whether to deliver streams, whether to compress streams with H.265 or H.264, Image capture size, image quality, and how to deliver streams.

- Live image pages configuration panels>Use the [Stream] tabs. The streams of H.265 and H.264 images are set in [Stream] on the [Stream] tabs.
- For the image compression method, refer to the following.
→[Reducing Data Capacity with Smart Coding](#)
 - Refer to the following for how to distribute.

3. Set the camera

3.16 Set the image stream

→[About delivery volume control \(bit rate\)](#)

- Refer to the User Manual for details of each setting method.

3.16.2 About delivery volume control (bit rate)

The following types of delivery modes are used to control the amount of delivery (bit rate) of the stream, and settings are made accordingly. You can also use smart coding, such as [Smart VIQS], to reduce the amount of data. For information about controlling the amount of stream delivery, see the following. Refer to the User Manual for details.

→[Reducing Data Capacity with Smart Coding](#)

- **Fixed bit rate:**

The H.265 (or H.264) images are delivered at the bit rate set by [Max bit rate (per client)*].

- **Variable bit rate:**

The H.265 (or H.264) images are delivered at the frame rate set by [Frame rate*] while maintaining the image quality level set by [Image quality]. At this time, the bit rate is varied within the maximum bit rate set by [Max bit rate (per client)*]. The recording capacity varies depending on the [Image quality] settings and the object status.

- **Specify Frame Rate:**

H.265 (or H.264) images are delivered at the frame rate set by [Frame rate*].

- **Best effort delivery:**

Depending on the bandwidth of the networks, H.265 (or H.264) images are delivered with varying bit rates within the maximum bit rate set by [Max bit rate (per client)*].

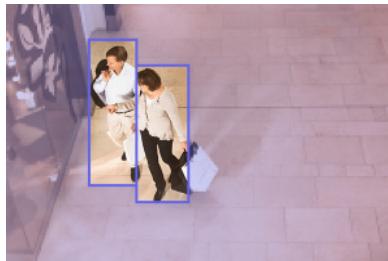
3.16.3 Reducing Data Capacity with Smart Coding

Smart coding is a data-compression technique that optimizes the compression ratio by reducing compression and high compression in the background to clearly show the human face, and by object.

- Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>Clicking [Image] displays the Smart Coding configuration.

3. Set the camera

3.16 Set the image stream



This image is an image. This is different from the actual view of the screen.

[Smart VIQS]

The image quality of the area where the object (head, people, automobiles, and motorcycles) is displayed is maintained at a high level. Images other than objects are delivered in such a way that low or medium image quality is maintained and the amount of data is reduced.

[Smart P-picture control]

In order to reduce the amount of data, data generation (macroblock) is reduced in areas other than where objects (head, people, automobiles, and motorcycles) are displayed.

[GOP control]

You can reduce the amount of data.

4. Clean up

4.2 Cleaning the front panel

4. Clean up



- Turn off the power before starting operation. Doing so may result in injury.
- Do not apply or use organic solvents such as benzene and thinner. The front part may become discolored. Follow the precautionary statement when using chemical foil.
- Do not loosen or remove the screws not specified in the operation manual.

4.1 Cleaning of lenses



- Clean with lens cleaning paper (for cleaning cameras and eyeglasses).
- Alcohols should be used when solvents are used. Do not use glass cleaners or thinners.

4.2 Cleaning the front panel

WV-S15701-Z3LN/ WV-X15701-Z3LN/ WV-X15501-Z3LN/ WV-X15501-Z1LN/ WV-X15502-Z1LN/ WV-S15501-Z1LN/ WV-X15301-Z1LN/ WV-S15301-Z1LN/ WV-X15302-Z1LN



- To clean the front panel, wash out hard sand grains and other adhered materials by pouring fresh water containing no lubricant or silicone substance using a hose or spray. If the stain is not removed, wipe with a soft sponge soaked with the above fresh water.
- Do not wipe dry (e.g., spread oil on surfaces or damage the advanced ClearSight Coating).
- Use neutral detergent for dishware and rinse thoroughly after use if dirt does not come off after wiping. If detergents other than neutral (weakly alkaline or slightly acidic) are used, the hydrophilic capacity of the product may deteriorate or the surface coating may peel off.
- Do not use organic solvents such as benzene and thinner.

4. Clean up

4.2 Cleaning the front panel

- If spraying is used, use it after emptying to remove the initial impurities.
- If the Advanced ClearSight Coating on the front panel becomes ineffective due to improper maintenance, the front panel needs to be replaced (paid) to restore the Advanced ClearSight Coating to its original state. Contact your dealer or contractor.

WV-S15701-Z3L/ WV-X15701-Z3L/ WV-X15501-Z3L/ WV-X15501-Z1L/ WV-X15502-Z1L/ WV-S15501-Z3L/ WV-S15501-Z3/ WV-S15501-Z/ WV-X15301-Z1L/ WV-S15301-Z1L/ WV-X15302-Z1L



If the front panel is dirty, clean it with a lens cleaning paper (for cleaning cameras and eyeglasses). If dust or dirt adheres to the front panel, the front panel may be damaged. It is recommended that you wash with water if the soil is too dirty.

5. Specifications

5.1 PC environment required

5. Specifications

5.1 PC environment required

CPU:	Intel® Core™ Processor family <When using an image capture size of 1920 x 1080 or lower> -Intel® Core™ i5-6500 or more -Intel® Core™ i7-6700 or higher recommended <When using an image capture size higher than 1920 x 1080> -Intel® Core™ i7-11700 or higher recommended
Memory:	<When using an image capture size of 1920 x 1080 or lower> Recommended at least 4 GB (2 GB x 2, dual channel) <When using an image capture size higher than 1920 x 1080> Recommended at least 16 GB (8 GB x 2, dual channel)
Network function:	10BASE-T/100BASE-TX/1000BASE-T 1 port
Sound function:	Sound Card (for voice function)
Image display function:	Image capture size: 1920 x 1080 pixels or more <When using an image capture size of 3840 x 2160> High Image capture size monitoring: 3840 x 2160 pixels or more Color: 24 bits or more of True Color
Compatible OS:	Microsoft Windows 11 Microsoft Windows 10
Web browser:	Google Chrome™ Firefox Microsoft Edge (after Chromium)
Other:	Adobe® Reader® or Acrobat Reader® (For viewing PDF files)

5. Specifications

5.2 About Image capture mode and Image capture size



- The bit rate of streams is restricted to [Bandwidth control(bit rate)] on the [Network] tabs of network pages.
- If the refresh interval is short, the bit rate may be exceeded depending on the object.
- Depending on the number of concurrent users or the combination of functions used, the bit rate may be lower than the set value. Confirm the image delivered after setting.

5.2.1 Image capture size

It's Image capture size. The initial value is underlined.

WV-S15701-Z3L/ WV-S15701-Z3LN

Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)*1	JPEG(2)
<u>16:9</u> (30fps)	<u>3840x2160</u> 2560x1440	3840x2160 2560x1440* ²			<u>3840x2160</u> 2560x1440	
16:9 (25fps)		<u>1920x1080</u> 1280x720 640x360 320x180* ³	<u>1280x720</u> 640x360 320x180* ³	1280x720 640x360 320x180* ³	1920x1080 1280x720 640x360 320x180* ³	
	(A)* ⁴ Max 30(25) fps* ^{5*6*7}	Max 15(12.5) fps	Max 15(12.5) fps	Max 15(12.5) fps	Max 5(4.2) fps* ^{8*9}	Max 15(12.5) fps* ⁹
	(B)* ⁴ Max 15(12.5) fps	Max 30(25) fps* ^{5*6*7}	Max 30(25) fps* ^{5*6*7}	Max 30(25) fps* ^{5*6*7}		

*1 Only the same image capture sizes set for "Stream(1)", "Stream(2)", "Stream(3)", "Stream(4)" and "JPEG(2)" are selectable.

*2 "2560x1440" of "Stream(2)" can be selected in case of "Stream(1)" is set to "2560x1440".

*3 When the image capture size is "320x180", the "90°" or "270°" cannot be set for [Image rotation].

*4 The maximum frame rates of "Stream(1)" to "Stream(4)" are either the combination of (A) or (B).

*5 When "3840 x 2160" or "2560 x 1440" is selected for "Stream(2)", the frame rate will be

5. Specifications

5.2 About Image capture mode and Image capture size

limited to max. "15 fps (12.5 fps)".

- *6 When "1280 x 720" is selected for "Stream(4)", the frame rate will be limited to max. "15 fps (12.5 fps)".
- *7 When "90 deg." or "270 deg." is selected for [Image rotation], the frame rate will be limited to max. "15 fps (12.5fps)".
- *8 When the image capture size is "3840 x 2160", the refresh interval is limited to 1 fps max. and when the image capture size is "2560 x 1440", the refresh interval is limited to 2 fps max. (2.1 fps).
- *9 When [Off] is selected for [Stream transmission], the maximum frame rate is 30 fps (25 fps).

WV-X15701-Z3L/ WV-X15701-Z3LN

Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)*1	JPEG(2)
16:9(60fps)	3840x2160	–	–	–	–	–
16:9(50fps)	2560x1440					
	60(50) fps	–	–	–	–	–
<u>16:9(30fps)</u>	<u>3840x2160</u>	3840x2160			<u>3840x2160</u>	
16:9(25fps)	2560x1440	2560x1440			2560x1440	
	1920x1080	<u>1920x1080</u>			1920x1080	
	1280x720	1280x720	<u>1280x720</u>	1280x720	1280x720	
	640x360	640x360		<u>640x360</u>	640x360	<u>640x360</u>
	320x180	320x180	320x180	320x180	320x180	
Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 5(4.2) fps* ^{2*3}	Max 15(12.5) fps* ³

*1 Only the same image capture sizes set for "Stream(1)", "Stream(2)", "Stream(3)", "Stream(4)" and "JPEG(2)" are selectable.

*2 When the image capture size is "3840 x 2160", the refresh interval is limited to 1 fps max. and when the image capture size is "2560 x 1440", the refresh interval is limited to 2 fps max. (2.1 fps).

*3 When [Off] is selected for [Stream transmission], the maximum frame rate is 30 fps (25 fps).

5. Specifications

5.2 About Image capture mode and Image capture size

WV-S15501-Z3L/ WV-S15501-Z3LN/ WV-S15501-Z1L/ WV-S15501-Z1LN

Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)*1	JPEG(2)
16:9(30fps) 16:9(25fps)	3072x1728 <u>2560x1440</u>	3072x1728			3072x1728 <u>2560x1440</u>	
		2560x1440*2 <u>1920x1080</u>			1920x1080	
		1280x720 <u>1280x720</u>		1280x720	1280x720	
		640x360 <u>640x360</u>		640x360	640x360	<u>640x360</u>
		320x180*3 <u>320x180*3</u>		320x180*3	320x180*3	
	Max 30(25) fps*4*5	Max 30(25)	Max 30(25)	Max 30(25)	Max 5(4.2) fps*6*7	Max 15(12.5) fps*7
		fps*4*5	fps*4*5	fps*4*5		
		3072x2304 2560x1920	3072x2304 2560x1920*2		3072x2304 2560x1920	
		1280x960			1280x960	
		800x600			800x600	
	Max 30(25) fps*4	640x480	640x480	640x480	640x480	640x480
		400x300			400x300	
		320x240	320x240	320x240	320x240	

*1 Only the same image capture sizes set for “Stream(1)”, “Stream(2)”, “Stream(3)”, “Stream(4)” and “JPEG(2)” are selectable.

*2 “2560x1440 (2560x1920)” of “Stream(2)” can be selected in case of “Stream(1)” is set to “2560x1440 (2560x1920)”.

*3 When the image capture size is “320x180”, the “90°” or “270°” cannot be set for [Image rotation].

*4 When “3072x1728 (3072x2304)” or “2560x1440 (2560x1920)” is selected for “Stream(2)”, the frame rate will be limited to max. “15 fps (12.5 fps)”.

*5 When “1280 x 720” is selected for “Stream(4)”, the frame rate will be limited to max. “15 fps (12.5 fps)”.

*6 When the image capture size is “3072 x 1728 (3072 x 2304)”, the refresh interval is limited to 1 fps max. and when the image capture size is “2560 x 1440 (2560 x 1920)”, the refresh interval is limited to 2 fps max. (2.1 fps).

*7 When [Off] is selected for [Stream transmission], the maximum frame rate is 30 fps (25 fps).

5. Specifications

5.2 About Image capture mode and Image capture size

*8 When "4:3" is selected for "Image capture mode", the "90°" or "270°" cannot be set for [Image rotation].

WV-X15501-Z3L/ WV-X15501-Z3LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN

Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)*1	JPEG(2)
16:9(60fps)	3072x1728	–	–	–	–	–
16:9(50fps)	2560x1440					
	60(50) fps	–	–	–	–	–
<u>16:9(30fps)</u>	3072x1728	3072x1728			3072x1728	
16:9(25fps)	<u>2560x1440</u>	2560x1440			<u>2560x1440</u>	
	1920x1080	<u>1920x1080</u>			1920x1080	
	1280x720	1280x720	<u>1280x720</u>	1280x720	1280x720	
		640x360	640x360	<u>640x360</u>	640x360	<u>640x360</u>
		320x180	320x180	320x180	320x180	
	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 5(4.2) fps* ^{2*3}	Max 15(12.5) fps* ³
4:3(60fps)	3072x2304	–	–	–	–	–
4:3(50fps)	2560x1920					
	Max 60(50) fps	–	–	–	–	–
4:3(30fps)	3072x2304	3072x2304			3072x2304	
4:3(25fps)	2560x1920	2560x1920			2560x1920	
	1280x960	1280x960			1280x960	
		800x600			800x600	
		640x480	640x480	640x480	640x480	640x480
		400x300			400x300	
		320x240	320x240	320x240	320x240	
	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 5(4.2) fps* ^{2*3}	Max 15(12.5) fps* ³

*1 Only the same image capture sizes set for "Stream(1)", "Stream(2)", "Stream(3)", "Stream(4)" and "JPEG(2)" are selectable.

*2 When the image capture size is "3072 x 1728 (3072 x 2304)", the refresh interval is limited to 1 fps max. and when the image capture size is "2560 x 1440 (2560 x 1920)", the refresh interval is limited to 2 fps max. (2.1 fps).

5. Specifications

5.2 About Image capture mode and Image capture size

*3 When [Off] is selected for [Stream transmission], the maximum frame rate is 30 fps (25 fps).

WV-S15301-Z1L/ WV-S15301-Z1LN

Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)	JPEG(2)
16:9(60fps)*1	1920x1080	1920x1080			1920x1080	
16:9(50fps)*1	1280x720	1280x720	1280x720		1280x720	
	640x360	640x360	640x360	640x360	640x360	640x360
	320x180	320x180	320x180	320x180	320x180	
	60(50) fps	Max 10(8.3) fps	Max 10(8.3) fps	Max 10(8.3) fps	Max 5(4.2) fps*3	Max 15(12.5) fps*3
<u>16:9(30fps)</u>	<u>1920x1080</u>	1920x1080			<u>1920x1080</u>	
16:9(25fps)	1280x720	<u>1280x720</u>	1280x720		1280x720	
	640x360	640x360	<u>640x360</u>	<u>640x360</u>	640x360	<u>640x360</u>
	320x180*2	320x180*2	320x180*2	320x180*2	320x180*2	
	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 5(4.2) fps*3	Max 15(12.5) fps*3
4:3(30fps)*1						
4:3(25fps)*1	1280x960	1280x960			1280x960	
	640x480	640x480	640x480	640x480	640x480	640x480
	320x240	320x240	320x240	320x240	320x240	
	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 5(4.2) fps*3	Max 15(12.5) fps*3
4:3(15fps)*1	2048x1536				2048x1536	
4:3(12.5fps)*1		1280x960			1280x960	
		640x480	640x480	640x480	640x480	640x480
		320x240	320x240	320x240	320x240	
	Max 15(12.5) fps	Max 15(12.5) fps	Max 15(12.5) fps	Max 15(12.5) fps	Max 5(4.2) fps*4	Max 15(12.5) fps

*1 When "16:9(60/50fps)" or "4:3" is selected for "Image capture mode", the "90°" or "270°" cannot be set for [Image rotation].

*2 When the image capture size is "320x180", the "90°" or "270°" cannot be set for [Image rotation].

*3 When [Off] is selected for [Stream transmission], the maximum frame rate is 30 fps (25 fps).

5. Specifications

5.2 About Image capture mode and Image capture size

*4 When [Off] is selected for [Stream transmission], the maximum frame rate is 15 fps (12.5 fps).

WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN

Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)	JPEG(2)
16:9(60fps)	1920x1080	1920x1080			1920x1080	
16:9(50fps)	1280x720	1280x720	1280x720		1280x720	
	640x360	640x360	640x360	640x360	640x360	640x360
	320x180	320x180	320x180	320x180	320x180	
	60(50) fps	Max 60(50) fps	Max 60(50) fps	Max 60(50) fps	Max 5(4.2) fps ^{*1}	Max 15(12.5) fps ^{*1}
<u>16:9(30fps)</u>	<u>1920x1080</u>	1920x1080			<u>1920x1080</u>	
16:9(25fps)	1280x720	<u>1280x720</u>	1280x720		1280x720	
	640x360	640x360	<u>640x360</u>	<u>640x360</u>	640x360	<u>640x360</u>
	320x180	320x180	320x180	320x180	320x180	
	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 5(4.2) fps ^{*1}	Max 15(12.5) fps ^{*1}
4:3(60fps)	2048x1536				2048x1536	
4:3(50fps)	1280x960	1280x960			1280x960	
	640x480	640x480	640x480	640x480	640x480	640x480
	320x240	320x240	320x240	320x240	320x240	
	Max 60(50) fps	Max 60(50) fps	Max 60(50) fps	Max 60(50) fps	Max 5(4.2) fps ^{*1}	Max 15(12.5) fps ^{*1}
4:3(30fps)	2048x1536				2048x1536	
4:3(25fps)	1280x960	1280x960			1280x960	
	640x480	640x480	640x480	640x480	640x480	640x480
	320x240	320x240	320x240	320x240	320x240	
	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 30(25) fps	Max 5(4.2) fps ^{*1}	Max 15(12.5) fps ^{*1}

*1 When [Off] is selected for [Stream transmission], the maximum frame rate is 30 fps (25 fps).

5. Specifications

5.2 About Image capture mode and Image capture size

5.2.2 Restrictions

	WV-S15701-Z3L/ WV-S15701-Z3LN	WV-S15501-Z3L/ WV-S15501-Z3LN/ WV-S15501-Z1L/ WV-S15501-Z1LN	WV-S15301-Z1L/ WV-S15301-Z1LN		
Function	16:9(30/25fps) 4:3(30/25fps)	16:9(30/25fps) 4:3(30/25fps)	16:9(60/50fps)	16:9(30/25fps) 4:3(30/25fps)	4:3(15/12.5fps)
Snap shot	Yes	Yes	Yes	Yes	Yes
Multi screen	Yes	Yes	Yes	Yes	Yes
Extension software	Yes ^{*1}	Yes	No	Yes	No
Image rotation	Yes	Yes ^{*2}	Yes ^{*3}	Yes ^{*2}	Yes ^{*4}
Stabilizer	Yes ^{*5*6*7}	Yes ^{*5*7}	Yes ^{*5*7}	Yes ^{*5*7}	Yes ^{*5*7}
SD recording	Yes	Yes	No	Yes	Yes
Overlay image	Yes	Yes	Yes	Yes	Yes
Smart coding	Yes	Yes	Yes	Yes	Yes
Super Dynamic	Yes ^{*8}	Yes ^{*8}	No	Yes	Yes
Intelligent auto	Yes	Yes	Yes	Yes	Yes
Auto contrast adjust	Yes	Yes	Yes	Yes	Yes
Privacy zone	Yes ^{*9}	Yes	Yes	Yes	Yes
E-mail notification (Alarm image attachment)	Yes	Yes	Yes	Yes	Yes
FTP/SFTP transmission	Yes	Yes	Yes	Yes	Yes

5. Specifications

5.2 About Image capture mode and Image capture size

	WV-S15701-Z3L/ WV-S15701-Z3LN	WV-S15501-Z3L/ WV-S15501-Z3LN/ WV-S15501-Z1L/ WV-S15501-Z1LN	WV-S15301-Z1L/ WV-S15301-Z1LN		
VMD	Yes	Yes	Yes	Yes	Yes
SCD	Yes	Yes	Yes	Yes	Yes
Audio detection	Yes	Yes	Yes	Yes	Yes
Data encryption	Yes	Yes	Yes	Yes	Yes
Remote Monitoring	Yes	Yes	Yes	Yes	Yes

*1 When Extension software is running, the frame rate will be limited to max. "15 fps (12.5fps)".

*2 When "4:3(30/25fps)" is selected for "Image capture mode", the "90°" or "270°" cannot be set for [Image rotation].

*3 When "16:9(60/50fps)" is selected for "Image capture mode", the "90°" or "270°" cannot be set for [Image rotation].

*4 The "90°" or "270°" cannot be set for [Image rotation].

*5 When [Stabilizer] is selected for [On], [Super Dynamic] setting is [Off].

*6 When [Stabilizer] is selected for [On], the frame rate will be limited to max. "15 fps (12.5 fps)".

*7 When [Stabilizer] is selected for [On], the "90°" or "270°" cannot be set for [Image rotation].

*8 When [Super Dynamic level] is set to 30 or more, the frame rate will be limited to max. "15 fps (12.5 fps)".

*9 When [Privacy zone] is selected for [On], the frame rate will be limited to max. "15 fps (12.5 fps)".

5. Specifications

5.2 About Image capture mode and Image capture size

	WV-X15701-Z3L/ WV-X15701-Z3LN	WV-X15501-Z3L/ WV-X15501-Z3LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN	WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN			
Function	16:9(60/ 50fps)	16:9(30/ 25fps)	16:9(60/ 50fps) 4:3(60/ 50fps)	16:9(30/ 25fps) 4:3(30/ 25fps)	16:9(60/ 50fps) 4:3(60/ 50fps)	16:9(30/25fps) 4:3(30/25fps)
Snap shot	No	Yes	No	Yes	Yes	Yes
Multi screen	No	Yes	No	Yes	Yes	Yes
Extension software	No	Yes ^{*1}	No	Yes	No	Yes
Image rotation	Yes ^{*2}	Yes	Yes ^{*3}	Yes ^{*3}	Yes ^{*3}	Yes ^{*3}
Stabilizer	No	Yes ^{*4*5}	No	Yes ^{*4*5}	No	Yes ^{*4*5}
SD recording	No	Yes	No	Yes	No	Yes
Overlay image	No	Yes	No	Yes	Yes	Yes
Smart coding	No	Yes ^{*6}	No	Yes ^{*6}	Yes ^{*6}	Yes ^{*6}
Super Dynamic	No	Yes ^{*7}	No	Yes ^{*7}	No	Yes
Intelligent auto	No	Yes	No	Yes	Yes	Yes
Auto contrast adjust	No	Yes	No	Yes	Yes	Yes
Privacy zone	Yes ^{*9}	Yes ^{*10*11}	Yes ^{*9}	Yes ^{*11}	Yes ^{*9}	Yes
E-mail notification (Alarm image attachment)	No	Yes	No	Yes	Yes	Yes
FTP/SFTP transmission	No	Yes	No	Yes	Yes	Yes
VMD	No	Yes	No	Yes	Yes	Yes

5. Specifications

5.2 About Image capture mode and Image capture size

	WV-X15701-Z3L/ WV-X15701-Z3LN	WV-X15501-Z3L/ WV-X15501-Z3LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN	WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN			
SCD	No	Yes	No	Yes	Yes	Yes
Audio detection	No	Yes	No	Yes	Yes	Yes
Data encryption	Yes* ¹²	Yes	Yes* ¹²	Yes	Yes	Yes
Remote Monitoring	No	Yes	No	Yes	Yes	Yes

*1 When Extension software is running, the frame rate will be limited to max. "15 fps (12.5fps)".

*2 When "16:9(60/50fps)" is selected for "Image capture mode", the "90°" or "270°" cannot be set for [Image rotation].

*3 When "16:9(60/50fps)" or "4:3" is selected for "Image capture mode", the "90°" or "270°" cannot be set for [Image rotation].

*4 When [Stabilizer] is selected for [On], [Super Dynamic] setting is [Off].

*5 When [Stabilizer] is selected for [On], the "90°" or "270°" cannot be set for [Image rotation].

*6 "Advanced (Fixed GOP 60s w/1s key-frame)" is not supported.

*7 When [Super Dynamic level] is set to 30 or more, the frame rate will be limited to max. "15 fps (12.5 fps)".

*8 When "16:9(60/50fps)" is selected for [Image capture mode], [Blurring] cannot be set for [Privacy zone display format].

*9 When "16:9(60/50fps)" or "4:3(60/50fps)" is selected for [Image capture mode], [Blurring] cannot be set for [Privacy zone display format].

*10 When [Privacy zone] is selected for [On], the frame rate will be limited to max. "15 fps (12.5 fps)".

*11 When "Blurring" is selected for [Privacy zone display format], the frame rate will be limited to max. "15 fps (12.5 fps)".

*12 Only "Stream (1)" can be encrypted.

5. Specifications

5.3 DORI

5.3 DORI

WV-S15701-Z3L/ WV-S15701-Z3LN/ WV-X15701-Z3L/ WV-X15701-Z3LN

	WIDE	TELE
Detect (25 ppm/8 ppf)	127.1 m {416.9 ft}	3519.7 m {11547.6 ft}
Observe (62.5 ppm/19 ppf)	50.8 m {166.7 ft}	1407.9 m {4619.0 ft}
Recognize (125 ppm/38 ppf)	25.4 m {83.4 ft}	703.9 m {2309.5 ft}
Identify (250 ppm/76 ppf)	12.7 m {41.7 ft}	352.0 m {1154.8 ft}

WV-S15501-Z3L/ WV-S15501-Z3LN/ WV-X15501-Z3L/ WV-X15501-Z3LN

	WIDE	TELE
Detect (25 ppm/8 ppf)	92.4 m {303.0 ft}	2550.6 m {8368.0 ft}
Observe (62.5 ppm/19 ppf)	36.9 m {121.2 ft}	1020.2 m {3347.2 ft}
Recognize (125 ppm/38 ppf)	18.5 m {60.6 ft}	510.1 m {1673.6 ft}
Identify (250 ppm/76 ppf)	9.2 m {30.3 ft}	255.1 m {836.8 ft}

WV-S15501-Z1L/ WV-S15501-Z1LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN

	WIDE	TELE
Detect (25 ppm/8 ppf)	92.4 m {303.0 ft}	960.9 m {3152.6 ft}
Observe (62.5 ppm/19 ppf)	36.9 m {121.2 ft}	384.4 m {1261.0 ft}
Recognize (125 ppm/38 ppf)	18.5 m {60.6 ft}	192.2 m {630.5 ft}
Identify (250 ppm/76 ppf)	9.2 m {30.3 ft}	96.1 m {315.3 ft}

WV-S15301-Z1L/ WV-S15301-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN

	WIDE	TELE
Detect (25 ppm/8 ppf)	63.7 m {208.8 ft}	666.0 m {2185.0 ft}
Observe (62.5 ppm/19 ppf)	25.5 m {83.5 ft}	266.4 m {874.0 ft}
Recognize (125 ppm/38 ppf)	12.7 m {41.8 ft}	133.2 m {437.0 ft}
Identify (250 ppm/76 ppf)	6.4 m {20.9 ft}	66.6 m {218.5 ft}

5. Specifications

5.5 Extension software (AI application)

5.4 Streaming performance

- Up to 14 users are accessible at the same time.
- The maximum bandwidth is 50 Mbps.

5.5 Extension software (AI application)

Information about the number and capacity of Extension software (applications) that can be installed.

WV-S15701-Z3L/ WV-S15701-Z3LN/ WV-S15501-Z3L/ WV-S15501-Z3LN/ WV-S15501-Z1L/ WV-S15501-Z1LN/ WV-S15301-Z1L/ WV-S15301-Z1LN

Number of installable applications	ROM capacity	RAM capacity
3	150 MB	250 MB

WV-X15701-Z3L/ WV-X15701-Z3LN/ WV-X15501-Z3L/ WV-X15501-Z3LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN

Number of installable applications	ROM capacity	RAM capacity
9	6 GB	1024 MB

For the latest software (AI application) support status and restrictions, please check the technical information <Control No.: C0103> on our website.

→[Technical information website](#)



WV-S15701-Z3L/ WV-S15701-Z3LN/ WV-S15501-Z3L/ WV-S15501-Z3LN/ WV-S15501-Z1L/ WV-S15501-Z1LN/ WV-S15301-Z1L/ WV-S15301-Z1LN

Software (AI apps)	Pre-install	Support status
AI-VMD	Yes	Supported
AI Privacy Guard	No	Supported
AI Face Detection	No	Supported
AI People Detection	Yes	Supported

5. Specifications

5.5 Extension software (AI application)

WV-S15701-Z3L/ WV-S15701-Z3LN/ WV-S15501-Z3L/ WV-S15501-Z3LN/ WV-S15501-Z1L/ WV-S15501-Z1LN/ WV-S15301-Z1L/ WV-S15301-Z1LN (continued)

Software (AI apps)	Pre-install	Support status
AI Vehicle Detection	No	Supported
AI Occupancy Detection	No	Supported
AI Scene Change Detection	No	Supported
AI On-site Learning	No	Supported
AI Processing Relay	No	Not supported
Application Release License	Yes	Supported
VaxALPR(Vaxtor LPR MMC)	No	Supported



VaxALPR(Vaxtor LPR MMC) is a Third Party Application. Note the following points when using Third Party Application.

Terms and Conditions on Installation of Third Party Application

You may install a third party's application ("Third Party Application") on your i-PRO Product ("Product") and you are starting to install Third Party Application. You agree on the following terms and conditions upon commencement of use of Third Party Application or completion of installation thereof;

1. All rights including intellectual property rights and ownership of or relating to Third Party Application belong to the proprietor of such Third Party Application and are not assigned to you.
2. You may use Third Party Application only combined or connecting with Product.
3. TO THE EXTENT ACCEPTED BY THE LAWS OF RELEVANT JURISDICTION, i-PRO DOES NOT REPRESENT AND WARRANT ON (i) PERFORMANCE OR BEHAVIOR OF PRODUCT RELATING TO USE OF THIRD PARTY APPLICATION; (ii) SPECIFICATION OR QUALITY OF THIRD PARTY APPLICATION; AND (iii) NON-INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHT OF ANY THIRD PARTY.
4. To the extent accepted by the laws of relevant jurisdiction, i-PRO gives no indemnification for any direct or indirect damages caused by or relating to use or installation of Third Party Application.
5. In addition to this terms and conditions, your use of Third Party Application may be subject to other terms and conditions or limitations provided by the proprietor of Third Party Application.

5. Specifications

5.5 Extension software (AI application)

WV-X15701-Z3L/ WV-X15701-Z3LN/ WV-X15501-Z3L/ WV-X15501-Z3LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN

Software (AI apps)	Pre-install	Support status
AI-VMD	Yes	Supported
AI Privacy Guard	Yes	Supported
AI Face Detection	No	Supported
AI People Detection	Yes	Supported
AI Vehicle Detection	Yes	Supported
AI Occupancy Detection	Yes	Supported
AI Scene Change Detection	Yes	Supported
AI On-site Learning	Yes	Supported
AI Processing Relay	Yes	Supported
Application Release License	Yes	Supported
VaxALPR(Vaxtor LPR MMC)	Yes	Supported



VaxALPR(Vaxtor LPR MMC) is a Third Party Application. Note the following points when using Third Party Application.

Terms and Conditions on Installation of Third Party Application

You may install a third party's application ("Third Party Application") on your i-PRO Product ("Product") and you are starting to install Third Party Application. You agree on the following terms and conditions upon commencement of use of Third Party Application or completion of installation thereof;

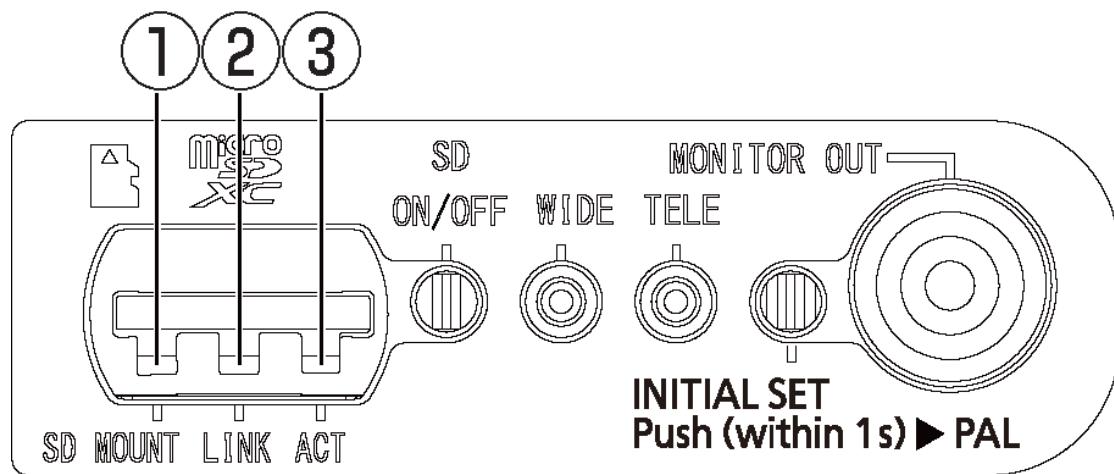
1. All rights including intellectual property rights and ownership of or relating to Third Party Application belong to the proprietor of such Third Party Application and are not assigned to you.
2. You may use Third Party Application only combined or connecting with Product.
3. TO THE EXTENT ACCEPTED BY THE LAWS OF RELEVANT JURISDICTION, i-PRO DOES NOT REPRESENT AND WARRANT ON (i) PERFORMANCE OR BEHAVIOR OF PRODUCT RELATING TO USE OF THIRD PARTY APPLICATION; (ii) SPECIFICATION OR QUALITY OF THIRD PARTY APPLICATION; AND (iii) NON-INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHT OF ANY THIRD PARTY.
4. To the extent accepted by the laws of relevant jurisdiction, i-PRO gives no indemnification for any direct or indirect damages caused by or relating to use or installation of Third Party Application.

5. Specifications

5.6 Lamp

5. In addition to this terms and conditions, your use of Third Party Application may be subject to other terms and conditions or limitations provided by the proprietor of Third Party Application.

5.6 Lamp



- ① [SD MOUNT] indicator
- ② [LINK] indicator
- ③ [ACT] indicator

5.6.1 Lighting of the lamp

[SD MOUNT] indicator

- When a microSD memory card is inserted and could be recognized
 - Lights off → Blinks green → Lights green
- When data can be saved after the microSD memory card is inserted and the SD ON/OFF button is pressed (less than 1 second)
 - Lights off → Lights green
- When data can be saved to the microSD memory card
 - Lights green
- When the microSD memory card is removed after holding down the SD ON/OFF button (about 2 seconds) (recording)
 - Lights green → Blinks green → Lights off

5. Specifications

5.7 Button

- When the microSD memory card is removed after holding down the SD ON/OFF button (about 2 seconds) (waiting for recording)
 - Lights green → Lights off
- When data cannot be saved to the microSD memory card because an abnormality was detected or the microSD memory card is configured not to be used
 - Lights off

[LINK] indicator

When the camera is able to communicate with the connected device

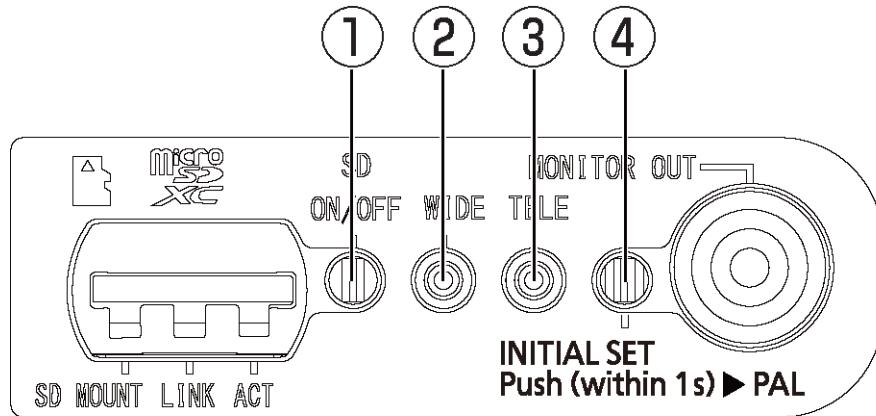
- Lights orange

[ACT] indicator

When data is being sent via the network camera

- Blinks green (accessing)

5.7 Button

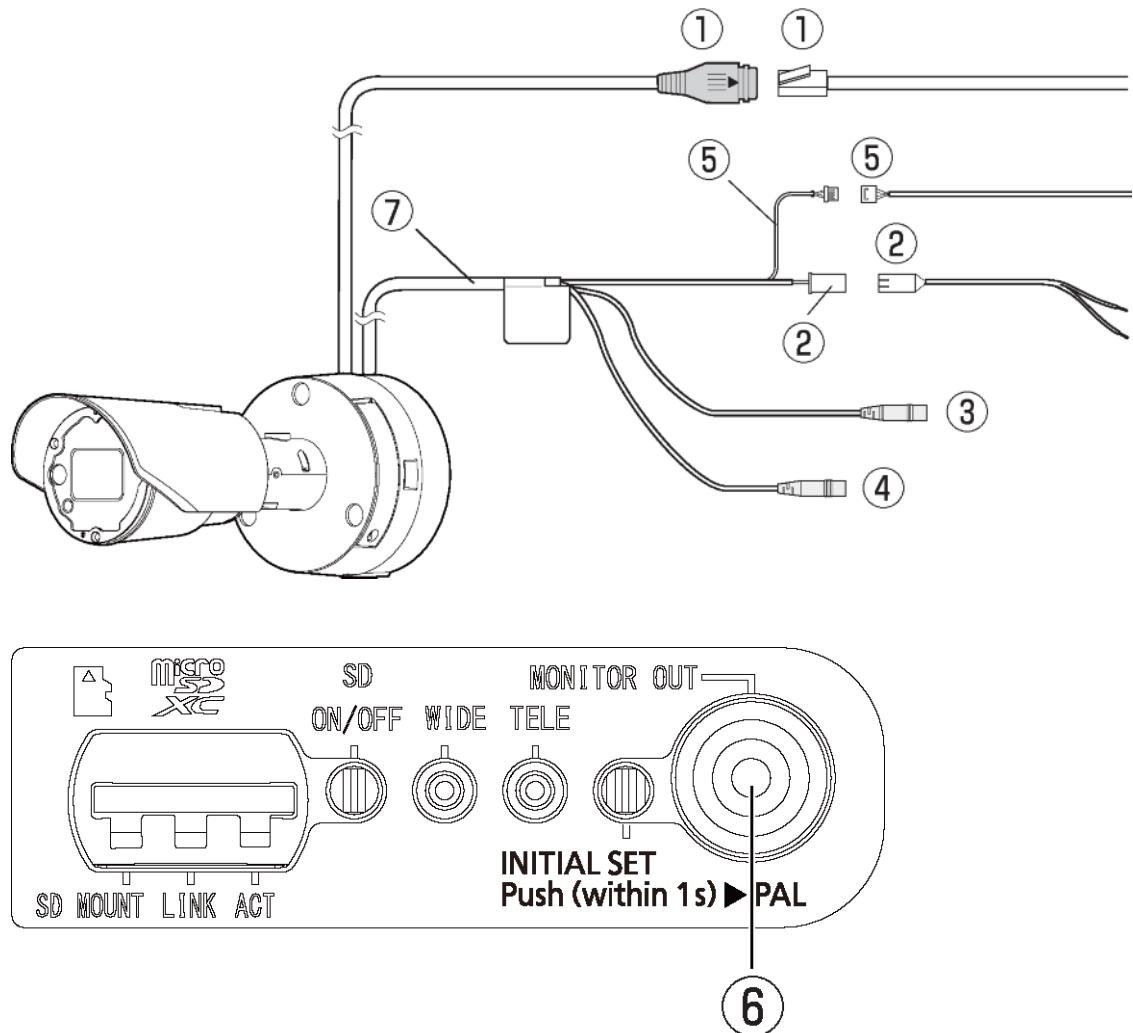


- ① [SD ON/OFF] button
- ② [WIDE+AF] button
- ③ [TELE+AF] button
- ④ [INITIAL SET] button

5. Specifications

5.8 Cable

5.8 Cable



- ① RJ45 network cable /Ethernet cable with RJ45 plug (category 5e or better, straight, all 4 pairs (8 pins), less than 100m {328 feet})
- ② Power supply cable /2P power cable (I/O cable (option) accessory)
- ③ Audio input cable (white)
- ④ Audio output cable (black)
- ⑤ EXT I/O cable /4P alarm cable (I/O cable (option) accessory)
- ⑥ [MONITOR OUT] terminal (factory shipment: NTSC monitor)
- ⑦ I/O cable (option)

5. Specifications

5.8 Cable



A detailed description of EXT I/O cable follows:

GND (Black)

ALARM IN1 (Green) : Alarm input 1/ Black & white input/ Auto time adjustment input

ALARM IN2 (Red) : Alarm input 2/ ALARM OUT

ALARM IN3 (Gray) : Alarm input 3/ ALARM OUT/ AUX OUT

Input specification : No-voltage make contact input (4 V – 5 V DC, internally pulled up resistor (approx. 5 kΩ))

OFF : Open or 4 V – 5 V DC

ON : Make contact with GND (required drive current: 1 mA or more)

Output specification : Open collector output (maximum applied voltage: 20 V DC)

OPEN : 4 V – 5 V DC, internally pulled up resistor (approx. 5 kΩ)

CLOSE : Output voltage 1 V DC or less (maximum drive current: 50 mA)

6. Other

6.2 Check the software version

6. Other

6.1 Initialize

You can initialize the main unit by pressing the [INITIAL SET] button. For the position of the INITIAL SET button, refer to the following.

→Button

1. Turn off the power of this product.
2. Turn on the power of this product while pressing the [INITIAL SET] button.
3. Press the [INITIAL SET] button for 15 seconds or longer after the power is turned on.
4. Release the INITIAL SET button
 - Approximately two minutes later, this product is started and the settings containing the network settings are initialized. If it does not start normally, try again.

6.2 Check the software version

The functions of this product are implemented in software. We recommend that you first check the current software version if there is a problem with the operation of this product.

- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Maintenance] of the Advanced menus on the left>Clicking on the [Upgrade] tabs displays the versioning window.
1. Check software versions with [Firmware version]
 - The current software version can be checked.



Up-to-date versions of software may contain modifications to specific problems.

6. Other

6.4 Order of setting when adjusting image quality

6.3 Upgrade software

➤ Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Maintenance] of the Advanced menus on the left>When the [Upgrade] tabs are clicked, the software-upgradeable window is displayed.

1. Download the latest software to the PC
2. Click Select Files to specify the software you downloaded, and then click [Execute].



- Use a PC on the same subnet as this product to upgrade the version.
- Do not turn off the power of this product during version upgrading. Do not perform any operation until the version upgrade is completed.
- Be sure to check the version after upgrading. Also, delete the temporary Internet file.

6.4 Order of setting when adjusting image quality

It is recommended to set the settings for image quality in the following order: Adjustment of visibility → Adjustment of color → Removal of noise.

1. Adjust the visibility
 - [Light control mode], [Intelligent auto], [Super Dynamic], [Contrast level], [High light compensation(HLC)], [Adaptive black stretch], [Adaptive highlight stretch], [Maximum gain], [Maximum shutter], [Pedestal level]
2. Adjust the color
 - [White balance], [Chroma gain level]
3. Remove the noise
 - [Digital noise reduction], [Sharpness level]

Refer to the User Manual for details of each function.



- The image quality adjustment function may affect each other.
- If necessary, adjust the brightness level of the screen.



6. Other

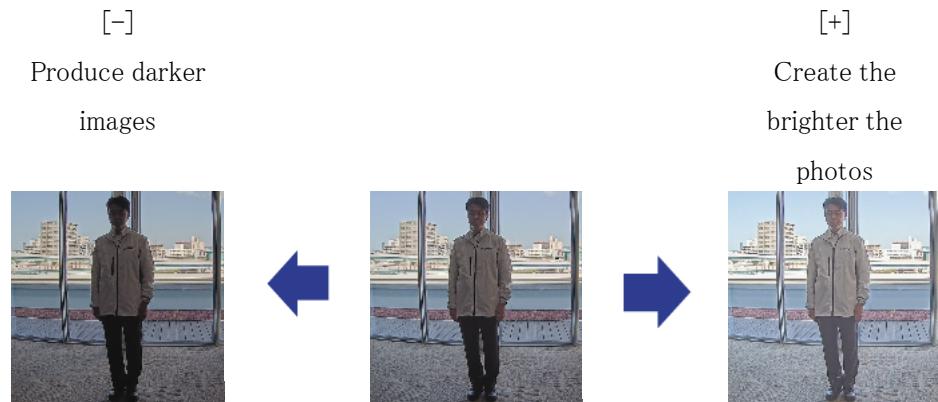
6.6 Adjusting object brightness (dark scenes)

6.5 Adjusting object brightness (bright scenes)

6.5.1 Adjusting brightness

Adjust the object brightness.

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
 1. Adjust the [Brightness] of [Image quality]
 - Moving in the [+] direction brightens the image.
 - Move in the [-] direction to darken the image.



6.6 Adjusting object brightness (dark scenes)

6.6.1 Adjust the maximum gain

In dark scenes, the image becomes brighter by increasing the maximum gain.

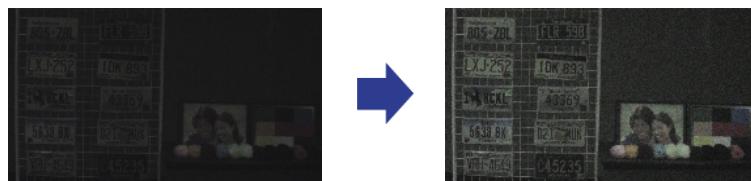
- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
 1. Adjust the [Maximum gain] to [+]

Maximum gain: 6

Maximum gain: 11

6. Other

6.7 Reducing white flickering and blacking on the screen



Increasing the maximum gain increases noise.

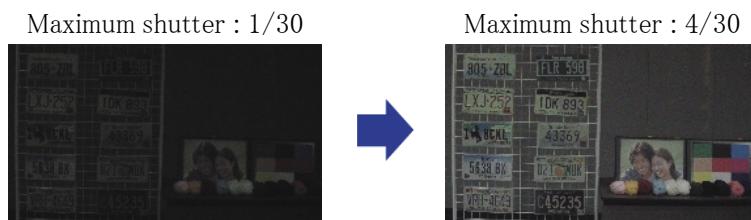


6.6.2 Adjust the maximum shutter

Increasing the maximum shutter makes the images brighter.

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
- 1. Select [Maximum shutter]
 - Selecting [Maximum shutter] longer than [Max 1/30s] brightens the image because the amount of light entered increases.

Increasing the maximum shutter increases the blur.



6.7 Reducing white flickering and blacking on the screen

6.7.1 Set Super Dynamic

When Super Dynamic is set to ON, both bright and dark areas are reproduced faithfully, even when shooting in a place with a large brightness difference.

6. Other

6.7 Reducing white flickering and blacking on the screen

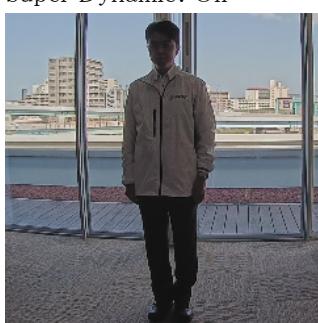
- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.

1. Set [Super Dynamic] to [On]

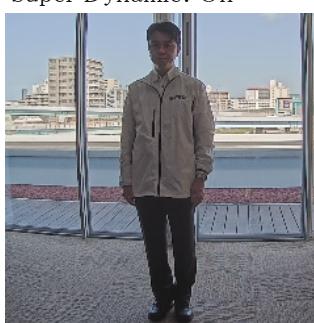


Set [Super Dynamic] to [Off] when the following phenomena are observed depending on the lighting condition.
-If flicker or color change occurs
-Noise in the bright area on the screen

Super Dynamic: Off



Super Dynamic: On



6.7.2 Set the backlight compensation

By setting [Backlight Corrector], the darkness of the indoor object is suppressed (brighter indoor object).

- Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs> When [Advanced settings] is clicked, the image quality adjustment setting window is displayed.
1. Set to [Back light compensation(BLC)] in the [Super Dynamic] [BLC/ HLC]



If [Super Dynamic] is set to [On] or [Intelligent Auto] is set to [On], [Backlight Compensation] cannot be set.

Back Light Correction: Off

Back light correction: On

Level: 16

6. Other

6.7 Reducing white flickering and blacking on the screen



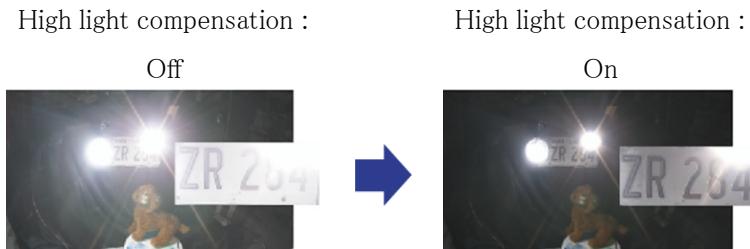
6.7.3 Set the high light compensation

By setting [High light compensation(HLC)], bright lights such as car headlights suppress the brightness of the object.

- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>When [Setup] is clicked, the image quality adjustment setting window is displayed.
- 1. Select [High light compensation(HLC)] in [Super Dynamic] [BLC/ HLC]



If [Super Dynamic] is set to [On] or [Intelligent Auto] is set to [On], it cannot be set to [High light compensation(HLC)].



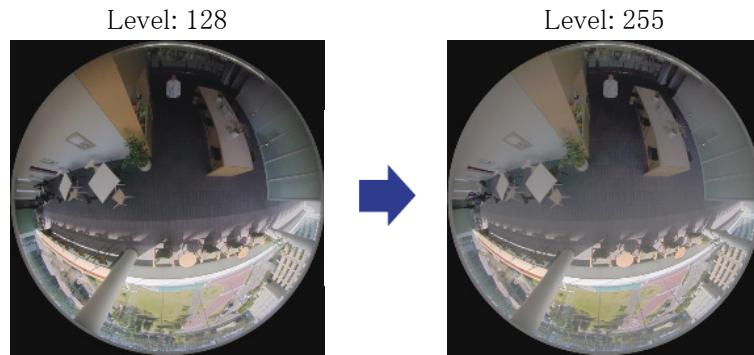
6.7.4 Adjust the adaptive black stretch

Adjust the [Adaptive black stretch] to brighten the dark areas of the images.

- Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>When [Advanced settings] is clicked, the image quality adjustment setting window is displayed.
- 1. Adjust [Detail setting] [Adaptive black stretch] levels to [+]

6. Other

6.8 Adjust the object contrast

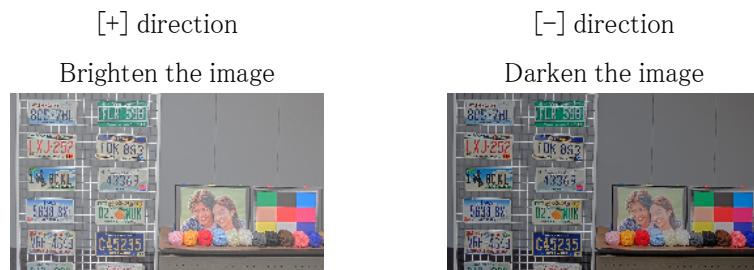


6.7.5 Adjust the [Pedestal level]

Adjust the [Pedestal level] to adjust the black level of the image.

➤ Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>When [Setup] is clicked, the image quality adjustment setting window is displayed.

1. Adjust the pedestal level of the [Detailed setting].
 - Moving in the [+] direction brightens the image.
 - Move in the [-] direction to darken the image.



6.8 Adjust the object contrast

6.8.1 Adjust the contrast

By adjusting the [Contrast level] to increase the contrast between the light and dark images, visibility of the object with less contrast can be improved.

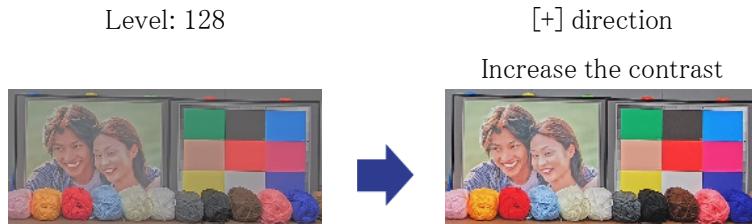
➤ Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality]

6. Other

6.10 Reducing the blur of object (bright scenes)

tabs>When [Setup] is clicked, the image quality adjustment setting window is displayed.

1. Adjust [Detailed setting] [Contrast level] levels to [+]



6.9 Reduce flicker

Flickers are automatically corrected by using [Light control mode].

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
- 1. Select [Indoor scene (50 Hz)] or [Indoor scene (60 Hz)] for [Light control mode].
 - Use 50 Hz/60 Hz depending on the region.

6.10 Reducing the blur of object (bright scenes)

6.10.1 Set intelligent auto (motion priority level)

Using [Intelligent Auto], the camera identifies object with scenes (backlights, outdoors, night scenes, etc.) and facial movements of people. The camera automatically adjusts the amount, gain, shutter speed, and contrast of light entering the camera from the camera's lenses to make it easier to see a moving object.

- Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs> When [Advanced settings] is clicked, the image quality adjustment setting window is displayed.
- 1. Adjust [Face priority level (Brightness)] and [Motion priority level (Shutter)] with [Intelligent Auto] set to [On].
 - By adjusting in the [+] direction, blurring of the object will be reduced.

6. Other

6.10 Reducing the blur of object (bright scenes)



Increasing the level in a low illumination environment increases noise.

Off (person
blurred)



On (less blurring)



6.10.2 Adjust the maximum shutter

Shortening the maximum shutter reduces blur.

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
- 1. Selecting a shorter [Maximum shutter] than [Max. 1/30s]
 - If [Maximum shutter] is set to a shorter time than [Max. 1/30s], blur is reduced.



In low illumination environments, shortening the maximum shutter will darken the object and increase the noise.

Maximum
shutter :
1/30



Maximum
shutter :
1/250



6. Other

6.12 Sharpen the outline of the subject

6.11 Reducing object blur (dark scenes)

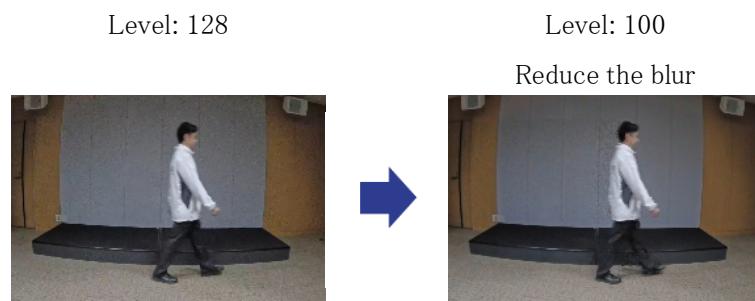
6.11.1 Adjust digital noise reduction

Reducing the effects of noise reduction by adjusting the [Digital noise reduction] reduces the blur.

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
 1. Adjust the [Digital noise reduction] in the [-] direction.



If the effect of noise reduction is reduced, the noise will increase.



6.12 Sharpen the outline of the subject

6.12.1 Adjust the sharpness level

Adjust the [Sharpness level] to sharpen the outline of the images.

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
 1. Adjust the [Sharpness level] to [+]

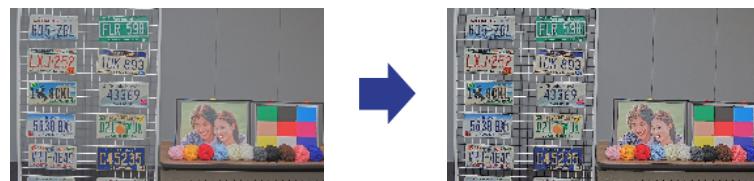
Level: 10

Level: 31

Sharpen the outline of the
image

6. Other

6.13 Adjust the color



6.13 Adjust the color

6.13.1 Adjust color density

Adjust the [Chroma gain level] to adjust the darkness.

- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>When [Setup] is clicked, the image quality adjustment setting window is displayed.
 1. Adjust [Chroma gain level] in [Basic Adjustment] or [Detailed setting]
 - If you move the slider in the “+” direction, the colors will become loud and vivid.
 - If you move the slider in the “-” direction, the colors will become subdued.



6.13.2 Adjust the white balance

If the color is affected by a sodium lamp, use [White balance] to adjust the color.

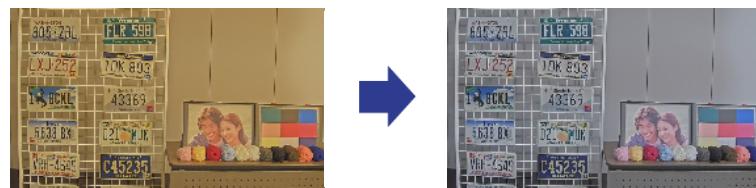
- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>When [Setup] is clicked, the image quality adjustment setting window is displayed.
 1. Select [ATW2] in [White balance]
 - The camera automatically adjusts the white balance under a sodium lamp.

Effect of sodium lamp

No effect of sodium lamp

6. Other

6.15 Reducing object noise (dark scenes)

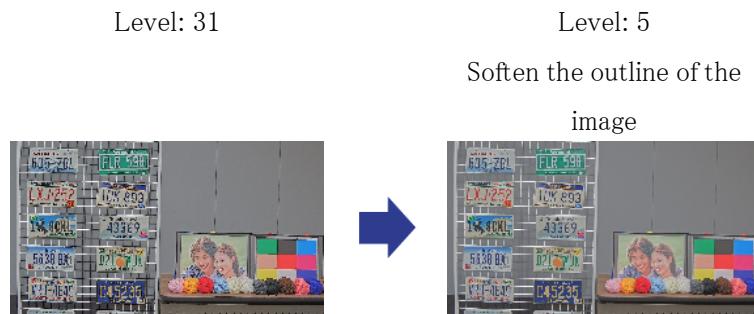


6.14 Reducing object noise (bright scenes)

6.14.1 Adjust the sharpness level

Adjusting the [Sharpness level] to make the images soft reduces the noise around the object.

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
- 1. Adjust the [Sharpness level] in the [-] direction.



6.15 Reducing object noise (dark scenes)

6.15.1 Adjust digital noise reduction

By adjusting the [Digital noise reduction] and increasing the effects of noise reduction, noise is reduced.

- Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.
- 1. Adjust the [Digital noise reduction] to [+]

6. Other

6.16 Set focus when switching between black and white.



Increasing the effects of noise reduction increases blur.

Level: 90



Level: 255

Reduce noise



6.16 Set focus when switching between black and white.

6.16.1 Focus adjustment method for switching between black and white

When [Adjusting method] is set to [Auto], the camera may not be able to focus when switching between black and white if, under low light conditions, spot-light such as street lights or flat object is reflected. If this is the case, set preset registration as shown below.

➤ Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]> [Zoom] of the Advanced menus on the left>When [Zoom/Focus] tab is clicked, the Zoom/focus adjustment setup page is displayed.

1. Set [Adjusting method]

- Set [Day & Night(IR)] to [Fixed focus shift(Normal)] when used with either [Off], [On(IR Light Off)], [On(IR Light On)], [Auto1(IR Light Off)], [Auto2(IR Light On)], or [Auto3(SCC)].
- When [Day & Night(IR)] is used in [Auto4(LPR)], set it to [Fixed focus shift(LPR)].

* Day & Night(IR) can be set in the Picture Adjust Settings window, which is displayed by clicking Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>When [Setup].

2. Use [Manual focus adjustment] to adjust the focus position in daytime color or nighttime black and white conditions

6. Other

6.16 Set focus when switching between black and white.

3. Set [Day & Night(IR)] to [Auto1(IR Light Off)], [Auto2(IR Light On)], [Auto3(SCC)], or [Auto4(LPR)].



- To be black-and-white, set [Day & Night(IR)] to [On(IR Light On)] and force it to black-and-white.
- [Auto3(SCC)] of [Day & Night(IR)] can be set only for the 10x model.
(WV-S15501-Z1L/ WV-S15501-Z1LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN/ WV-S15301-Z1L/ WV-S15301-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN)
- If [Day & Night(IR)] is set to [Auto4(LPR)], [Day & Night(IR)] > [Level] cannot be set or changed.
- Since [Auto4(LPR)] of [Day & Night(IR)] setting assumes high-speed shutter operation, switching between black-and-white and color images may be repeated when Maximum shutter is set to a shutter setting of [Max. 1/120s] or less ([Max. 1/30s], etc.).

Zoom/focus adjustment

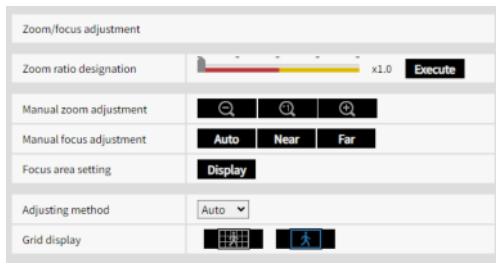
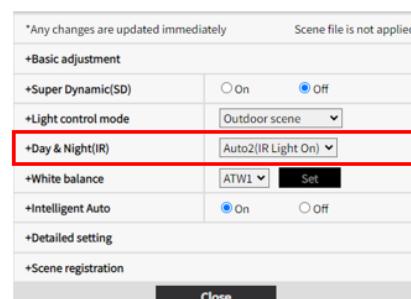


Image adjust



If the focus does not match even in the above procedure, adjust the focus as follows.

- Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Zoom] of the Advanced menus on the left>[Preset position] in the [Position] tabs>When [Setup] is clicked, the Preset position setting window is displayed.
- 1. Select the position number from [Preset] pull-down menu.
- 2. Change [Auto focus] to [Off]
- 3. Use [Focus]’s [Auto]/[Near]/[Far] to adjust the focused position during daytime.
- 4. Press [Register] key
 - Register a preset position with the focus position in the color state, such as when taking pictures during the day.
- 5. With [Day & Night(IR)] set to [On(IR Light On)] at night, use [Focus]’s [Auto]/[Near]/[Far]

6. Other

6.16 Set focus when switching between black and white.

to adjust the focused position.

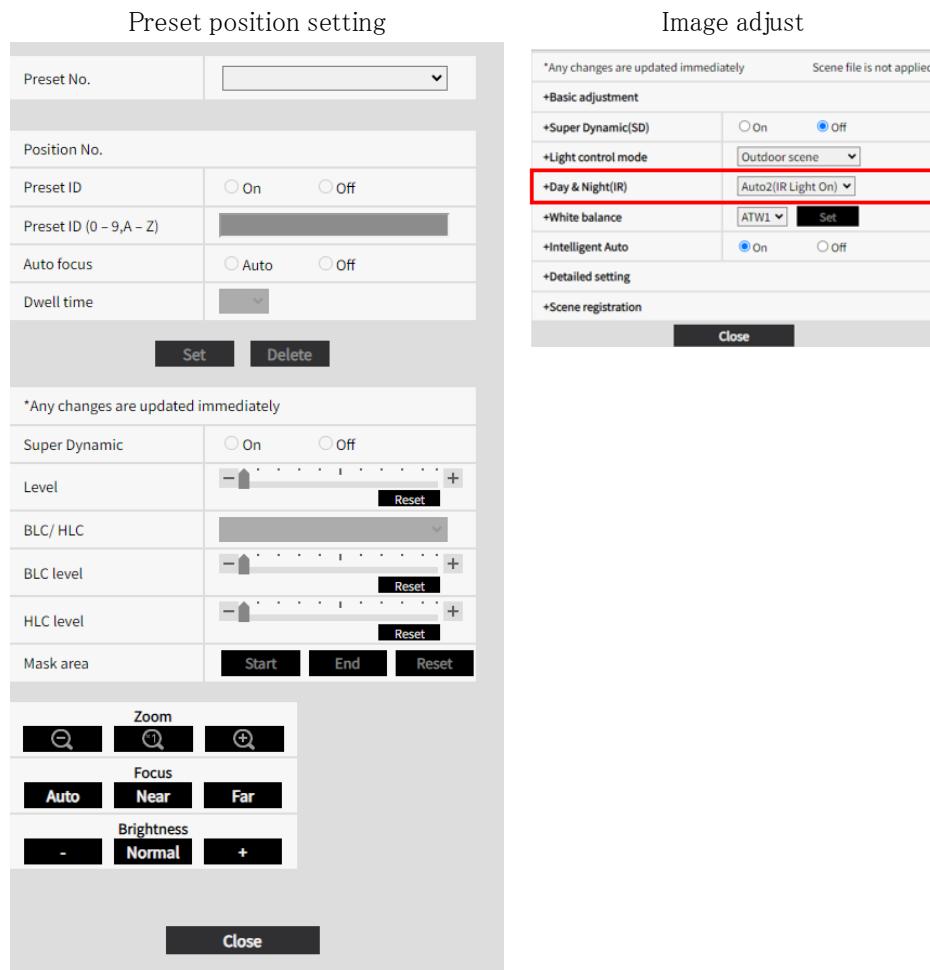
6. Press [Register] key
 - Register a preset position with black and white focus, such as when taking pictures at night.
7. Open [Time range] > [Time range] in the Advanced menu.
8. Set the day of the week and the duration of [Time range] by selecting [Operation mode] pull-down menu of [Time range] and selecting [Preset] registered in (4).
9. (8) Select [Time range] day of the week and the duration from [Operation mode] pull-down menu of [Preset] registered in (6) and set the day of the week.
10. Press [Set] key
 - Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]> [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs> When [Setup] is clicked, the Image adjust setting window is displayed.
11. Set [Day & Night(IR)] to [Auto1(IR Light Off)], [Auto2(IR Light On)], [Auto3(SCC)], or [Auto4(LPR)] depending on the application.



- To be black-and-white, set [Day & Night(IR)] to [On(IR Light On)] and force it to black-and-white.
- [Auto3(SCC)] of [Day & Night(IR)] can be set only for the 10x model.
(WV-S15501-Z1L/ WV-S15501-Z1LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/ WV-X15502-Z1L/ WV-X15502-Z1LN/
WV-S15301-Z1L/ WV-S15301-Z1LN/ WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN)
- If [Day & Night(IR)] is set to [Auto4(LPR)], [Day & Night(IR)] > [Level] cannot be set or changed.
- Since [Auto4(LPR)] of [Day & Night(IR)] setting assumes high-speed shutter operation, switching between black-and-white and color images may be repeated when Maximum shutter is set to a shutter setting of [Max. 1/120s] or less ([Max. 1/30s], etc.).

6. Other

6.17 Troubleshooting



6.17 Troubleshooting

Check the symptoms on this table before asking for repair.

Contact the dealer from whom you purchased the watch if you do not recover from any of these problems or if you have symptoms other than those listed in this table.

Phenomenon	Cause	Countermeasures	Reference
Be not powered on	For a PoE++ power supply		Installation

6. Other

6.17 Troubleshooting

Phenomenon	Cause	Countermeasures	Reference
	<ul style="list-style-type: none"> • Is the Ethernet cable of this product connected to the power supply device for PoE++ (IEEE802.3bt compliant)? • Some power supply devices that can connect multiple PoE++ terminal devices will not supply power if the total power supply exceeds the limit. 	<ul style="list-style-type: none"> • Check if it is connected. • Refer to the instruction manual for the PoE++ power supply. 	
	<ul style="list-style-type: none"> For DC power supply • Is the 2P power cable (WV-QCA501A accessory) connected to the power cable? • Does the AC adapter meet the rating of this product? 	<ul style="list-style-type: none"> • Check if it is connected. • Check the AC adapter rating. 	
The LINK lamp does not illuminate orange when the network cable is connected.	<ul style="list-style-type: none"> • Is the Ethernet cable connected correctly to this product? • Is the hub or router to which this product is connected working correctly? • Is the Ethernet cable connected to this product broken? 	<ul style="list-style-type: none"> • Connect the Ethernet cable properly. • Check that your hub or router is working correctly. • Replace with another Ethernet cable. 	—

6. Other

6.17 Troubleshooting

Phenomenon	Cause	Countermeasures	Reference
The SD Memory Card Warning/Error lamp blinks red.	An SD Memory Card read/write error has occurred. Is an abnormal memory card inserted?	Replace the SD Memory Card with a normal one.	—
Generate noise in the audio input	<p>The following may be considered.</p> <ul style="list-style-type: none"> • The grounding of the camera, switching hub, and peripheral equipment is not grounded. • Power lines, etc. are connected nearby. • There are equipment that generates strong electric and magnetic fields in the vicinity (such as television and radio transmission antennas, air conditioner motors, power transformers, etc.). 	If the peripheral is not improved, use a microphone with an amplifier or connect an audio output with low output impedance.	Installation
Incorrect auto focus (AF)	The focus may not be adjusted automatically in the following locations or object.	Adjust the focus manually from the top of the software screen.	—

6. Other

6.18 Precautions pertaining to usage

Phenomenon	Cause	Countermeasures	Reference
	<ul style="list-style-type: none">• There is a big move.• Large variation in illumination intensity• Low illuminance• Be extremely bright or reflective• Over windows• Places where front panels are prone to contamination.• White walls and other light and darkness are low.• Flashing is severe.		

6.18 Precautions pertaining to usage

• Impact on image/image quality

Image quality may deteriorate or the image may be difficult to see under the installation conditions below.

- When rain drops adhere to the front panel due to wind during rainfall
- When snow adheres to the front panel due to wind during snow coverage (depending on the amount of snow and the snow quality)
- Contamination on the front panel due to dust in the air or exhaust gas from automobiles
- **Thin white radial impressions may appear in the front panel. These occur during the process of forming the rain wash coating and are not abnormalities in the product.**

<WV-S15701-Z3LN/ WV-X15701-Z3LN/ WV-S15501-Z3LN/ WV-S15501-Z1LN/

WV-X15501-Z3LN/ WV-X15501-Z1LN/ WV-X15502-Z1LN/ WV-X15301-Z1LN/

WV-X15302-Z1LN>

(ClearSight coating models only)

- **Do not apply a strong impact to the front.**

Otherwise damage or flooding can result.

- **Ventilation opening**

6. Other

6.18 Precautions pertaining to usage

- Condensation may occur under certain conditions, such as temperature, humidity, and weather, and dehumidification may take longer.
- Do not block the surface of the ventilation opening.

- **Using in low temperature environments**

This product is equipped with an internal heater unit for use in cold climates.

The heater unit turns on automatically when the temperature inside the product drops below around -15°C { 5°F }.

When this product is installed and operated in low temperatures below -20°C { -4°F }, it may require time to start up since the camera will wait to be warmed up internally by the internal heater right after the power is turned on.

Also, the camera may not function properly, if it is installed and operated in an environment where the temperature is below -30°C { -22°F }~ 60°C { -76°F }. In such a case, wait approximately 2 hours or more until the camera is warmed up. Then, turn on the power again. As the camera warms up, snow or frost accumulated on the front panel will melt. However, it may not be defrosted from the panel depending on the ambient temperature or weather condition.

- **When "WARMING UP-PLEASE WAIT" is displayed on the screen during use**

The inside temperature of this product is low. Wait for the interior to warm up before this product restarts automatically. Please wait for a while.

- **Do not touch the lens or front panel directly.**

If dirty, image quality may deteriorate.

- **Batteries**

The battery is built into this product. Do not leave the battery in an environment exposed to excessive heat from sunlight or fire.

- **If this product is no longer in use, do not leave it unattended and must be removed.**

- **Consumables**

The following parts are consumables. Replace the watch with a new one based on the life time. The lifetime varies depending on the operating environment and conditions. The life time is a rough guide when used at $+35^{\circ}\text{C}$.

- Lens:

<WV-S15701-Z3L/ WV-S15701-Z3LN/ WV-X15701-Z3L/ WV-X15701-Z3LN/

WV-S15501-Z3L/ WV-S15501-Z3LN/ WV-X15501-Z3L/ WV-X15501-Z3LN>

About 1 million cycles (about 5,500 hours)

<WV-S15501-Z1L/ WV-S15501-Z1LN/ WV-X15501-Z1L/ WV-X15501-Z1LN/

WV-X15502-Z1L/ WV-X15502-Z1LN/ WV-S15301-Z1L/ WV-S15301-Z1LN/

6. Other

6.18 Precautions pertaining to usage

WV-X15301-Z1L/ WV-X15301-Z1LN/ WV-X15302-Z1L/ WV-X15302-Z1LN>

About 3.7 million cycles (about 20,000 hours)

- **Installation place**

The product can not be installed in areas by the sea, the seashore, or where snow-melting agent is sprayed.

- **We shall not be liable for content compensation, losses of recorded or edited content and any direct or indirect consequent damages caused by failure to record or edit due to faults with this unit or the microSD memory card.**

In addition, the same provisions apply after unit is repaired.

- **Open Source Software**

- This product contains open source software licensed under GPL (GNU General Public License), LGPL (GNU Lesser General Public License), etc.
- Customers can duplicate, distribute and modify the source code of the software under license of GPL and/or LGPL.
- For details concerning licensing and source code of open source software, click “Click here for OSS information” on “Support” page of the setup menu of this product and read the displayed content.
- Please note that we shall not respond to any inquiries regarding the contents of the source code.

- **Copyright**

Except for open source software licensed under GPL/LGPL and so on, distributing, copying, disassembling, reverse compiling and reverse engineering of the software provided with this product are all expressly prohibited. In addition, exporting any software provided with this product violating export laws is prohibited.

- **For trademarks and registered trademarks**

- Microsoft, Windows, Windows Media, Internet Explorer, Microsoft Edge, and ActiveX are registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Intel and Intel Core are trademarks of Intel Corporation or its subsidiaries in the United States and/or other countries.
- Adobe, Acrobat, and Reader are either registered trademarks or trademarks of Adobe in the United States and/or other countries.
- microSDXC Logo is a trademark of SD-3C, LLC.
- iPad and iPhone are trademarks of Apple Inc., registered in the United States and other countries.
- Android and Google Chrome are trademarks of Google LLC.

- Firefox is a trademark of the Mozilla Foundation in the United States and other countries.
- QR Code is a registered trademark of DENSO WAVE INCORPORATED in Japan and other countries.
- Other company names and product names described in this manual are trademarks or registered trademarks of each company.

6.19 Disclaimer

IN NO EVENT SHALL i-PRO Co., Ltd. BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

1. ANY LOSS OR DAMAGE, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
2. ANY INCONVENIENCE, LOSS, OR DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
3. ALL MALFUNCTIONS OR TROUBLES FROM UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER, REGARDLESS OF THE CAUSE OF THE MALFUNCTION OR TROUBLE;
4. INCONVENIENCE OR ANY LOSS ARISING WHEN IMAGES ARE NOT DISPLAYED, DUE TO ANY REASON OR CAUSE INCLUDING ANY FAILURE OR PROBLEM OF THE PRODUCT;
5. ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
6. ANY CLAIM OR ACTION FOR DAMAGES BROUGHT BY ANY PERSON OR ORGANIZATION AS A PHOTOGRAPHED SUBJECT DUE TO VIOLATION OF PRIVACY CONCERNING A SURVEILLANCE CAMERA'S PICTURE OR SAVED DATA, FOR SOME REASON (INCLUDING USE WHEN USER AUTHENTICATION ON THE AUTHENTICATION SETTING SCREEN IS SET TO OFF)、 BECOMING PUBLIC OR BEING USED FOR ANY PURPOSE;
7. LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE (INCLUDING INITIALIZATION OF THE PRODUCT DUE TO FORGOTTEN AUTHENTICATION INFORMATION SUCH AS A USER NAME AND PASSWORD);

Limitation of liability

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THE THIRD PARTY'S RIGHT.

THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE ADDED TO THE INFORMATION HEREIN, AT ANY TIME, FOR THE IMPROVEMENTS OF THIS PUBLICATION AND/OR THE CORRESPONDING PRODUCT (S).

6.20 NETWORK RELATIONSHIP

Since this product is connected to the network, it may be damaged as follows.

- ① Leakage or leakage of information via this product
- ② Malicious operation of this product by a malicious third party
- ③ Interference or stoppage of this product by a malicious third party

In order to prevent such damage, take adequate network security measures including the following measures under the responsibility of the customer.

- Use this product on a secure network using firewalls, etc.
- Confirm that computer viruses and malicious programs are regularly checked and exterminated when the computer is connected to the system.
- Use user authentication, set user names and passwords, and restrict users who can log in to protect against unauthorized attacks.
- To prevent image data, authentication information (user name, password), alarm mail information, FTP server information, DDNS server information, etc., from being leaked on the network, measures such as restricting access by user authentication are implemented.
- All browsers must be closed after administrator access to this product.
- The password of the administrator is changed periodically. In addition, authentication information (user name, password) shall be appropriately stored so that it is not visible to third parties.
- Do not install this product or cables in a place where they are easily destroyed.