Web Guide

WV-X15700-V2LN/ WV-X15700-V2L/
WV-X15600-V2LN/ WV-X15600-V2L/
WV-X15500-V3LN/ WV-X15500-V3L/
WV-X15300-V3LN/ WV-X15300-V3L

Ver 1.1

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1. Set up

For detailed installation instructions, refer to the following:

Installation

1.1 Recommended Procedures for Installing this product

The URL of the movie is as follows.

https://www.youtube.com/playlist?list=PLTQfvt0fJHvAKrdAAd5DqTzd5iR4GRJIR

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>.

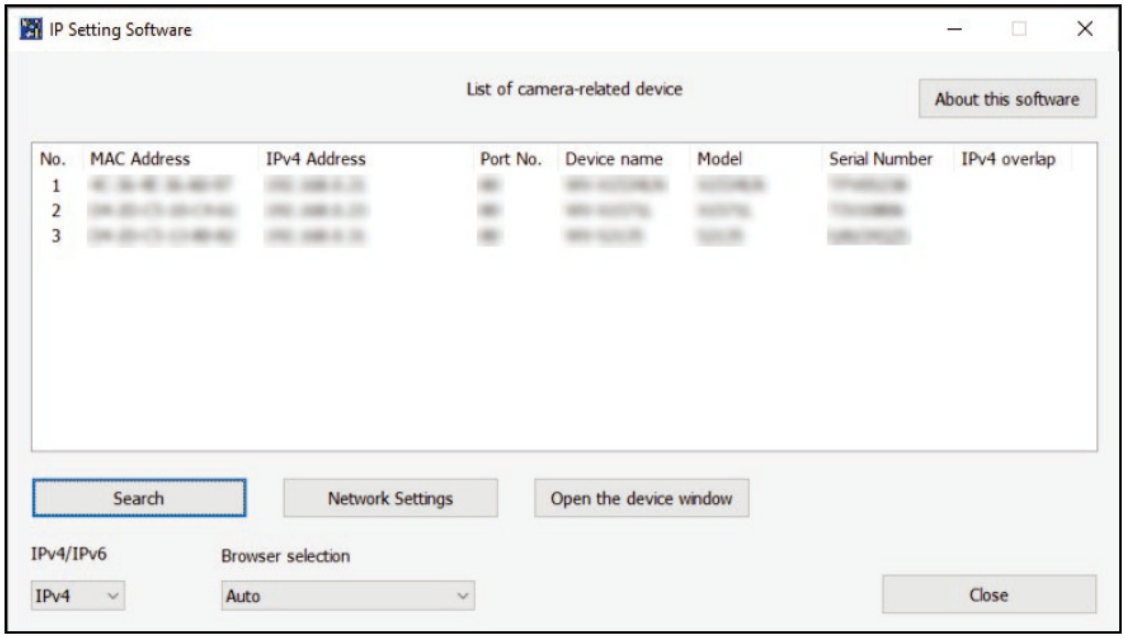
→Click here for more information on the IP Setting Software

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].

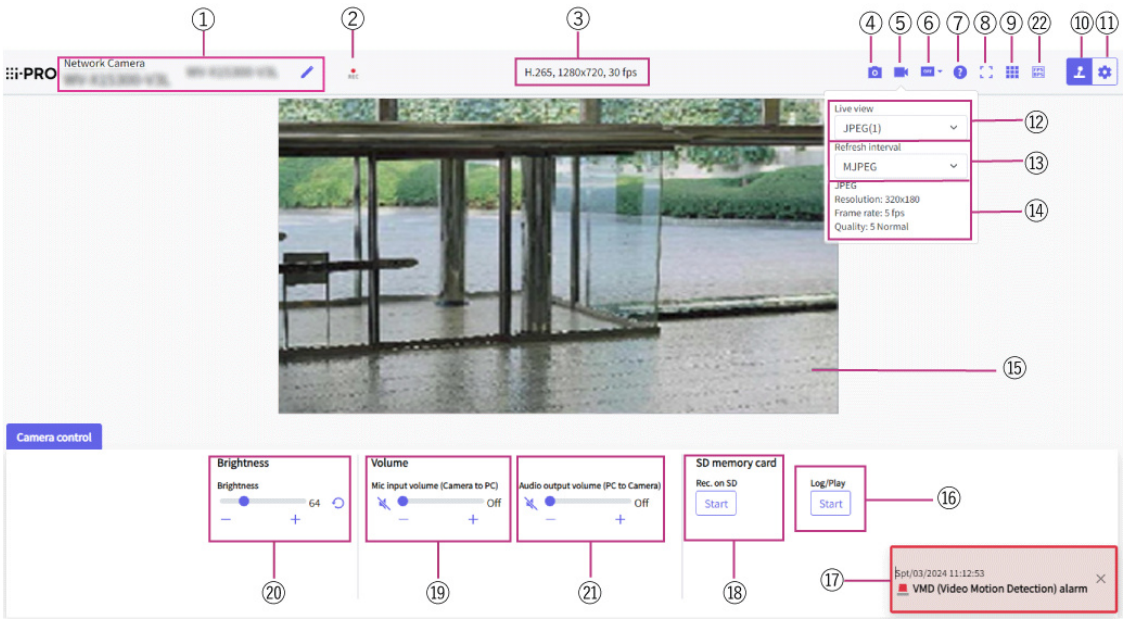
・If you cannot obtain an IP address from the DHCP server, set the IP address to 192.168.0.10.

2. 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.

2.4 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 Camera control panel display button

⑪ [Setup] buttons (Settings panel display button)

⑫ Select Streams–[Live only] pull–down menu

⑬ Select Streams–[Refresh Rate] pull–down menu

⑭ Select Stream–Display Stream Information

⑮ Main area

⑯ Camera Control Panel–SD Memory Card–[Log/Play] button

⑰ Alarm notification

⑱ Camera Control Panel–SD Memory Card–[Rec. on SD] button

⑲ Camera Control Panel–[Mic input volume (Camera to PC)]

⑳ Camera Control Panel–[Brightness]

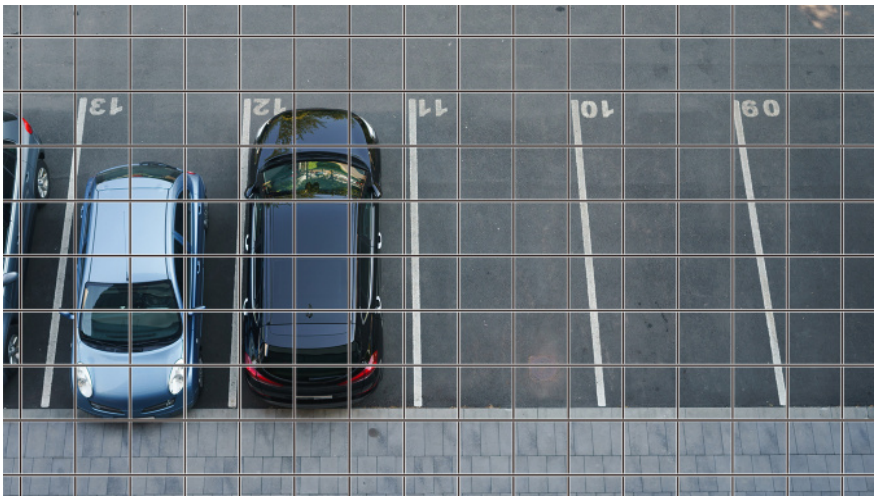
㉑ Camera Control Panel–[Audio output volume (PC to Camera)]

㉒ Frame rate/bit rate display button

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.

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

・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>Clicking the [Image quality] tabs enables you to set the image quality.

1. Select [Day & Night(IR)]
   - Select [Off], [On(IR Light Off)], [On(IR Light On)], [Auto1(IR Light Off)], [Auto2(IR Light On)], and [Auto3(SCC)].

[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.

3.3 Recording setting (SD Memory Card)

3.3.1 Install the SD Memory Card

1. Remove the front part
2. 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.

3.3.2 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].

3.3.3 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 contol panel display button.
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.

3.4 Adjust the zoom/focus

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

➢ Live image pages configuration panels>Clicking on the [Zoom] tabs displays the settings window.

1. Adjust [Zoom ratio designation], [Zoom], [Focus], and [Auto focus]

3.5 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.

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.

(1) Drag the desired area with the mouse and press [Set] button.
- Privacy zones are set in order from Area 1.

(2) Select [Status] to view privacy zones.
- Set up the privacy zone in [On]/[Off].

3.6 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.

3.7 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).

3.8 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.

3.8.1 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.

3.8.1.1 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].

3.9 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

3.10 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

3.11 Set the Image capture size and frame rates

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

・Refer to the User Manual for details on settings and frame rates.
・For more information about Image capture size, see the following.
→About Image capture mode and Image capture size

3.12 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]

3.13 Set the image stream

3.13.1 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.
→About delivery volume control (bit rate)
・Refer to the User Manual for details of each setting method.

3.13.2 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.

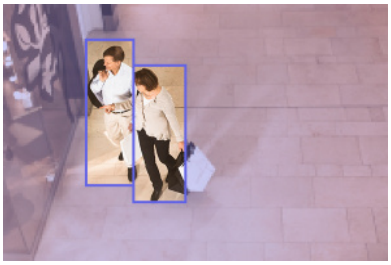
→Reducing Data Capacity with Smart Coding

- **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) *].

3.13.3 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.



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

・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

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・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.
・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.

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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

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)

5.2 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.

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Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)*1	JPEG(2)
16:9(60fps) 16:9(50fps)	3840x2160 2560x1440	–	–	–	–	–
	60(50) fps	–	–	–	–	–
16:9(30fps) 16:9(25fps)	**3840x2160** 2560x1440 1920x1080 1280x720	3840x2160 2560x1440 **1920x1080** 1280x720 640x360 320x180	**1280x720** 640x360 320x180	1280x720 **640x360** 320x180	**3840x2160** 2560x1440 1920x1080 1280x720 640x360 320x180	**640x360**
	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).

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Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)*1	JPEG(2)
16:9(60fps) 16:9(50fps)	3328x1872 2560x1440	–	–	–	–	–
	60(50) fps	–	–	–	–	–
16:9(30fps) 16:9(25fps)	**3328x1872** 2560x1440 1920x1080 1280x720	3328x1872 2560x1440 **1920x1080** 1280x720 640x360 320x180	 **1280x720** 640x360 320x180	 1280x720 **640x360** 320x180	**3328x1872** 2560x1440 1920x1080 1280x720 640x360 320x180	 **640x360**
	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 ″3328 x 1872″, 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).

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Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1) *1	JPEG(2)
16:9(60fps) 16:9(50fps)	3072x1728 2560x1440	—	—	—	—	—
	60(50) fps	—	—	—	—	—
16:9(30fps) 16:9(25fps)	3072x1728 **2560x1440** 1920x1080 1280x720	3072x1728 2560x1440 **1920x1080** 1280x720 640x360 320x180	 **1280x720** 640x360 320x180	 1280x720 **640x360** 320x180	3072x1728 **2560x1440** 1920x1080 1280x720 640x360 320x180	 **640x360**

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Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1) *1	JPEG(2)
	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) 4:3(50fps)	3072x2304 2560x1920	—	—	—	—	—
	Max 60(50) fps	—	—	—	—	—
4:3(30fps) 4:3(25fps)	3072x2304 2560x1920 1280x960	3072x2304 2560x1920 1280x960 800x600 640x480 400x300 320x240	640x480 320x240	640x480 320x240	3072x2304 2560x1920 1280x960 800x600 640x480 400x300 320x240	640x480
	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).

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

WV-X15300-V3LN/ WV-X15300-V3L

Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)	JPEG(2)
16:9(60fps) 16:9(50fps)	1920x1080 1280x720 640x360 320x180	1920x1080 1280x720 640x360 320x180	1280x720 640x360 320x180	640x360 320x180	1920x1080 1280x720 640x360 320x180	640x360

WV-X15300-V3LN/ WV-X15300-V3L *(continued)*

Image capture mode	Stream(1)	Stream(2)	Stream(3)	Stream(4)	JPEG(1)	JPEG(2)
	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
16:9(30fps) 16:9(25fps)	**1920x1080** 1280x720 640x360 320x180	1920x1080 **1280x720** 640x360 320x180	1280x720 **640x360** 320x180	**640x360** 320x180	**1920x1080** 1280x720 640x360 320x180	**640x360**
	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) 4:3(50fps)	2048x1536 1280x960 640x480 320x240	1280x960 640x480 320x240	640x480 320x240	640x480 320x240	2048x1536 1280x960 640x480 320x240	640x480
	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) 4:3(25fps)	2048x1536 1280x960 640x480 320x240	1280x960 640x480 320x240	640x480 320x240	640x480 320x240	2048x1536 1280x960 640x480 320x240	640x480
	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).

5.2.2 Restrictions

	WV-X15700-V2LN/ WV-X15700-V2L		WV-X15600-V2LN/ WV-X15600-V2L		WV-X15500-V3LN/ WV-X15500-V3L		WV-X15300-V3LN/ WV-X15300-V3L	
Function	16:9(60/ 50fps)	16:9(30/ 25fps)	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	No	Yes	Yes	Yes

	WV-X15700-V2LN/ WV-X15700-V2L		WV-X15600-V2LN/ WV-X15600-V2L		WV-X15500-V3LN/ WV-X15500-V3L		WV-X15300-V3LN/ WV-X15300-V3L	
Multi screen	No	Yes	No	Yes	No	Yes	Yes	Yes
Extension software	No	Yes *1	No	Yes *1	No	Yes	No	Yes
Image rotation	Yes *2	Yes	Yes *2	Yes	Yes *3	Yes *3	Yes *3	Yes *3
Stabilizer	No	Yes *4*5	No	Yes *4*5	No	Yes *4*5	No	Yes *4*5
SD recording	No	Yes	No	Yes	No	Yes	No	Yes
Overlay image	No	Yes	No	Yes	No	Yes	Yes	Yes
Smart coding	No	Yes *6	No	Yes *6	No	Yes *6	Yes *6	Yes *6
Super Dynamic	No	Yes *7	No	Yes *7	No	Yes *7	No	Yes
Intelligent auto	No	Yes	No	Yes	No	Yes	Yes	Yes
Auto contrast adjust	No	Yes	No	Yes	No	Yes	Yes	Yes
Privacy zone	Yes *8	Yes *10	Yes *8	Yes *10	Yes *9	Yes *10	Yes *9	Yes
E-mail notification (Alarm image attachment)	No	Yes	No	Yes	No	Yes	Yes	Yes
FTP/ SFTP transmission	No	Yes	No	Yes	No	Yes	Yes	Yes
VMD	No	Yes	No	Yes	No	Yes	Yes	Yes
SCD	No	Yes	No	Yes	No	Yes	Yes	Yes

	WV-X15700-V2LN/ WV-X15700-V2L		WV-X15600-V2LN/ WV-X15600-V2L		WV-X15500-V3LN/ WV-X15500-V3L		WV-X15300-V3LN/ WV-X15300-V3L	
Audio detection	No	Yes	No	Yes	No	Yes	Yes	Yes
Data encryption	Yes *11	Yes	Yes *11	Yes	Yes *11	Yes	Yes	Yes
Remote Monitoring	No	Yes	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(60fps/50fps)″ is selected for “Image capture mode”, the “90° ” or “270° ” cannot be set for [Image rotation].

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

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

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

*11 Only “Stream (1)” can be encrypted.

5.3 DORI

WV-X15700-V2LN/ WV-X15700-V2L

	WIDE	TELE
Detect (25 ppm/8 ppf)	60.0 m {196.9 ft}	154.0 m {505.4 ft}
Observe (62.5 ppm/19 ppf)	24.0 m {78.7 ft}	61.6 m {202.1 ft}

WV-X15700-V2LN/ WV-X15700-V2L *(continued)*

Recognize (125 ppm/38 ppf)	12.0 m {39.4 ft}	30.8 m {101.1 ft}
Identify (250 ppm/76 ppf)	6.0 m {19.7 ft}	15.4 m {50.5 ft}

WV-X15600-V2LN/ WV-X15600-V2L

	WIDE	TELE
Detect (25 ppm/8 ppf)	52.0 m {170.6 ft}	133.5 m {438.0 ft}
Observe (62.5 ppm/19 ppf)	20.8 m {68.2 ft}	53.4 m {175.2 ft}
Recognize (125 ppm/38 ppf)	10.4 m {34.1 ft}	26.7 m {87.6 ft}
Identify (250 ppm/76 ppf)	5.2 m {17.1 ft}	13.3 m {43.8 ft}

WV-X15500-V3LN/ WV-X15500-V3L

	WIDE	TELE
Detect (25 ppm/8 ppf)	46.3 m {151.9 ft}	201.0 m {659.3 ft}
Observe (62.5 ppm/19 ppf)	18.5 m {60.8 ft}	80.4 m {263.7 ft}
Recognize (125 ppm/38 ppf)	9.3 m {30.4 ft}	40.2 m {131.9 ft}
Identify (250 ppm/76 ppf)	4.6 m {15.2 ft}	20.1 m {65.9 ft}

WV-X15300-V3LN/ WV-X15300-V3L

	WIDE	TELE
Detect (25 ppm/8 ppf)	23.5 m {77.2 ft}	114.8 m {376.5 ft}
Observe (62.5 ppm/19 ppf)	9.4 m {30.9 ft}	45.9 m {150.6 ft}
Recognize (125 ppm/38 ppf)	4.7 m {15.4 ft}	23.0 m {75.3 ft}
Identify (250 ppm/76 ppf)	2.4 m {7.7 ft}	11.5 m {37.7 ft}

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)

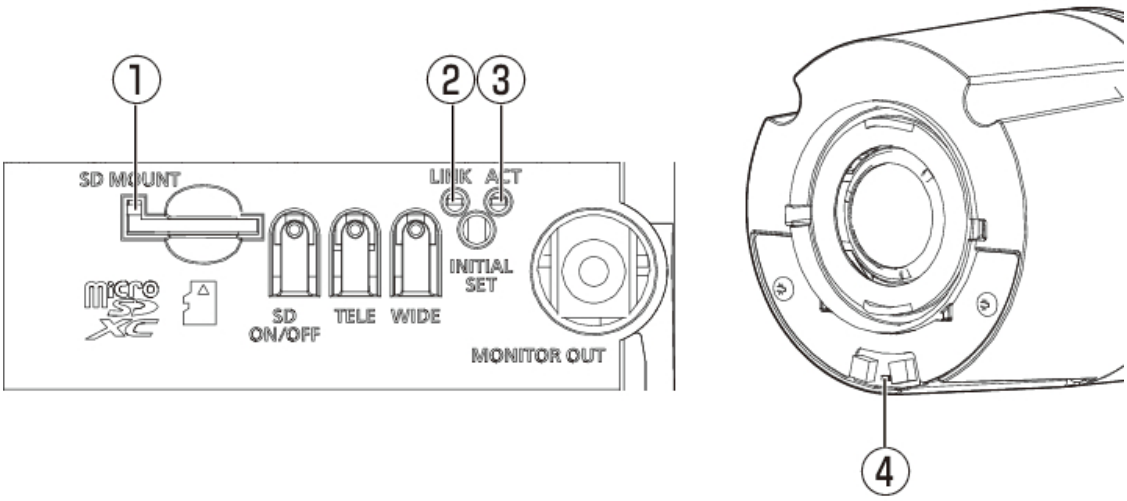
Information about the number and capacity of Extension software (applications) that can be installed.

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

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

5.6 Lamp



① [SD MOUNT] indicator

② [LINK] indicator
③ [ACT] indicator
④ SD memory card warning/error 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
- 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)

SD memory card warning/error indicator

- When a warning status is detected
  - Lights red

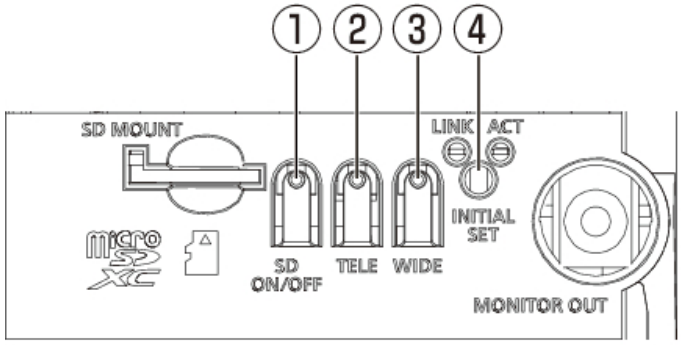
    * SD memory card warning detection conditions: After the total use time has exceeded 6 yearsand the number of overwrite times has exceeded 2000.

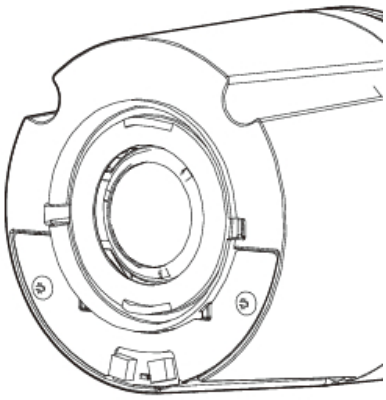
・ When an error status is detected

– Blinks red

＊ SD memory card error detection conditions: Write error, read error, etc.

5.7 Button





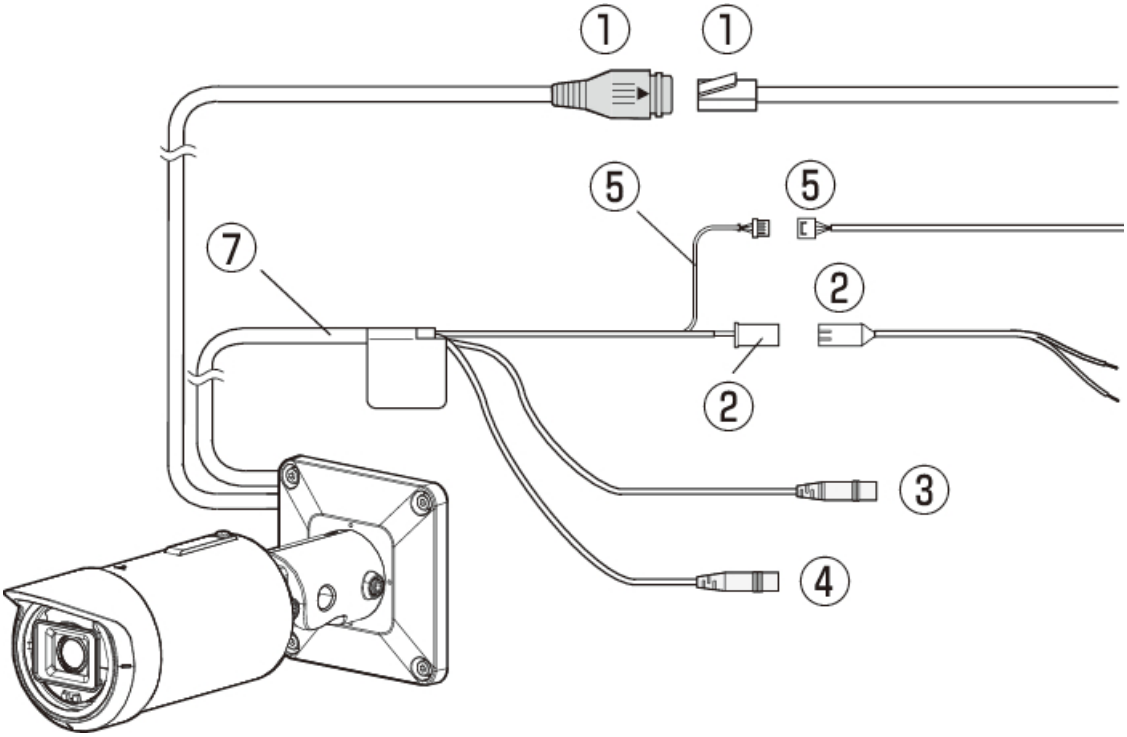
① [SD ON/OFF] button

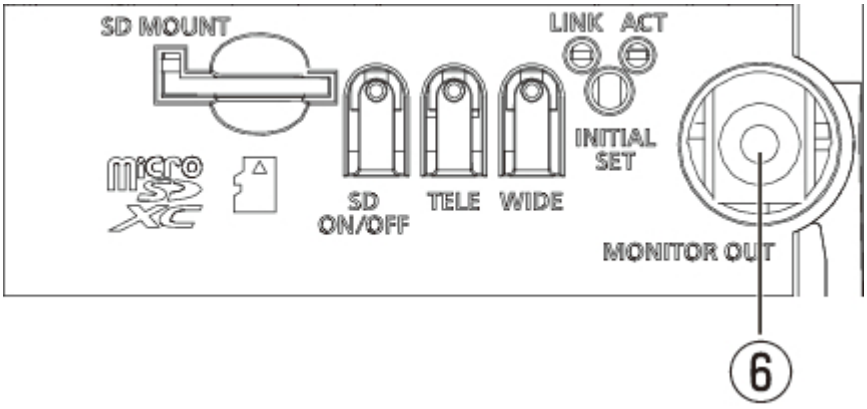
② [TELE+AF] button

③ [WIDE+AF] button

④ [INITIAL SET] button

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)

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

6.1 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.

6.3 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.

6.5 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.

[−]
Produce darker images

[+]
Create the brighter the photos

6.6 Adjusting object brightness (dark scenes)

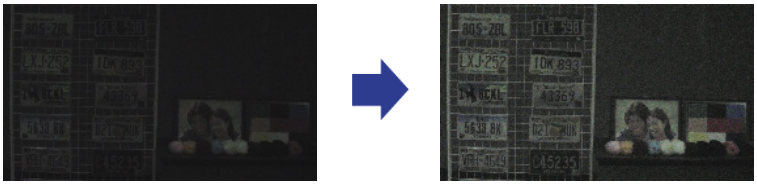
6.6.1 Adjust the maximum gain

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



Increasing the maximum gain increases noise.

6.6.2 Adjust the maximum shutter

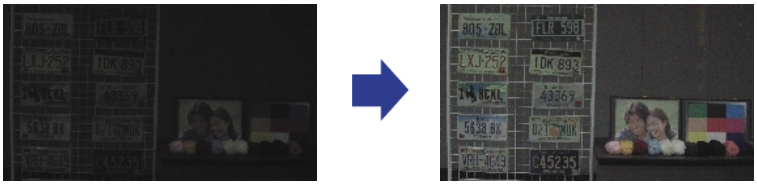
Increasing the maximum shutter makes the images brighter.

➢ 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.

Maximum shutter : 1/30



Maximum shutter : 4/30

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.

➢ 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).

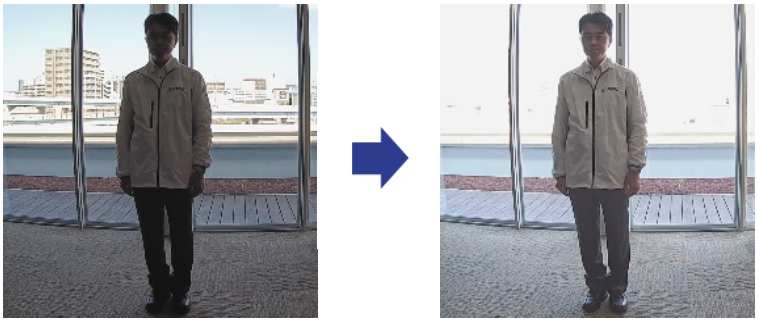
➢ Live image pages configuration panels>[Detail setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs> When [Advanced settings] is clicked, the image quality adjustment setting window is displayed.

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



6.7.3 Set the high light compensation

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

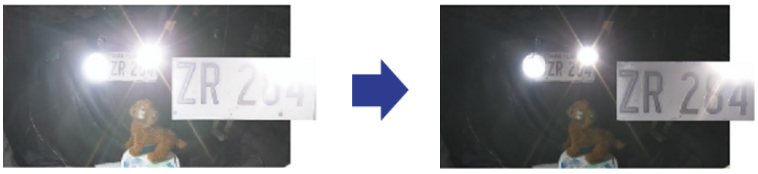
➢ Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>When [Setup] is clicked, the image quality adjustment setting window is displayed.

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)].

High light compensation : Off

High light compensation : On



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 [+]

Level: 128

Level: 255

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.

[+] direction

Brighten the image

[−] direction

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.

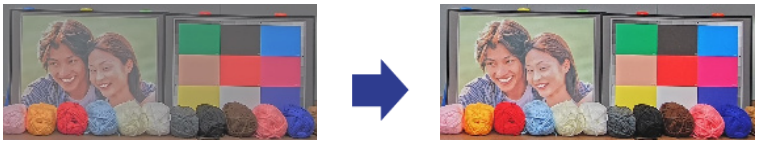
➢ Live image pages configuration panels>[Detailed setting]>[Camera detailed setting]>[Image] or [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality]

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

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

Level: 128 [+] direction

Increase the contrast



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.

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

6.11 Reducing object blur (dark scenes)

6.11.1 Adjust digital noise reduction

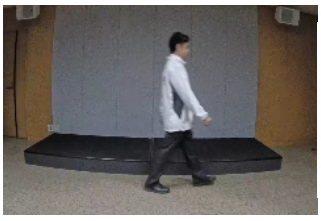
Reducing the effects of noise reduction by adjusting the [Digital noise reduction] reduces the blur.

➢ 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.

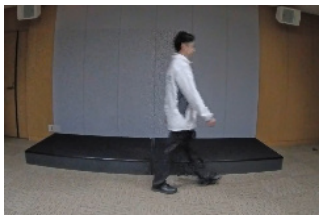
If the effect of noise reduction is reduced, the noise will increase.

Level: 128



Level: 100

Reduce the blur



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.

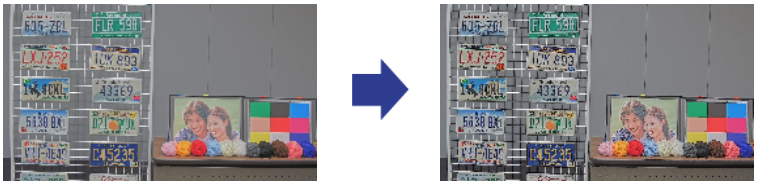
➢ Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.

1. Adjust the [Sharpness level] to [+]

Level: 10

Level: 31

Sharpen the outline of the image



6.13 Adjust the color

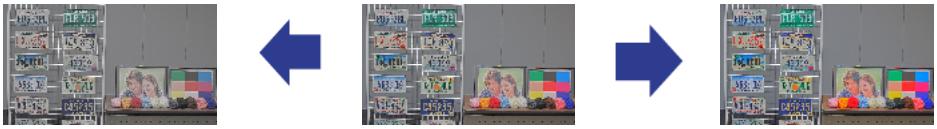
6.13.1 Adjust color density

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.

[−] [+]



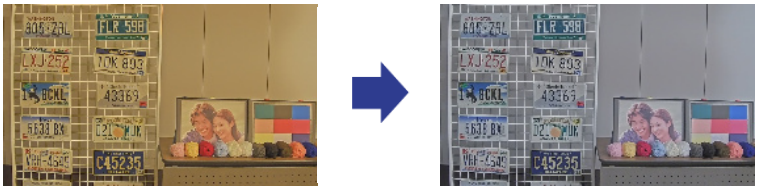
6.13.2 Adjust the white balance

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



6.14 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.

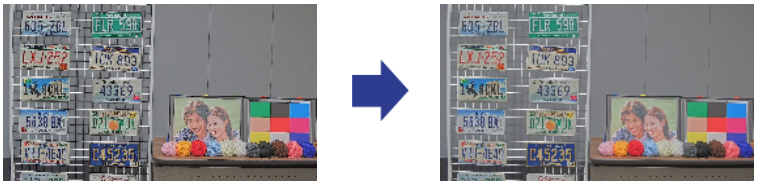
➢ Live image pages configuration panels>Clicking the [Image quality] tabs enables you to set the image quality.

1. Adjust the [Sharpness level] in the [−] direction.

Level: 31

Level: 5

Soften the outline of the image



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.

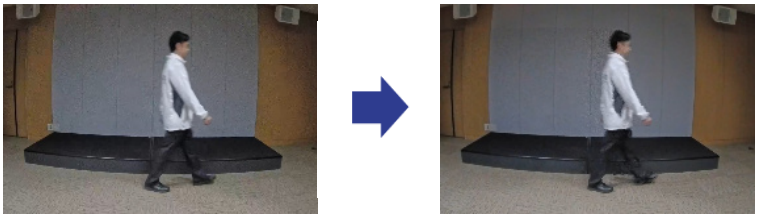
1. Adjust the [Digital noise reduction] to [+]

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

If spots such as street lights or flat object are reflected in low-illumination conditions, the focus may not match when switching between black and white. If this is the case, adjust the focus as shown below.

➢ Live image pages configuration panels>[Detail setting]>[Camera detailed setting]> [Image/Audio] of the Advanced menus on the left>[Zoom/focus adjustment] in the [Image quality] tabs>To Advanced Settings>>Click [Zoom/Focus Adjustment] to open the Zoom/Focus Setting window.

1. Change [Focusing at Day & Night switching] to [Preset]
2. Run [Manual focus adjustment] or [Auto focus] in color
   - The focus position is stored in the color mode during daytime shooting.
3. Run [Manual focus adjustment] or [Auto focus] in black and white
   - The focus position is stored in black and white during night shooting.

   ➢ Live image pages configuration panels>[Detail setting]>[Camera detailed setting]> [Image/Audio] of the Advanced menus on the left>[Image adjust] in the [Image quality] tabs>To Advanced Settings>>Click [Image Quality Adjustment] to display the image quality adjustment setting screen.
4. Set [Day & Night(IR)] to [Auto1(IR Light Off)], [Auto2(IR Light On)], or [Auto3(SCC)]

depending on the application.

To be black-and-white during the daytime, set [Day & Night(IR)] to [On(IR Light On)] and force it to black-and-white.

Zoom/focus adjustment

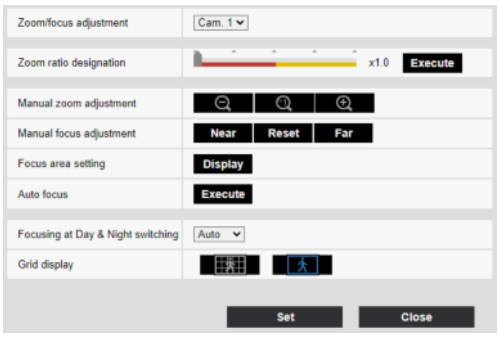
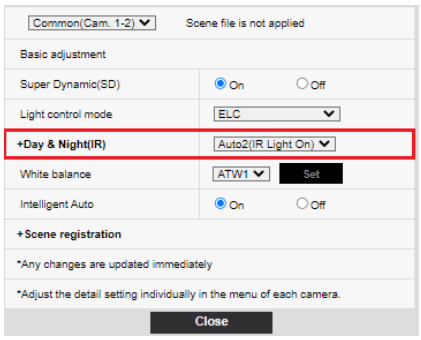


Image quality adjustment



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 ・Is the Ethernet cable of this product connected to the power supply device for PoE+ (IEEE 802.3at compliant)?	・Check if it is connected.	Installation

Phenomenon	Cause	Countermeasures	Reference
	・Some power supply devices that can connect multiple PoE+ terminal devices will not supply power if the total power supply exceeds the limit.	・Refer to the instruction manual for the PoE+ power supply.	
	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?	・Check if it is connected. ・Check the AC adapter rating.	
The LINK lamp does not illuminate orange when the network cable is connected.	・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?	・Connect the Ethernet cable properly. ・Check that your hub or router is working correctly. ・Replace with another Ethernet cable.	−
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.	−

Phenomenon	Cause	Countermeasures	Reference
Generate noise in the audio input	The following may be considered. ・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.	—

Phenomenon	Cause	Countermeasures	Reference
	・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

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

  Otherwise damage or flooding can result.

- **Ventilation opening**

  - This product has an internal hygroscopic gel and a ventilation opening to keep the inside of the camera at low humidity.
  - 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 -25 ° C{-13 ° 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.**

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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.