WISENET

Network Camera

Online help

XNP-9250R/XNP-8250R/XNP-6400R
XNP-9250/XNP-8250/XNP-6400

Live screen

You can check the live screen to view what is being captured by the camera and control screen capture, and other features. When you click the button on the screen, the live screen will appear.

You can move to the live screen, playback screen or setup screen by clicking the buttons at the top.

- (Live): Check the live screen to view what is being captured by the camera and control a variety of camera features.
- (Playback): Search and playback a recorded image from an SD card or NAS.
- (Setup): Change the camera settings.

Note

- If a high resolution video is played on the live screen, a PLUGINFREE is automatically generated, which optimizes the high resolution video. The generated PLUGINFREE profile can be found in [Setup]>[Basic]>[Video profile].
- If you click the icon at the top right of the live page, you can see the connected IP address and the authentication status. If successfully authenticated, the icon will be colored in green. If failed to be authenticated, it will be colored in red. If authentication is irrelevant due to the use of HTTP connection, dash (-) will be displayed.
- Connecting to the web viewer via Chrome, the record playback screen feature can be securely used.
- When playing a video on the live page, ghosting might occur under one of the following cases:
  - When the resolution changed after changing the profile
  - When the data transfer is delayed due to network delay after changing the profile
  - When the size or location of the web browser window changed

Icons

The icons at the bottom of the live screen provide the following functions (Some functions may not work with a certain browsers or codecs.):

Icon	Description of function
Video setup	You can check or change the profile applied to the current live screen. You can also change the display settings of the live screen.
PTZ	You can control the pan/tilt/zoom motions of the camera. You can move to the preset location set on the [Setup]>[PTZ]>[PTZ setup] page or start/stop the swing, group, and tour functions. You can check the list of focus in [Focus save].
Status	Check the connection information for each profile and for connected users at the same time.
Full screen	View the live screen in full screen. To return to the size of the previous web browser, click the icon in full screen mode or press the [Esc] key on the keyboard.

Icon	Description of function
Size option	The size changes to the next size each time you click it. • (Fit): Fit the camera image to the size of the web browser. • (Original Size): View the camera image at its actual resolution. • (Aspect Ratio): View the live screen in the web browser by zooming in or out, while maintaining the aspect ratio of the camera image.
Capture	Capture and save the live screen as a PNG image file. A captured image file is saved in the default recording path of each browser.
Heater	Clicking the button activates the heater for 30 seconds.
Spinning dry	Pressing this button rotates the motor three times in one direction to dry it.
Record	You can record and save the live screen to a PC. Click the Record icon to start recording; click the icon again to stop recording. Recorded files are saved in .avi format and can be saved in the default path of the browser or a file path can be set in the 'Save as' window. To protect your video files with password, select ZIP from the list of the video recording file format and enter a password. You need to enter the password to play back downloaded videos. The password setup function for recorded videos is not available in some camera models.
Pixel count	You can check the number of image pixels in an area selected by the mouse on the live screen. Click the Pixel count icon and click and drag the desired area with the mouse. The selected area will be displayed and the number of pixels in the image will be displayed. When you click the Pixel count icon again, the Pixel count function ends.

To capture image

- In the scene to capture, click the capture icon( ).
- When the captured image is saved, a notification message will pop up. The capture image is saved to the path specified in each browser.

To record video

- Click the Record icon( ).
- To end the manual recording, click the Record icon( ) again.

The manual recording can be saved as an .avi file in your PC. Specify the path and save the video.

To protect video recordings with password

- Select ZIP from the list and enter a password.

Your video recordings will be saved as .zip in your PC. You need to enter the password to play back the videos. (The password setup function for recorded videos is not available in some camera models.)

To switch to full screen

- Select the Full screen icon(⛶) to change the viewer mode to full screen.
- To exit the full screen mode, click the Full screen icon(⛶) again or the [Esc] key on the keyboard.

To count the number of pixels

- Click the Pixel count icon(⬚).
- Drag the mouse over the video to set an area. From this area, the number of pixels will be counted and displayed on the screen.

Video setup

Profile

The name and detailed information of the Video profile applied to the current live screen will be displayed. When you press the [Profile] drop-down icon, a Video profile list that can be used from the current web viewer will appear; when you select the desired Video profile, it will be applied to the live screen immediately. You can check the resolution, codec, frame rate and target bitrate of the selected Video profile.

Display

Set the contrast, brightness, sharpness and color level of the live screen; when you enter the setting, it will be applied to the live screen immediately. Click the ↻ button if you want to reset all the display settnigs.

PTZ

You can control the Pan/Tilt/Zoom motions of the camera.

Controlling zoom motion

When you click the ⊕ icon in the zoom bar, the screen will zoom in. When you click the ⊖ icon, the screen will zoom out.

Controlling pan/tilt motions

Move the camera direction by clicking the ⊕ icon in the Pan & Tilt area.

Adjusting the focus

Adjust the camera focus by clicking the 👤 icon or the ▲ icon.
To adjust the camera focus automatically once, click the ⊡ icon.

Focus save

You can check the list of focus save.
Click [Set] to save the screen currently being shot into a focus area. After entering [Number] and [Name], click [OK] to save.
To apply IR shift to a focus-saved area, go to [IR shift] and click [Enable].
If you click [Go] after selecting focus save from the list, the camera focus moves to the saved focus area.
Focus save can also be set or deleted in [Setup]>[Video & Audio]>[Camera setup]>[Focus save].

Using the PTZ function

You can move the camera to a position set in advance or start and stop the swing, group, and tour functions. For relevant setting, refer to [Setup]>[PTZ]>[PTZ setup] page.

Area zoom

The area zoom allows to zoom in and view a specified area.
When you select an area by dragging the mouse on the camera image screen after clicking the icon , the zoom function will operate based on the selected area and the camera position will move to the selected area. You can move to the previously selected area and configuration by clicking the icon . In case you have moved to the previously selected area and configuration, click the icon if you wish to move back to the previous area and configuration again. When you click the icon , the zoom magnification will change to 1x and the camera will move to its original position.
To end the area zoom setup, click the icon again. The currently set area zoom will be maintained and the area zoom setup function will end.

Status

Profile access

Check the connection status of all currently-set profiles or check the status of currently-connected users.

Current users

You can check the applied profile for each user, bitrate (kbps), network connection status and IP address of all users currently connected to the camera.

Playback screen

You can import and playback a recorded image from an SD card (or microSD card) or NAS.
When you click the ▶ button on the screen, the recorded screen will appear. A time bar will appear at the bottom of the playback screen and an image recorded according to the set schedule or by an event is displayed on the time bar. You can search for a recorded image by event type or date, and capture or save it to a PC.

You can move to the live screen, playback screen or setup screen by clicking the buttons at the top.

- (Live): Check the live image being captured by the camera and control various camera functions.
- (Playback): Search and playback a recorded image from an SD card (or microSD card) or NAS.
- (Setup): Change the camera settings.

Note

- A video needs to be recorded first on the [Live] page before being able to play it.
- If there is no connection to an SD card (or microSD card) or NAS, the playback function cannot be used.
- Connecting to the web viewer via Chrome, the record playback screen feature can be securely used.

Playback icons

The icons at the bottom of the playback screen provide the following functions:

Icon	Description of function
Full screen	View the playback in full screen. To return to the previous size, click the icon in full screen mode or press the [Esc] key on the keyboard.
Size option	• The size changes to the next size each time you click it. (Fit): View the camera image in the same size as the web browser viewing window. • (Original Size): View the camera image at its actual resolution. • (Aspect Ratio): View the playback screen in the web browser by zooming in or out while maintaining the aspect ratio of the camera image.
Capture	Capture and save a recorded image as a PNG image file. A captured image file is saved in the default recording path of each browser.
Prev	Move to the previous frame.

Icon	Description of function
►/ II Playback/Pause	Playback or pause an image.
►I Next	Move to the next frame.
Playback speed	Set the playback speed of the screen.

Playback a recorded image through event search

You can search for a recorded image by event type. Also, if the time on the camera system has been adjusted and thus resulted in overlapping time, the video recorded during that overlapping hour can be searched.

To search by event and play back

1. Click the Show button on the Playback screen. If there is any video taken on the day of searching, it will be displayed on the time bar.
2. To search by event type, click the [All] button at the top of the time bar and select an event you want.
3. To search for recorded images during the overlapped time, select an overlapped section.
4. Click the [OK] button to display the searched events on the time bar.
5. Click the Playback button.
6. To stop the playback, click the Pause button.

Playback a recorded image through time search

Search for a recorded image by selecting a date and time on the calendar.
When you click the [Today] button on the time bar, only images recorded today will be searched.

To search by time and play back

1. Click the Show button on the Playback screen. If there is any video taken on the day of searching, it will be displayed on the time bar.
2. Click a date on the time bar, select the date you want on the calendar, and set the start and end time.
   - When you select [All day], the start and end time will be set automatically from 00:00:00 to 23:59:59.
3. Click the [Apply] button.
4. Click the Playback button. The video of the selected time will play back.
   - If the video is already playing, the recorded time of the current video is displayed.
   - You can rewind or fast-forward the video and change the playback speed as necessary.
   - Click the left arrow button to go back by 1 frame. Click the right arrow button to go forward by 1 frame.
   - Click the Playback speed button to change the speed to 1x, 2x, 4x, 8x, -1x, -2x, -4x, or -8x. As the speed changes, you can set the desired playback speed.
   - Move the button along the time bar to play back the video of the desired time.

Recorded video save	Recorded videos can be saved to files.

To save a video

1. Click the [Export] button.
2. In [Time], set the Start time and End time for the video to save.
3. From [Type], select the file type you want.
   - AVI: Saves in .avi.
   - ZIP: Saves in .zip. You can set a password for your files. You need to enter this password to unzip those files in order to play videos. (The password setup function for recorded videos is not available in some camera models.)
4. Click the [OK] button.

Video profile

The user can add or delete a video profile, and change the profile properties. Set the video profile, frame rate and codec as ‘Video profile’ in advance and later change the video profile to stream or play back an image. When you finish the setting, click the [Apply] button at the bottom of the page.

Video profile connection policy

After profile properties have been changed, you can set whether to output an image with the previous profile or with the changed profile.
When [Keep connection when Profile properties are changed] is selected, the image is outputted according to the previous profile properties even if the profile properties have been changed; when the web viewer is reconnected, the image is outputted with the changed profile. Border lines will appear on the edge of the live view of the [Live] screen until you connect to the web viewer again after changing the profile properties.
[Keep connection when Profile properties are changed] is not selected, the image is outputted with the changed profile immediately when the profile properties are changed.

Video profile

The user can select a video profile according to the service environment and circumstances of product use. In addition to the profiles provided by default, the user can add a new profile or delete an existing one. You can set the codec, profile type, resolution, frame rate, multicast, and other settings for each profile.

Profile list

The profile list is provided by default; all profiles added by the user are also displayed.

Adding a video profile

1. Click the [Add] button. A new item will be added to the profile list.
2. Enter the name of profile in the [Name] field. The entered name will appear in the profile list.
3. Set the profile items, including [Codec], [Profile type] and [Resolution].
4. Click the [Apply] button at the bottom of the page.
5. When the confirm window appears, click the [OK] button. The new profile will be added.

Changing a video profile property

1. Select the profile which you wish to change from the profile list.
2. Change the relative settings, including [Codec], [Profile type] and [Resolution].
3. Click the [Apply] button at the bottom of the page.
4. When the confirm window appears, click the [OK] button. The settings of the selected profile will change.

Deleting a video profile

1. Select the profile which you wish to delete from the profile list.
2. Click the [Delete] button.

3. When the confirm window appears, click the [OK] button. The selected profile will be deleted.

Name

The name of the profile selected from the profile list will be displayed. You can enter a new profile name if creating a new profile.

Codec

Select the codec which you wish to apply to the profile. The profile properties may vary according to the selected codec type.

Profile type

Select a profile type to apply. The selected profile type will be displayed in the [Type] column of the profile list. The setup items may vary according to the selected codec type.

- Default profile: This is the default profile applied for streaming a live camera image. ‘Default’ is displayed in [Type] in the profile list.
- E-mail/FTP profile: This video profile is used for sending the captured screen of an image when an event is created. ‘Event’ is displayed in [Type] in the profile list. The E-mail/FTP profile option will appear only when MJPEG is set for the codec.
- Edge recording profile: This profile is applied for recording an image on an SD card or NAS. ‘Record’ is displayed in [Type] in the profile list.
- Frame Lock profile: This is a profile applied to guarantee a certain level of video frame rate. ‘FrameLock’ is displayed in [Type] in the profile list. This ‘Frame Lock profile’ option appears only when [Codec] is set to [h.264] or [h.265].

Crop encoding

Crop encoding crops only a selected portion from the full screen and displays it according to the resolution set in the [Profile properties]. Only a resolution size smaller than the Crop encoding setting area can be set. To apply crop encoding to the current profile, select [Enable].

Setting a crop area

1. Set [Enable] for crop encoding and click the [Set area] button.
2. Set the area by dragging the mouse on the [Set crop area] preview screen. After selecting [Manual], select the area you want.
3. To complete the area setting, click the [OK] button.

Note

- If [Crop area setting] is set to a range you desire, the resolution that is most similar to the output resolution within the range set by you will be displayed.
- If you change the setting under [Video & Audio]>[Camera setup]>[Special]>[DIS], the crop area setting may change. If you have changed the DIS setting, please set the Crop encoding area again.

Profile properties

Set the details for the current video profile.

Resolution

Set the resolution of the camera image.

> **Note**
> - In order to stream a high-resolution image smoothly, it is recommended to connect to the web viewer using Google Chrome.

Frame rate

Set the number of frames per second.
The range of frame rates available varies according to the frame rate value selected from [Video & Audio]>[Camera setup]>[Sensor].

Maximum bitrate

Set the maximum bitrate of the image when [Bitrate control] is [VBR].

Target bitrate

Fix the amount of image data to be sent if [Bitrate control] is [CBR].

Advanced

If either [H.264] or [H.265] is set for [Codec] of the profile, all advanced setup items will be displayed. If [MJPEG] is selected for [Codec] of the profile, only the [Encoding priority] item will be displayed.

Bitrate control

Set how to adjust the amount of image data.

- CBR: Constant Bitrate is for sending full-frame data of a constant size. When CBR is selected, the size of data to be sent is set by setting the target bitrate. CBR has a constant data size, making it is easy to predict the data size for the whole system, enabling the system to be operated stably.
- VBR: Variable Bitrate is for sending an image within the maximum bitrate without fixing the data size of the frame. VBR can use storage space capacity or bandwidth efficiently while maintaining the quality, but if an image suddenly becomes more complex, it may cause a strain on the network.

> **Note**
> - When the Bitrate control is set to ‘CBR (fixed bitrate)’ and the priority on image quality mode is selected, the actually transferred frame rate may be different from the set frame rate in order to guarantee the best image quality under the set bitrate in consideration of the complexity on screen.

Video compression

You can set the video compression ratio.
The [Compression] option of [Profile properties] sets the priority of encoding when [Bitrate control] is set to [CBR]. The [Video compression] option sets sets the priority of encoding, which affects the amount of data transmission and video quality based on the video compression rate for VBR action.
The higher the value of [Video compression], the better the video compression rate. As the video compression rate increases, the amount of video data transmission decreases, but the video quality might be degraded as a result. If the video compression rate is lowered by setting a low value to [Video compression], the video quality improves, but the amount of video transmission could increase.
[Video compression] is activated if either [H.264] or [H.265] is selected for [Codec] of the profile, and [VBR] is set for [Bitrate control].

Encoding priority

Set the priority between frame rate and image quality if the amount of image data exceeds the target bitrate.
If either [H.264] or [H.265] is selected for [Codec] of the profile, the user can select between [Frame rate] and [Compression]. If [Frame rate] is set as the high priority, the maximum frame rate is secured, but the image quality may be lowered. On the other hand, when [Compression] is set as the high priority, the image quality is secured, but some frames my be omitted, so that the image may be disconnected or seem unnatural. If either [H.264] or [H.265] is selected for [Codec] of the profile, [Encoding priority] is activated only when [CBR] is set for [Bitrate control].
If [Codec] of the profile is [MJPEG], you can select between [Frame rate] and [Bitrate].

GOV length

GOV (Group of Video) is a group of image frames for H.264/H.265 video compression; it means the group of frames from one I-frame to the next I-frame. GOV contains both I-frame and P-frame. I-frame is the frame which becomes the basis of compression (also called the key frame); it has data for one complete image. P-frame has information of the changed area only, based on the front frame. For this reason, the number of I-frames is fewer as the GOV length is longer, making the image size small, while the number of I-frames is more as the GOV length becomes shorter, making for a larger image size. The maximum value of the GOV length varies according to the [Frame rate] in [Profile properties].
If H.264 or H.265 codec is selected for the recording file, GOV length becomes framerate/2.

Profile

This menu becomes active only when the codec of the profile is H.264. The profile can be considered as a bundle of various compression technologies. The profiles supported in the Hanwha Techwin cameras include [Baseline], [Main] and [High]. The compression performance becomes higher and the quality becomes better as you move from Baseline to High, but a lot of system resources are used for compressing and decompressing and may create a strain on the playback equipment.

Entropy coding

Set the type to reduce compression loss.

Two entropy coding types, CAVLC (Context Adaptive Variable Length Coding) and CABAC (Context Adaptive Binary Arithmetic Coding), are provided. However, only CAVLC coding type is available for the Baseline profile.

- CABAC: The CABAC data processing procedure is more complicated than CAVLC, so that it uses more system resources, but it has an excellent compression rate.
- CAVLC: The data processing procedure for CAVLC is simpler than CABAC, so that it uses fewer system resources, but the compression rate is relatively low.

Smart codec

Set whether or not to use smart codec. Smart codec is a unique technology of Hanwha Techwin that reduces the compression rate for an area of interest to the user (to output in high quality), while it increases the compression rate for other areas, (to output in normal quality), thereby reducing the data size of the image as a whole. Smart codec is activated only when [Bitrate control] is [CBR].
The area for smart codec can be set from [Video & Audio]>[Smart codec].

Dynamic GOV

To apply the Dynamic GOV function to the current profile, select [Enable].
Dynamic GOV is the function whereby the GOV length is changed automatically according to the image situation. In a video where little or no motion is detected, GOV operates based on the value set for [Dynamic GOV] by user, decreasing the bitrate of the whole video. Once motion is detected, I-frame is displayed immediately. Then, until the motion is not detected anymore, GOV operates based on the value set for [GOV length].

- Enter the maximum GOV length to apply when there is no motion in the image. The range of input value is displayed next to [GOV length]. The input value in [GOV length] becomes the minimum value, while the maximum value is 480; it varies according to the [Frame rate] in [Profile properties].

Note

- When the WiseStream function is used, if the dynamic GOV and dynamic FPS functions are used, the WiseStream performance is optimized. The WiseStream can be set in the [Video & Audio] > [WiseStream] menu.
- Dynamic GOV is enabled only when [Bitrate control] is set to [VBR]. If [Profile type] is set to [Edge recording profile], Dynamic GOV cannot be used.

Dynamic FPS

Select [Enable] to apply the Dynamic FPS function to the profile currently being set.
Dynamic FPS is a function that automatically changes FPS settings, from the minimum FPS setting to frame rate setting depending on the screen situation. In a nearly motionless video, FPS will function using the minimum FPS setting, which in turn reduces the overall screen bitrate. When a motion is detected, FPS will use an increased FPS value.

Minimum FPS

Enter the minimum FPS value to be applied when Dynamic FPS is enabled.
The [Minimum FPS] option is not displayed if the Minimum FPS value is set as 1.

Note

- When the WiseStream function is used, if the dynamic GOV and dynamic FPS functions are used, the WiseStream performance is optimized. The WiseStream can be set in the [Video & Audio] > [WiseStream] menu.
- Dynamic FPS is enabled only when [Codec] is set to [H.264] or [H.265] and [Bitrate control] is set to [VBR]. If [Profile type] is set to [Edge recording profile], Dynamic GOV cannot be used.

Multicast

Multicast is the method used to send data in one instance from the camera to multiple pieces of equipment. Set whether or not to use RTSP (Real Time Streaming Protocol) on the current profile and enter the detailed information.

Multicast (RTSP)

To send an image by using RTSP, select [Enable].

IP address

Enter an IPv4 address that can be connected from the IPv4 network. The range of multicast IP address is anywhere between 224.0.0.0 and 239.255.255.254. However, 255 cannot be used at the end.

Port

Set the port that controls sending of the image. The range of multicast RTSP ports is from 1024 to 65534, and only even numbers are allowed. (The 3702 port however, cannot be used.)

TTL

You can set the TTL of the RTSP packet. A value between 0 and 255 can be entered for the TTL value.

User

Manages the user accounts connecting to the camera. Changing of the administrator password and guest settings, authentication setup and setting of current users are all available. When you finish the setting, click the [Apply] button at the bottom of the page.

Change administrator info

You can change the administrator account ID and password. To reinforce security, create a password by combining random English uppercase and lowercase letters, numbers and special characters.

ID

You can view or change the administrator ID that is currently used.

> **Note**
> - Administrator ID must contain only alphanumeric characters with a maximum length of 8 characters.
> - The default guest ID “guest” or the default user ID “user1”, “user2”...“user10” cannot be used as the administrator ID.

Current password

Enter the current password. To prevent the password from being changed by someone else, the administrator password can be changed only after entering the previous password.

New password

Enter a new password.

Confirm new password

This is the confirmation procedure to prevent incorrect input of a new password. Enter the new password again.

> **Note**
> - To reinforce security, it is recommended to create a password by combining special characters, numbers, and uppercase and lowercase letters.
> - It is recommended to change the password every three months.
> - The password length and restrictions are as follows:
> - For password of 8 to 9 digits, you need to combine at least three different types of the following: uppercase and lowercase alphabets, numbers, and special characters.
> - For password of 10 to 15 digits, you need to combine at least two different types of the following: uppercase and lowercase alphabets, numbers, and special characters.
> - Password must be different from your ID. Also, we recommend not to use your ID string as part of the password.

    - You cannot use four or more consecutive characters (e.g. 1234, abcd).
    - You cannot use the same character four or more times in a row (e.g. !!!!, 1111, aaaa).
    - Only ~`!@#$%^*()_-+=|{}[].?/ are allowed for special characters.
    - After the factory reset, both the admin and user passwords will reset, and you need to create them again.
    - When you access the camera web viewer for the first time, or access it after the initialization, you will be moved to the password setting menu.
    - To use the web viewer menu, you need to set the new password in the password change menu and log in to the web viewer again with the changed password.
    - When changing the admin password, if the current password is not matched, then you cannot set the new password.
    - After changing the password, if there is a camera connected to a client, such as CMS or NVR, then you need to register the changed password before use. If you maintain the same connection, the client will use the previous password for authentication, so the account can be locked.
- When logging in to the web viewer, if you entered incorrect password more than five times, it will be locked for 30 seconds and you won't be able to access the web viewer.
- If connection is made from various places with the same ID, or the password is changed while a number of Internet browsers are open, the Internet browsers may malfunction. It is recommended that a password be changed only from one location or only through one Internet browser.

Date & Time

You can check the current system time of the camera, change the time setting according to the local time zone, or set the system time through synchronization with an NTP server.

Current system time

The current system time of the camera is displayed. The previously set system time is displayed.

Time zone

The camera time is set based on standard time (GMT).

Time zone

Select the desired time zone and click the [Apply] button below.

Daylight saving time

When an area where daylight saving time is used is selected, the [Daylight saving time] menu will be displayed. The start and end time for daylight saving time in the selected time zone are displayed. When [Enable] is selected for [Daylight saving time], a time which is one hour ahead of the standard time of the relevant zone is displayed.

> **Note**
> - Only when [Daylight saving time] is set to [Enable] will the time appearing on the timeline of the playback screen be displayed according to daylight saving time.
> - If the clock function of the PC is set to automatically apply daylight saving time, the daylight saving time option is automatically selected in the camera web viewer, and cannot be changed by the user.

System time setup

The user can set the camera time manually or by synchronizing it with an NTP server. When you complete the setting, click the [Apply] button at the bottom of the page.

Manual

The user can enter the current time manually for the camera or synchronize it with the time of the PC with which it is currently being used.

- Set the system time by entering the time in [Y - M - D] and [h: m: s].
- When [Synchronize with PC viewer] is selected, the time of the PC viewer is synchronized with the system time. When [Synchronize with PC viewer] is selected, the same time zone should be separately set for both the PC and the camera.

Synchronize with NTP server

The NTP (Network Time Protocol) server time is synchronized with the system time. 5 NTP server addresses are entered by default. You can change an NTP server address by clicking the address input field.

IP & Port

Enter IP address and port. You can set IPv4 and IPv6 on the [IP address] tab. You can set the port for each protocol on the [Port] tab. When you finish the setting, click the [Apply] button at the bottom of the page. When you click the [Apply] button, you will need to reconnect to the web viewer.

IPv4 setup

You can check or change the IP type, MAC address, IP address, subnet mask, gateway, and DNS information used for the network communication using the IPv4 type.

IP type

Select the IP connection type. If a fixed IP address is used, set [Manual] and enter the information. If a dynamic IP is used, set [DHCP] and enter the DNS address only.

- Manual: Enter and set the IP address, subnet mask, gateway, DNS1 and DNS2 directly.
- DHCP: Set DNS1 and DNS2.

MAC address

The MAC address of the camera is displayed.

IP address

The current IPv4 address is displayed. You can change the IP address by setting [Manual] for [IP type].

Subnet mask

The subnet mask of the current IP address is displayed. You can change the subnet mask by setting [Manual] for [IP type].

Gateway

The gateway of the current IP address is displayed. You can change the gateway by setting [Manual] for [IP type].

DNS setting by DHCP

This is displayed when [DHCP] is set for [IP type]. If you select Enable, the DNS address is automatically assigned.

DNS1/DNS2

The address of the DNS (Domain Name Service) server is displayed.

Host name

Host name is the name to retrieve the host name which is used in ONVIF GetHostname command. The first character must be alphabetic and only alphanumeric characters can be entered. Up to 63 characters can be entered. Name of the camera is input as default; does not need to be set as it is not a required value.

MTU

Set the maximum transmission unit (MTU) at which data can be transferred from the network interface. The MTU value can be set from 1280 octets to 1500 octets. If the value is set too low, the video playback may be delayed. Therefore, the MTU value should be set according to the user's network environment.

IPv6 setup

IPv6 is a next-generation Internet address system with data processing speed, concurrent data processing capacity and Internet address system which are more expanded than IPv4. To use IPv6, select [Enable]. You can set the IP type, IP address, Prefix and gateway. When you select a camera model from the IP installer, you can select either IPv4 or IPv6 address and connect by entering the appropriate address directly in the web browser.

IP type

Select the IP connection type. The default value is [Default]. If DHCP is not detected, the value will automatically be changed to the previous setting.

- DHCP: The IPv6 address assigned through DHCP is displayed.
- Manual: The user can enter an IPv6 address of choice.
- Default: The current IPv6 address is displayed.

Note

- After changing the setting, click the [Apply] button to close the web browser window. After a moment, access the changed IP address again.

IP address

Enter the IPv6 address.

Prefix

This value sets the IP range. If [IP type] is [Default], [Prefix] value is 64. If it is [Manual], you can change the [Prefix] value.

Gateway

Gateway is displayed when [Manual] is set for [IP type]. The user enters the gateway address directly.

Port

A port is the location used for sending and receiving data Click [Port] tab, set the relevant items, and then click the [Apply] button at the bottom of the page. It is recommended to use HTTPS and RTSP to reinforce image security.

> **Note**
>
> - When setting the port number, you cannot use 3702, 4520, 49152 or any number between 0 and 1023.

HTTP

The HTTP port is used for connecting to the camera using a web browser. The default value is 80 (TCP). When the HTTP port is changed, the web browser window will be closed. Enter the new HTTP port at the end of the IP address to reconnect. If the HTTP port is 80, the port number can be omitted. (e.g.: Camera IP address: 192.168.1.100, HTTP port In case of 8080 -> http://192.168.1.100:8080)

HTTPS

HTTPS has increased security over HTTP. This can be used when HTTPS mode is set in SSL, and the default value is 443 (TCP). The available range is between 1024 and 65535.

RTSP

This is the port for sending an image in RTSP (Real Time Streaming Protocol); the default value is 554.

Timeout

To use the timeout, select [Enable]. If there is no response for a certain period of time when connection is made in RTSP, reset the port connection.

PTZ setup

You can set the position of the camera PTZ preset and detailed functions including swing, group, tour, and auto start. When you complete the setting, click the [Apply] button at the bottom of the page.

Preset

You can set the preset position of the PTZ camera.

Setting a preset

1. Adjust the camera position as follows.
   - When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
   - Select an image magnification by adjusting the zoom slide bar, or by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out.
   - Move the focus nearer by clicking the 👤 icon or move the focus farther away by clicking the ▲ icon.
   - To adjust the camera focus automatically for once, click the ⊡ icon.
2. Click the [Set preset] button.
3. Select a desired preset No. from [Number] on the [Preset setup] dialog box.
4. Enter the relevant preset name in [Name]. The preset name can only be entered using upper/lower case alphabets and numbers.
5. Click the [OK] button.

The added preset will appear on the list of [Preset setup]. You can set the details for the relevant preset on the preset list.

Deleting a preset

- Select the checkbox of a preset you wish to delete from the preset list of [Preset setup] and click the [Delete] button.

Navigating to home

- Click the [Go home] button.

Setting the home

1. Adjust the camera position you wish to set as the home as follows.
   - When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
   - Select an image magnification by adjusting the zoom slide bar, or by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out.
   - Move the focus nearer by clicking the 👤 icon or move the focus farther away by clicking the ▲ icon.
   - To adjust the camera focus automatically once, click the ⊡ icon.
2. Click the [Set home] button.

Note

- When the camera is rebooted after setting home position, the screen is positioned at home position. If another sequence (Preset, Swing, Group, Tour, Trace) is in operation, the sequence that was active will be executed without moving to the home position when the camera is rebooted.

Preset setup

You can view the preset list and modify or delete the detailed setting of each preset.

No.

This is the preset number entered on the [Preset setup] dialog box.

Name

This is the preset name entered on the [Preset setup] dialog box.

Follow-up action

Set the camera action to be executed after the camera moves to the relevant preset position.

- Off: No action will be executed after the camera moves to the relevant preset position.
- Auto run: An action set from the [Auto run] tab will be executed automatically. When [Off] is selected from the Auto run [Mode] or there is no auto start action, the preset execution status will be maintained.
- Auto tracking: Executes the auto tracking for a time set from the [Tracking time] column.
- Auto tracking > Home: It moves to the PTZ home position after executing the auto tracking operation. Please refer to Setting the home (ptzInfoSetup.html#set_home) on how to set the home position.
- Auto tracking > Auto run: Automatically runs the action predetermined after auto tracking action is executed. To set an action to auto run, see Auto run (ptzInfoSetup.html#autorun).
- Video analytics: Video analytics action will be executed.

Tracking time

Sets the tracking time to execute auto tracking when [Auto tracking] is selected from [After action].

Go to menu

You can move to the setup page and check or set a detailed option.

- Camera setup: Move to the [Video & Audio] > [Camera setup] page. You can change the camera setting to fit for the surrounding environment of the selected preset.
- Motion detection: Navigate to [Analytics] > [Motion detection] page. When [Preset] is selected among the [Type] options from the option motion detection page, you can set a different motion detection event for each preset.
- IVA: Navigate to [Analytics] > [IVA] page. When [Preset] is selected among the [Type] options from the IVA page, you can set a different IVA (Intelligent video analytics) event for each preset.

Last position

You can set the camera to move to the last position when turning the camera on and off. Select whether or not to save the last position of the camera and select the saving interval.

Save last position

To save the last position, select [Enable].

Time

Set the saving interval at which to save the current position as the last position. The unit used to measure the interval is seconds. Enter the saving interval on the field and click [Apply].

Swing

Swing is the function for the camera to move 2 preset sections back and forth.

> **Note**
> - In order to use the swing function, at least 2 presets must be added. You can add or modify a preset from the [Preset] tab.

Swing setup

From preset no.

Select start preset No. to begin the swing action.

To preset no.

Select end preset No. to end the swing action.

Speed

This is the moving speed from the start preset and the end preset.
If you set a larger number, the camera moves from the start preset position to the end preset position faster.

Dwell time

This is the amount of time the camera will stop and stand by at the start preset position and the end preset position, respectively.
For example, if '1' is entered, the camera stays in the start preset position for 1 second, then moves to the exit preset position.

Swing mode

Select whether to move the camera with only the pan or tilt action of the camera or to move the camera with both pan and tilt actions when the camera moves back and forth from the start preset to the end preset.

Swing setup

1. Select preset No. to begin swing from the [From preset no.] column.
2. Select preset No. to end swing from the [[To preset no.] column.
3. Enter the moving speed from the start preset to the end preset on the [Speed] column.
4. Enter the preset hold time on the [Dwell time] column to decide how long the camera stays in the start preset and then moves to the end preset.
5. Set the swing action mode from the [Swing mode] column. For example, if you wish to move to the camera to the preset only in the pan direction, select [Pan].

Start swing

- To start the swing action, click the [Start] button.

Stop swing

- To stop the swing action, click the [Stop] button.

Group

The group function is a function used to group a number of previously designated presets and access the presets placed in a group sequentially.
Up to 6 groups can be set, and up to 128 presets can be saved for each group.

Note

- In order to use the group function, a preset must have been added previously. You can add a preset from the [Preset] tab.

Group setup

Preset no.

Select a preset No. to save to a group.

Speed

Enter the moving speed between presets; that is, the moving speed of the camera to the next preset position.
If you set a larger number, the camera moves from the current preset position and the next preset position faster.

Dwell time

Enter the amount of time to stay in each preset position.
For example, if '1' is selected for dwell time in No. 1 preset, it stays in No. 1 preset position for 1 second and then moves to the next preset position.

Setting Group 1

1. To set Group 1, select '1' from the group drop-down list.
2. Select preset No. to add to 'Group 1' from the [Preset no.] column.

3. Enter the speed of the camera to move from the preset position being set to the next preset position on the [Speed] column.
4. Set the amount of time to stay to decide how long the camera stays in the preset position being set from the [Dwell time] column to the next preset position.
5. Click the [Apply] button.

Deleting group setting value

1. Select a group No. to clear the value set previously from the group drop-down list.
2. Click the [Delete] button.

Starting group action

1. Select a group No. to run from the group drop-down list.
2. Click the [Start] button.

Stopping group action

1. To stop the group currently running, click the [Stop] button.

Tour

The tour function is a function used to call a group that is a set of previously set presets sequentially.

Note

- In order to use the tour function, a group must have been set previously. You can set the group from the [Group] tab.

Tour setup

Group no.

Select the group No. that will be called sequentially in order.

Dwell time

Enter the amount of time to stay in each group.
For example, if '1' is selected for dwell time in Group 1, it stays in Group 1 for 1 second and then moves to the next group.

Setting tour

To call Group 1, 2, and 3 sequentially and move the camera, set as follows.

1. Select '1' from the group number drop-down list.
2. Set the stay time of the camera in 'Group 1' from the [Dwell time] column.
3. Select '2' from the group number drop-down list.
4. Set the stay time of the camera in 'Group 2' from the [Dwell time] column.
5. Select '3' from the group number drop-down list.
6. Set the stay time of the camera in 'Group 3' from the [Dwell time] column.
7. Click the [Apply] button.

Resetting tour setting

- When you click the [Delete] button, all tour settings will be deleted and initialized.

Starting tour action

- Click the [Start] button. The camera moves while calling the set groups sequentially.

Stopping tour action

- Click the [Stop] button. The tour action will stop.

Trace

The trace function is a function used to save the moving path of the camera and move the camera according to the path.

Trace Setup

You can set up a trace path and start or end using the trace function. When setting up a trace path, you can include preset locations in the trace path. Preset locations can be set under the [Preset] tab.

Setting tracking path

1. Select a trace no. to set up.
2. Click the [Set] button and set the path as explained in the following:
   - Use the direction buttons on the video screen⊕ to pan, tilt, and zoom to set the path you want to save.
   - To include a preset location in the path, choose a desired preset location number from the [Preset list] and click [Go].
3. If you click on the [Set] button again, the trace path will be saved in the current trace no.

Starting tracking action

1. Select the trace No. to operate.
2. Click the [Start] button. The camera moves according to the moving path set under the relevant trace No.

Stopping tracking action

1. To stop the tracking action currently operating, click the [Stop] button.

Auto run

Auto run is a function used to execute an action specified in advance automatically if the user does not operate the camera for a certain period of time.

Mode

You can select a function you wish to execute automatically and specify a detailed setting.

- Off: The auto run function is not used.

- Home: The camera moves to the home position. You can set the home position from the [Preset] tab.
- Preset: Moves to the relevant preset No. You can set the time for the camera to move to the preset and the preset position No. where the camera will move.
- Swing: Executes swing action automatically. You can set the time to execute a swing action automatically and the swing mode.
- Group: Executes the group action automatically. You can set the time to execute a group action automatically and the group No. You can set the detailed group action from the [Group] tab.
- Tour: Tour action will be executed automatically.
- Trace: Trace action will be executed automatically. You can set the time to execute the tracking action automatically and the trace No. You can set the detailed tracking action from the [Trace] tab.
- Auto pan: Executes the action to rotate 360 degrees in the pan direction automatically. You can set the time to execute the action automatically, the speed for the camera to rotate in the pan direction, and the fixing angle of the tilt. For example, if '30' is set for the tilt range, the tilt range will be maintained at 30 degrees.
- Schedule: You can set a set the action to operate automatically on the set weekday and time.

Setting the camera to start automatically according to the schedule

1. Select [Schedule] from [Mode].
2. Click a time to execute the camera automatically.
3. Select an action to be executed automatically from [Mode] of the [Schedule] dialog box. Detailed options vary depending on the selected mode. Set each option.
4. Click the [OK] button.

The set time for Auto run action will be displayed on the timetable. When you click the [Clear] button, all set times will be deleted.

PT limit

You can set the camera pan and tilt to move only within a limited range. When you complete the setting, click the [Apply] button at the bottom of the page.

> **Note**
> When you use the PT limit function by selecting [Enable] from [Pan/Tilt limit], you can set a preset only within the limited range.
> If there is a preset set beyond the previously set pan and tilt range before the PT limit is used, the preset will operate according to the initial setting.

Adjusting the PTZ

You can adjust the pan, tilt, and zoom actions of the camera.

Adjusting the PTZ

- When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
- Select an image magnification by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out from the zoom bar.
- Move the focus near by clicking the icon or move the focus far by clicking the icon.
- To adjust the camera focus automatically for one shot, click the icon.

Click [Set Pan ground position] to set the pan degree of the video currently shot as 0.
Click [Set Pan/Tilt correction] to reset the Pan/Tilt positions manually once.

Pan/Tilt limit

To limit the pan or tilt action range, select [Enable]. The pan and tilt operate within a set range.

Mode

Select an action to set the limited range.

Action

Sets the maximum range of pan and tilt to move.

Setting the limited range of pan and tilt actions

1. Begin the setting by clicking the [Start] button.
2. When you click the [Enter] button, the position of the start point will be displayed on the camera image screen. Set the position of the start point for the limited range while adjusting the PTZ.
3. When you click the [Enter] button, the position of the end point will be displayed on the camera image screen. Set the position of the end point for the limited range while adjusting the PTZ.
4. Click the [Enter] button one additional time.

When you click the [Exit] button, all values currently being set will be deleted. You can click the [Start] button and set the limited range of action again.

Pan/Tilt speed	You can select the speed option for controlling the Pan/Tilt behavior of cameras. When controlling the Pan/Tilt behavior, the farther the center point, the faster the behavior speed. Select [Exponential] to see increase in speed in the shape of a curve (i.e. Initially slow, but getting faster with acceleration). Select [Linear] to see a constant increase in speed in a straight line.
Proportional Pan/Tilt	Adjusts the moving speed of pan and tilt according to the zoom magnification. If the zoom magnification increases, the moving speed of tilt will be reduced. **Mode** You can select an option to change the manual operation speed of pan and tilt according to the zoom magnification.
Pan/Tilt correction	[Pan/Tilt correction] is a function to manually reset the Pan and Tilt positions. Specifies whether or not to initialize the pan/tilt of camera as well as setting the initialization cycle and time. For example, after selecting [Enable], if you set [Duration] to "2 days" and [Time] to "9", pan/tilt position will be initialized every two days at 9 a.m. If the time is set to Jan 1, 2000, the initialization process begins at 9 a.m. on Jan 3, 2000, and then the pan/tilt position will be initialized every two days at 9 a.m. (i.e. Jan 5, Jan 7, and so on) **Duration** Set the initialization cycle. For example, if you set it to "2 days", the initialization recurs every two days. **Time** Sets the initialization time. You can select the hourly time from 0 to 23. **Note** • A deviation of ±10 min may be expected. • After the action of pan/tilt initialization, the previous PTZ action state is maintained. For example, if initialization action occurs in the middle of a preset action, the preset action will resume after the completion of the initialization.

Video setup

You can set a privacy area in the camera's image or flip it in reverse directions (vertically or horizontally).
Once you have completed the setting, click the [Apply] button at the bottom of the page.

Adjusting the PTZ

You can adjust the pan, tilt, and zoom actions of the camera.

Adjusting the PTZ

- When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
- Select an image magnification by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out from the zoom bar.
- Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
- To adjust the camera focus automatically for one shot, click the ⛶ icon.

Privacy area

To prevent a possibility of privacy invasion in the camera's image, you can set a privacy area. To use the privay area function, click [Enable privacy area]. To deactivate a privacy area, deselect [Enable privacy area], then you can check the full camera's image without anything hidden due to privacy. The set privacy areas are not deleted and they can be checked in the privacy area list.

Pattern

Select the mosaic pattern to apply to a privacy area. Select [Solid] to apply the color set in the privacy area window. If you select the pattern, it will be applied to all the areas.

Setting a privacy area (except for a zoom or PTZ camera)

1. Select [Enable privacy area] and click the [Apply] button at the bottom of the page.
2. Click on 4 corners with the mouse on the camera video screen.
3. In the [Privacy area] window, set the following:
   - Enter the name of the privacy area in [Name], select the color to cover the image in [Color].
4. In the [Privacy area] window, click the [OK] button.
5. A new privacy area is added to the list of privacy areas. The color set in the camera's image screen is used to display a privacy area.

Note

- Only English letters, numbers, dash (-) and period (.) can be entered for the name of a privacy area.

Deleting a privacy area

1. Select a privacy area to delete from the list of privacy areas. The selected area is displayed on the camera's image screen.

2. Click the [Delete] button. The selected area will be deleted.

Video rotation

If the screen is displayed upside down after installing the camera, you can correct this through the flip mode and mirror mode functions.

> **Note**
> - If you change the video rotation settings, the video screen will be flipped in four directions or changed. To help you analyzing the changed video, change the analysis settings in the [Analytics] menu.

Flip/Mirror

Select [On] to flip the camera output horizontally or vertically.

Camera setup

You can change the camera settings to capture the best image in the environment where the camera is installed. Image presets suitable for various environments are provided by default; the user can also specify camera settings directly. You can check on the camera preview screen how the camera image is displayed according to the settings. When you complete the setting, click the [Apply] button at the bottom of the page. If the time-out time (240 seconds) has passed without clicking the [Apply] button after changing the setting, the previous setting will be restored.

Comparison view

You can see the videos of before and after changing camera video setting values all at once in the [Before] and [After] panels.
In the case of PTZ camera, if you click [PTZ control], a PTZ adjustment panel rather than camera video screen is shown in the place of the [Before] panel. Also, if you click [Refresh], it updates the source video in the [Before] panel with values most recently applied.

Adjusting the PTZ

You can adjust the pan, tilt, and zoom actions of the camera.

Adjusting the PTZ

- When you drag the icon ⊕ with the mouse, the camera moves to the pan and tilt.
- By using the zoom bar, you can adjust the video zooming ratio. Or select an image magnification by clicking the ⊕ icon to zoom in or the ⊖ icon to zoom out.
- Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
- To adjust the camera focus automatically once, click the ⊡ icon.
- Place the screen center toward the north, and click the N (Set North) button to change the location to the north. (The Set North button displays when you click the [OSD] tab.)

Focus save

Select [Enable focus save] to activate the focus save function. The focus save function is a function that stores the focus value for a specific location (Pan/Tilt/Zoom) of the camera, and changes it to the saved focus value when reaching the corresponding Pan/Tilt positions while controlling the PTZ. The focus position can be set in [Focus save setup].

Focus save setup

You can check the list of set focus save.
You can set or delete the focus position, and apply the desired focus to the camera.

- Go: Moves to the selected focus save area from the list of focus save.
- Set: Saves the screen currently being recorded as a focus save area.
  - Number: Selects the number of a focus area to save.
  - Name: Enter the name of a focus area to save. Names can include up to 12 alphanumeric characters (A-Z, a-z, 0-9), excluding spaces.

- IR shift: Select [Enable] to apply IR shift to the focus save area. When enabled, IR shift moves the focus to match the location of the saved focus based on visible light. The extent to move the focus can be set using the slide bar.
- Remove: It deletes the selected focus save area from the list of focus save.

> **Note**
> - The [Enable focus save] option displays when the [Focus] tab is selected, and select [Enable focus save] to enable [Focus save setup]

Type

To apply the same camera setup for every preset, select [Global]. To apply a different setup for each PTZ preset, select [Preset]. The [Preset] option will be activated only when a preset is set from the Preset setup page. If you select [Preset] and set the camera setting for each preset, then you may not set some of the items in the detailed camera settings.

Sensor mode

Set how many frames per second the CMOS sensor of the camera will capture.

> **Note**
> - Changing the sensor mode will reset the whole camera setting.
> - Sensor mode value cannot be set differently for each image preset. Frame rate applies identical to all image presets.
> - The maximum value of [Basic]>[Video profile]>[Frame rate] varies according to the number of frames set for the sensor mode.

Image preset mode

Various image presets are provided for specific purposes. Select an image preset that best suits your camera environment.

- User-defined preset 1: Used for displaying the image as set by the user.
- User-defined preset 2: Used for displaying the image as set by the user.
- Outdoor daytime: Used to display a clear and smooth video taken outdoor in daytime.
- Outdoor night time: Used to reduce the level of noises for video taken outdoor at night with low brightness and lighten up dark areas.
- Indoor backlight: Used to display a video where indoor and outdoor are both identifiable with indoor backlight.
- Indoor bright scenes: Used to provide clear picture quality and reduce flickering in an illuminated indoor environment.
- Number plates: Used to improve the ability to identify the license plate of a car in daytime and at night.
- Vivid video: Used to improve color and clarity.

> **Note**
> - After selecting an image preset mode, change the detailed settings of camera image, such as white balance and night/day modes, and click [Apply] to save the changed value as the image preset value. To reset it to default, click the [Reset] button.

SSDR

SSDR increases the brightness of a dark area to reveal an image in an environment where there is a significant difference between a dark area and a bright area.

SSDR

To use SSDR, select [Enable].

Level

Adjust the level of dynamic range. As the level goes higher, a dark area becomes brighter.

D-Range

Select the amplitude area of the dynamic range.

White balance

You can make corrections to show the color white correctly and other colors normally, in any lighting environment.

Mode

Select the white balance mode according to the environment where the camera is being used.

- Manual: You can adjust red gain and blue gain manually. If more red color is shown, lower the red gain, and if more blue color is shown, lower the blue gain. If more green color is shown, raise both the red and the blue values.
- ATW: Corrects the camera color automatically.
- Outdoor: The colors of the camera are corrected to be optimized for an outdoor environment.
- Indoor: Correction is made to optimize colors for an indoor environment.
- AWC: Screen correction is made to optimize the colors for the current lighting environment. When you aim the camera at white paper and press the [Set] button, the red gain and blue gain will be adjusted and applied to the image. The white balance value continues to be applied to the currently displayed video. If the environment changes, this should be adjusted again.
- NarrowATW: Auto-corrects camera color in 2800 K ~ 9000 K environment.[ATW]The color temperature range is narrower than Mode.
- MERCURY: Screen correction is made to optimize the colors for the mercury lighting environment.
- SODIUM: Screen correction is made to optimize the colors for the sodium lighting environment.

Red gain

Adjust the red gain. If the red gain is high, more red color is shown on the screen. If too much red is shown, lower the red gain.

Blue gain

Adjust the blue gain. If the blue gain is high, more blue color is shown on the screen. If too much blue is shown, lower the blue gain.

> **Note**
>
> - In any of the following cases, white balance may not operate normally. In such case, adjust the white balance through the [AWC] mode.
> - If the surrounding environment exceeds the color temperature correction range, such as a clear sky or sunset
> - If the surrounding environment is dark
> - If the camera faces directly toward a fluorescent light or if there is a significant illumination change.

Backlight

An image captured against the light can be corrected. Select from among Off, BLC, HLC, or WDR in [Mode] and change the setting according to the selected backlight mode.

BLC

The BLC (Back Light Compensation) mode selects and corrects a specific area on a dark image captured against the light, to show an object in a selected area more clearly.

BLC level

Move the slide bar to adjust the BLC level. The higher the level, the brighter the set area.

HLC

The HLC (High Light Compensation) mode blocks strong lighting such as a streetlight or the headlights of a vehicle, to prevent failures to detect a neighboring object, such as a car license plate, due to saturation of strong lights.

HLC level

Set the level of exposures and adjust the highlight areas.
The higher the level, the higher the correction and the bigger the difference is for highlight-blocked area.

Mask

Select whether or not to apply the mask.

- Off: Does not create blocked area.
- On: Always blocks areas of brightness above a certain level.
- All day: Blocks areas except during very bright or dark time.
- Night only: Blocks areas until it gets really dark.

Mask color

Sets the color of the blocked area.

Mask tone

Sets the tone of the blocked area.

Dimming

Detects the strongly illuminated area on the screen and adjusts brightness to reduce the size of the saturated areas.

> **Note**
>
> - At night, it only operates when the size of a highlight goes over the threshold in a dark environment.
> - At night, HLC does not operate when it is overall too bright or dark. In daytime, HLC does not operate when it is too dark.
> - When setting up HLC, there are minimum and maximum sizes to prevent malfunction of HLC.

WDR

The WDR (Wide Dynamic Range) mode shows both a dark area and a bright area clearly in a backlight environment. This method captures once with a fast shutter to show a bright area clearly and again with a slow shutter to show a dark area clearly, using the dual shutters of the camera, and then combines only the parts shown clearly from the two images into one image. If the WDR mode is used, noise may occur between the bright area and the dark area.

WDR mode off　　WDR mode on

WDR level

Adjusts the intensity of backlight correction.

WDR control

Sets the WDR action option.

- Always on: the WDR mode is enabled at all times.
- Auto: Video is analyzed and WDR mode is automatically turned on when backlight correction is necessary.
- Turn off in low light: The WDR mode is automatically turned off in a low-light environment.
- Turn off in B/W: The WDR mode is automatically turned off when the B/W mode operates.

Note

- When WDR mode is selected, the shutter value will be reset. The screen will become bright and then become dark.
- When WDR mode is used, the frame rate is reduced by half.
- It is recommended to use the WDR mode when a camera is installed indoor and there is very strong backlight.
- If the WDR mode is used, noise may occur between the bright area and the dark area.
- If the WDR mode is used, noise may occur in the motion detection area.
- Please turn off the WDR mode because, depending on the lighting condition in WDR mode, the following problems could occur:
  - When there are unnatural color changes and/or unnatural symptoms on the screen.
  - When there is noise on the bright part of the screen.
- The WDR performance may vary depending on the size of bright areas on the screen, so adjust the installation angle properly for the best WDR performance.
- If you set the WDR level too high, the screen may exhibit unnatural symptoms.
- For the best WDR performance, it is recommended to set the exposure iris to [Auto].

Exposure

Change the exposure according to the environment of the camera. If the background is darker than the subject, the subject will be shown normally only when the exposure is decreased. Conversely, if the background is brighter than the subject, the subject will be shown normally only when the exposure is increased.

Brightness

The brightness of the screen can be adjusted. The higher the number, the brighter the screen.

Minimum shutter

The shutter can set the sensor exposure automatically according to the environment; the electronic shutter operates at a range of between minimum shutter and maximum shutter. Minimum shutter means the minimum value of the possible range for exposure time and sets a long exposure time.
If the selected minimum shutter value is smaller than the fps value of [Sensor] mode, the frame rate can be reduced in the dark.

Maximum shutter

Maximum shutter means the maximum value of the possible range for exposure time and sets a short exposure time.

Prefer shutter

Set the proper exposure time that has a high priority in operation within the range of exposure time.

Anti flicker

Prevents screen flickering that occurs due to inconsistency in the lighting in the capturing environment.

SSNR

Remove noise from the image.

- On/Off: Sets whether or not to use the SSNR function. When [On] is selected, the SSNR level can be adjusted.
- Wise NR: When a moving object is in the image, the noise reduction level is adjusted automatically to improve object discrimination.

SSNR 2D level

SSNR 2D reduces noise on the image using adjacent pixels in one frame. Set the SSNR 2D level. The level can be set when [On] or [Wise NR] is selected for [SSNR]. The higher the level, the less the noises, but then the video might become fuzzy.

SSNR 3D level

SSNR 3D reduces noise on the image using the pixels of various frames. Set the SSNR 3D level. The level can be set when [On] or [Wise NR] is selected for [SSNR]. The higher the level, the less the noises, but then the video might lag.

Iris

Select the iris type

- DC (Auto): Automatically adjusts the iris depending on the optical intensity of the surroundings.
- Manual: Manually adjusts the iris's F number.
- P-Iris: Adjusts the iris through the step motor. A large depth of field can be secured so that a number of objects at various distances can be brought into focus at the same time.

Iris F-No

Activated when [Iris] mode is set to [Manual], and it sets the iris f-number.

AGC

AGC (Auto Gain Control) adjusts the brightness by controlling the sensitivity of image gain when capturing an object in dim light.

- Off: Disables the AGC function that brightens dark image by amplifying gain from video signal.When this option is selected, [SSNR] and [Day/Night] do not work.
- Manual:: Manually adjusts the AGC value.
- Max gain: Sets the max gain that can be auto-controlled depending on the brightness of the surrounding.

Level (Manual)

Sets the AGC level value manually as desired. The higher the level value, the higher the gain value, which results in a brighter screen even in a dark environment.
If [Manual] is selected under [AGC], [Level (Manual)] is enabled.

Level (Max gain)

Sets the max gain value. : Controls the max gain that is set based on the brightness of the surrounding. The higher the level value, the higher the max gain.
[Level (Max gain)] is enabled if [Max gain] is selected under [AGC].

> **Note**
>
> - The screen exposure can be saturated depending on the max/min range of shutter settings.
> - It may take a while until the effect is applied or canceled after setting the Wise NR mode (SSNR 2D and SSNR 3D).
> - The level of noise might go up despite the improved video detection ability after setting the Wise NR mode (SSNR 2D and SSNR 3D).
> - In the bright environment with less noises, the effect of Wise NR (SSNR 2D and SSNR 3D) can be little.
> - Since the motion detection function is used internally when the Wise NR (SSNR 2D and SSNR 3D) is enabled to detect motion in video, it is detected according to the operational condition of motion detection event. For the detailed motion detection settings, go to [Analysis] > [Motion Detection].
> - As the usage of AGC increases, the SSNR 3D value for SSNR also increases, which could lead to stuttering in the video.
> - AGC action increases screen noise.
> - If AGC mode option is set to [Off] or [Manual], or if [Max gain] value is set to below 30 db, [Day/Night] cannot be set to [Auto].

Day/Night

Change the image to color or b/w according to the camera's environment. When the dwell time is set, the image can be changed to color or b/w according to preference. When switching to Day/Night, a motion detection event or image analysis event cannot be detected.

Mode

Selects the mode which changes the camera to color or b/w.

- Color: Outputs an image in color.
- B/W: Outputs an image in b/w.
- Auto: Switch to color mode during the daytime and b/w at night or in low light. However, if [AGC] under [Exposure] is set to [Off] or [Manual], or if [Max gain] is set below "below 30 dB", [Day/Night] cannot be set to [Auto].
- External: When an alarm input terminal is linked with external equipment, color and b/w can be controlled.
- Schedule: Day/Night is changed to the schedule set from [Activation time (Color)].

> **Note**
>
> - The [External]
>
> can be set when there is more than one alarm inputs. Select [Event]>[Alarm I/O] to set the alarm I/O.

Dwell time

Changes to color or b/w when [Auto] is selected for Day/Night and the brightness condition is maintained for the set dwell time.

Duration

Sets the time interval when switching to color or b/w occurs.Selecting [Customize] allows you to manually set the duration.

Activation time (Color)

Sets the schedule for operation in color mode. When [Everyday] is selected and the time is set, color mode is activated at the relevant time every day, and b/w mode is activated at all other times. If you wish to not have color mode set for the same time every day, you can deselect [Everyday] and set the activation time to Mon., Tue., Wed., Thu., Fri., Sat. or Sun., respectively.

> **Note**
> - When switching between night and day modes, the motion detection event will not take place. In other words, even if you 'Enable' the motion detection event, it will not detect when switching between night and day modes occurs. You can enable or disable the motion detection event in [Analytics] > [Motion Detection].

Special

You can adjust an image for sharpness, contrast, and color level.

DIS

When the camera is shaking due to external impacts, such as wind, DIS (Digital Image Stabilization) corrects the video automatically and stabilizes the screen.

> **Note**
> - If you change the DIS setting, the video screen may be reduced or enlarged. Change the analytics setting in the [Analytics] menu so that the video can be analyzed according to the changed video.

Sharpness

Adjust the overall sharpness of the image.

Sharpness level

Adjust the overall sharpness of the image. You can set the sharpness level by setting [On] for [Sharpness].
The higher the sharpness level is, the stronger and clearer the video sharpness is.

Gamma control

When set to [On],the brightness distribution of video is analyzed and its brightness level is adjusted.

Gamma

Adjust the contrast of the image. This means the gap between the brightest part and the darkest part in an image; a higher gamma value means a clearer display of the difference in brightness.

Contrast

Adjust the shade contrast of the image.

Local contrast

Local contrast more clearly shows the subtle difference in brightness of video.

Local contrast level

This is enabled by setting [Local contrast] to [On]. The higher the level value, the higher the contrast of video, which means a clearer image. However, this also increase the level of noise on the screen, and a warped form of the duplicated image might be more visible around the edges.

Color level

Adjust the intensity of color in the image.

Defog

Correct the image when it is foggy or cloudy. When [Auto] is set, the surrounding environment is detected and the image is corrected automatically. When [Manual] is set, the user can see the surrounding environment and set the correction level directly. The default value is set to [Off].

Defog level

Activated when [Manual] is set for [Defog]; it adjusts the defog level. A higher defog level displays the image more clearly. If the fog level is low and a high defog level is set, the screen may look darker.

Note

- If you set the Defog mode to [Auto], as the amount of fog decreases, the level of defog function is also lowered. If you want to maintain the same effect of the function despite a decrease in the fog, then set the Defog mode to [Manual].
- If the fog level is low and a manual high defog level is high, the screen may look darker.

OSD

Display the camera title or the date and time, and set the location, size, color and transparency of the characters.

Camera title

Sets whether or not to display the camera title. When [Enable] is selected, the [Add]/[Delete] buttons will be activated.

When you click the [Add] button, a field where a camera title can be entered will be added to the list.Enter the title of your camera, and move the cursor to set its location.Up to 5 camera titles can be added.
To delete a camera title, select the title to delete and click the [Delete] button. To preview how the camera title is displayed on the screen after entering it, enter the camera title and click the [Preview] button.
In the [Position]column,click the [Move]button. Then, OSD position is displayed as a triangular shaped icon on the preview video screen. You can move the icon to adjust the position of the OSD.

Date & Time

To display the date and time on the screen, select [Enable]. Select the date display type and set the position to display the date and time by moving the cursor.

Size

Adjust the size of OSD.

Color

Set the color of OSD.

Transparency

Set the transparency of OSD.

Overlay

Display the camera's PTZ coordinates, or preset names on the screen.

- PTZ position: Sets whether to display the PTZ location on the screen or not.
- Preset name: Sets whether to display the preset name on the screen or not.
- Azimuth: The function is used to display the azimuth of the area that you are looking at on the screen currently. When the function is enabled, the 8 directions of E(East)/W(West)/S(South)/N(North)/NE(Northeast)/NW(Northwest)/SE(Southeast)/SW(So are displayed at the bottom right of the screen.

Overlay image

The image you want can be displayed at the top left of the screen. [Upload image] menu allows you to upload images.

Upload image

[...]button can be clicked to search files in bitmap format. Click the [Upload] button to upload image files. To delete image files applied to the screen, click the [Delete] button. The allowed image spec is 16-bit (RGB565 not supported), 24-bit, or 32-bit bitmap file. Its size should be a fixed 200x200 pixels, and the file size should be 200 KB or less.

Note

- In case of the item with a location that can be adjusted(camera title, date & time), if it overlaps with other fixed OSD items, the screen may fail to display it properly.

Focus

You can set the camera focus operation method, whether or not to use digital zoom, and reset the camera.

Mode

Set the camera focus operation method.

- Manual: Adjust the camera focus manually.
- Auto: The camera focus is adjusted automatically.
- One shot AF: In case of a user event (Auto Focus or Zoom Action), the focus will be automatically adjusted one time.

Range

Sets the applicable range when automatically adjusting the camera focus.
To automatically adjust the focus in consideration of the whole supported range for the camera, select [Wide]. To automatically adjust the focus in consideration of only partial range from the current location, select [Narrow].
If you select [Wide], the camera motion might be mildly shaky during the process of automatic focusing. If you select [Narrow], there will be no such shaky motion, but the focusing might fail if the subject is located exceptionally close or far.

Digital zoom

To use digital zoom, select [On].

Max digital zoom

Set the maximum range of available digital zoom. You can set the range of digital zoom by setting [On] for [Digital zoom].

Zoom mode

Set the method to synchronize the camera focus when the zoom is operating.

- Auto: Even if the zoom magnification is changed, the zoom operates while maintaining the focus by continuously appraising and modifying the condition in focus.
- Manual: The zoom operates according to the set focus track. The image may be out of focus if the zoom magnification is changed.

Zoom speed

Set the zoom speed when the Zoom mode function is enabled.

Lens reset

You can reset the lens manually once or set the reset period to reset the lens automatically.

To reset the lens manually, select [Manual] from [Lens reset] option and click the [Reset] button. To set auto reset period, select a desired time between 1 and 7 days. The lens will be reset at the set period from the set time.

Note

- Since the automatic focusing function adjusts the focus based on a subject in the middle of the screen, subjects on the periphery of the screen may be out of focus.
- The automatic focusing function may not operate normally under the following conditions.
  - If there is a bright light or flashing light, such as a neon sign
  - If the illumination in the monitoring area is low
  - If the illumination in the monitoring area is excessively high
  - If the camera operates with a slow shutter
  - If the subject is dark
  - If there is no intensity difference, such as between the sky and a wall
  - If the camera is aimed at a thin horizontal line
  - If there are objects both far and near within the monitoring area,

Heater

One time act

If frost is present and you would like to defrost by operating the heater, click the ↺ button once.

IR

Enables the identification of objects at a close distance by preventing overt brightness of proximate objects on screen when IR LED is turned on.

Mode

In the B/W mode when the IR LED is turned on, the saturation at the center of screen is prevented, so it is possible to identify a nearby object.

- Off: Turns off IR LED.
- On: Turns on IR LED. This mode disables [Day/Night].
- Day/Night: Turns on/off IR according to Day/Night. It means that, after the activation of Day/Night, LED is turned off when the video is in color mode and turned on when video is in B/W mode. If this mode is selected, [Day/Night] is automatically set to [Auto] and the setting cannot be changed.
- Sensor: IR and Day/Night changes depending on the amount of light detected by the optical sensor. This mode disables [Day/Night].
- Timed: Sets the IR On time. This mode disables [Day/Night].

LED On level

If the amount of light is below the set LED level, LED is automatically turned on. "IR On level" is enabled if you select [Sensor] in [Mode].

LED Off level

If the amount of light is above the set LED level, LED is automatically turned off. "IR Off level" is enabled if you select [Sensor] in [Mode].

LED On time

Sets the time during which IR is turned on. "LED On time" is enabled if you select [Timed] in [Mode].

LED max. power

Set the maximum brightness of IR.

LED power control

Select [Auto] to control the state of screen saturation due to the presence of proximate objects. If [Off] is selected, the screen saturation won't be controlled even if it is saturated.

Note

- If LED is turned on by setting the IR mode to [On], the screen goes into B/W mode. If LED is turned off by setting it to [Off], [Day/Night] is activated.
- If you change zoom magnification while using your infrared rheostat, the rheostat will be linked with the zoom magnification.
- If the ambient temperature goes up too high, IR LED might be forced to terminate in order to protect the product.

Location setup

You can set to display direction information on the camera video.
Set up to eight directions: north, northern east, east, southern east, south, southern west, west, and northern west. Then, every time PTZ is adjusted and the location of camera pan changes, the direction information on the current video screen is updated accordingly.

Note

Changing the OSD size or language setting resets all of the direction setting values (azimuth, description, and location information). You can set the OSD size in [Video & Audio]>[Camera setup]>[OSD], and the language in [System]>[Product information].

Direction indicator

Enable direction indicator

To enable the direction indicator feature, select [Enable direction indicator]. Every direction information set for any of the eight directions are displayed.
[Enable direction indicator] is the option that allows the use of the whole direction display function, whereas [Indicator (locationSetup_namo.html#indicator)] is the option to set up the display of an individual direction.

Setting up the direction indicator

1. Adjust the camera PTZ as shown below to designate a reference video screen when setting up the camera direction.
   If you want to activate the PTZ jog panel, [Enable direction indicator] should not be selected.
   - When you drag the icon with the mouse, the camera moves to the pan and tilt.
   - Use the zoom bar to adjust the image magnification, or select an image magnification by clicking the icon to zoom in or the icon to zoom out.
   - Move the focus nearer by clicking the icon or farther by clicking the icon.
   - To automatically adjust the camera focus once, click the icon.
2. Select [Enable direction indicator].
3. Select the arrow indicating direction on the camera screen.
4. To make the direction selected in Step 3 appear on the screen, go to [Indicator] and select [Enable].
5. The details can be set as shown below:
   - To show the azimuth information, go to [Azimuth] and select [Enable]. Azimuth information such as N, NE, E, SE, S, SW, W or NW is displayed next to the directional arrow.
   - Enter the description of the direction in [Text].
   - Set the location of direction display (directional arrow, azimuth, and text) for [X] and [Y], respectively.
6. To see the set direction display on the video screen, click [Preview]. To return to the setup screen, click [Back].
7. To apply the settings, click the [Apply] button at the bottom of the page.

Whenever the direction of the camera changes due to pan adjustment after direction is set, the direction information on the current video screen is updated accordingly.

Indicator

Determines the individual display of each direction.

Select an arrow on the screen and click [Enable] to show the arrow image along with its direction information on the camera screen.

Azimuth

Select [Enable] to display azimuth information of the direction.
North is marked as N while northern east, east, southern east, south, southern west, west, and northern west as NE, E, SE, S, SW, W, and NW, respectively.
In [Video & Audio]>[Camera setup], click the (Set North) button to set your desired direction as north.

Text

You can enter description of the direction.

Note

- You can enter up to 12 characters, which can contain any of the following: a to z, A to Z, 0 to 9, special characters such as . - # * + - / ( ) _, and spaces.
- To change the size, color, and transparency of the text, go to [Video & Audio]>[Camera setup]>[OSD], and change the values of [Size], [Color], and [Transparency].
- Korean or Chinese text typed in under the language preference set to Korean or Chinese will be lost when the language preference is changed.

X/Y

Set the location where the arrow indicating direction displays on the camera video.
The X/Y coordinate values are based on the current camera screen.

Preview

To see the set camera direction information displayed on the camera image, click [Preview]. To return to the setting, click [Back].

Smart codec

Smart codec is a technology that reduces the size of image data by setting an area desired by the user as an area of specific quality, while managing other areas at normal quality. When you complete the setting, click the [Apply] button at the bottom of the page.

Manual ROI area

The user can set the area on the camera image screen. When you click and drag on the screen with the mouse, a square-shaped area will be created. 5 areas can be set, but overlapping is not allowed. When you click the [Clear] button, all set areas will be deleted.

Adjusting the PTZ

You can adjust the pan, tilt, and zoom actions of the camera. When you click [PTZ] in the Select channel menu, the PTZ jog panel displays for camera PTZ adjustment.

- When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
- Select an image magnification by adjusting the zoom slide bar, or by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out.
- Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
- To adjust the camera focus automatically for one shot, click the ⊡ icon.

Note

- A smart codec can be set for each video profile. If you set [CBR] for [Bitrate control] in [Basic]>[Video profile] and set [Disable] in [Smart codec] then the smart codec function will not operate in the profile.

Smart codec setup

Quality

Select the quality level of an area set by the user. You can check an area in set quality level. The adjusted quality level of an area is always higher than normal quality.

WiseStream

WiseStream is a function that, by analyzing the complexity of an image, can effectively reduce the data size while still maintaining the quality. It reduces image size and saves on bandwidth by increasing the compression rate, if many motions are not created on the image being captured by the camera. If motion increases, the image returns to its previous status, preventing image information loss. This function is not suitable in an environment with much motion, as the screen may malfunction. When you complete the setting, click the [Apply] button at the bottom of the page.

WiseStream

Mode

You can select how much the image will be compressed with WiseStream.

- Off: The WiseStream function is not used.
- Low~High: The WiseStream function allows you to set the level of reduction for the bitrate to be applied.

Note

- To optimize the performance of the WiseStream, set [Dynamic GOV] and [Dynamic FPS] to [Enable] in the [Basic] > [Video Profile] menu. With [Dynamic GOV] and [Dynamic FPS] functions, you can achieve both the video quality and the number of frames per second.
- In any of the following cases, the WiseStream function may not operate properly:
  - If you switch the screen all of sudden, the screen display might not function properly.
  - In an environment with a lot of changes on the screen, use of the WiseStream function is not adequate.

DDNS

If you use DDNS (Dynamic Domain Name Service), you can set the IP address of the camera to be changed to a general host name which can be easily remembered by the user. If the IP address of the camera is 198.160.0.100, you can connect to the camera by entering a host name such as http://ddns.hanwha-security.com/camera1 instead of the IP address. It is convenient since the user can connect to the camera with the DDNS address even if the IP address of the camera is changed.
The exclusive Wisenet DDNS for Hanwha Techwin or public DDNS can be used for DDNS. Enter the desired DDNS information and click the [Apply] button at the bottom of the page. If the connection to the selected DDNS is made, 'Successful' message will be displayed, and if the connection is not made, 'Failed' message will be displayed.

Note

To use the DDNS service, the setup of port forwarding for the DDNS and the router need to be done together.
For the port forwarding setup method for the router, see the instruction manual shipped together with the product.
When UPnP discovery funtion is enabled, DDNS cannot be used. UPnP discovery will be activated when the [UPnP discovery] option is set to [Enable] on [Network]>[Auto IP configure].

DDNS

Off

Select if you wish not to use DDNS.

Wisenet DDNS

Select when you use DDNS server provided by Hanwha Techwin. To use Wisenet DDNS, sign up for the membership at the Wisenet DDNS homepage (http://ddns.hanwha-security.com (http://ddns.hanwha-security.com)) and register the product at [My DDNS]>[Register Product].

- Server: Enter DDNS server name which you intend to use.
- Product ID: Enter ID of the product registered on Wisenet DDNS server. If [Quick connect] is selected when a router which supports the UPnP (Universal plug and play) function is used, it supports automatic opening of the port in case of connection from the outside.

Note

- If the router does not support the UPnP function or to use DDNS server without using [Quick connect], set manual for the port forwarding of the router. For the port forwarding setup method for the router, refer to the instruction manual included in the product.

Public DDNS

Select it when you use DDNS server provided by a public website. Use it after signing up for the service at the relevant website.

- Server: Select public DDNS server which you intend to use.
- Host name: Enter a host name registered on DDNS server.
- User name: Enter the user name for DDNS server.

- Password: Enter the password for DDNS server.

IP filtering

You can prepare an IP address list to allow or reject the connection for a specific IP. IP addresses are managed separately between IPv4 and IPv6. When you complete the setting, click the [Apply] button at the bottom of the page.

Filtering type

[Deny registered IP] and [Allow registered IP] filtering conditions apply to all registered IP addresses.

- Deny registered IP: Denies access for a registered IP.
- Allow registered IP: Allows access for a registered IP

> **Note**
>
> - When an access-authorized IP is registered, the IP currently connected to the camera should also be registered. Especially, when [Enable] is selected for [Basic]>[IP & Port]>[IPv6 setup], all IPv4 and IPv6 addresses of the IP addresses currently connected should be added.
> - A currently-connected IP address cannot be registered as [Deny registered IP].

IPv4

This is the address list for IPv4 types; an IP address can be added or deleted. Up to 10 IP addresses can be entered.

> **Adding an IPv4 address**
>
> 1. Click the [Add] button. A field where an IPv4 address can be entered will be created.
> 2. Enter the IP and Prefix information. The filtering range for the entered information will be displayed.
> 3. Filtering for the relevant range is possible only after the [Use] box is checked.
> 4. Clicking the [Apply] button at the bottom of the page will save all information added to the list.

> **Deleting an IPv4 address**
>
> 1. Select an IPv4 address you wish to delete.
> 2. Click the [Delete] button.
> 3. Click the [OK] button on the delete confirm window. The IPv4 address will be deleted.

> **Note**
>
> - Addresses from 224.0.0.0 to 239.255.255.254, which are used for multicast, are not available.

IPv6

This is the address list for IPv6 types; an IP address can be added or deleted. Up to 10 IP addresses can be entered.

Adding an IPv6 address

1. Click the [Add] button. A field where an IPv6 address can be entered will be created.
2. Enter the IP and Prefix information. The filtering range for the entered information will be displayed.
3. Filtering for the relevant range is possible only after the [Use] box is checked.
4. Clicking the [Apply] button at the bottom of the page will save all information added to the list.

Deleting an IPv6 address

1. Select an IPv6 address you wish to delete.
2. Click the [Delete] button.
3. Click the [OK] button on the delete confirm window. The IPv6 address will be deleted.

HTTPS

You can select a secure connection system or install a public certificate. When you complete the setting, click the [Apply] button at the bottom of the page.

Secure connection system

Select an appropriate secure connection system in consideration of the security level. HTTPS (Hypertext Transfer Protocol over Secure Socket Layer) sends and receives data through the process of encoding/decoding users' page requests over SSL sub layer under hypertext transport agreement layer. Therefore, this mode is safer than HTTP mode in terms of security. In the secure HTTPS mode, you can select to use either Proprietary certificate or Public certificate.

HTTP (Do not use a secure connection)

Select when sending data without encryption

HTTPS (Secure connection mode using a unique certificate)

Establishes a secure connection by using a unique certificate provided by the camera. When you select [HTTPS (Secure connection mode using a unique certificate)] and click the [Apply] button at the bottom of the page, a secure connection will be made in HTTPS mode.

Change host name

Selecting [Change host name] option changes the camera’s host name to the common name in the certificate. Some security check tools may see that the product's security is vulnerable if the camera’s host name is different from the common name set in the certificate.
You can view the host name under [Basic]>[IP & Port]>[IP address]>[IPv4 setup]>[Host name].

Mutual authentication

To proceed with mutual authentication for enhanced security, select[Mutual authentication].
As you proceed with mutual authentication, you can choose an option for allowing access.If [Allow all connections]is selected, all access attempts that tried mutual authentication are allowed for connection regardless of the success/failure of mutual authentication. This means that even without mutual authentication, camera access is granted. If [Allow only mutually authenticated connections] is selected, camera access is granted upon the success of mutual authentication only.

HTTPS (Secure connection mode using the public certificate)

Establishes a secure connection using the public certificate. You can select this after installing the public certificate. When you select [HTTPS (Secure connection mode using the public certificate)] and click the [Apply] button at the bottom of the page, a secure connection will be made in HTTPS mode.

TLS settings

Sets Cipher mode or TLS version to use for encrypted communication.

Cipher mode

Provides cipher suites by combining various algorithms to use for TLS-encrypted communications, such as key exchange, authentication, and encryption. To use only cipher suites with a high level of security, select [Secure cipher suites only]. To use cipher suites with backward compatibility although less secure, select [All compatible cipher suites]. [All compatible cipher suites] includes both secure and not secure cipher suites.

Version

Selects the TLS protocol version to use for encrypted communication.
If [Secure cipher suites only] is selected for [Cipher mode], you can select only TLS 1.2 or TLS 1.3. If [All compatible cipher suites] is selected, you can select any option you want out of all TLS versions.

Install a public certificate

To select [HTTPS (Secure connection mode using the public certificate)] in [Secure connection system], you need to install a public certificate first.

- Name for the certificate: Enter the name of the certificate to install.
- Certificate file: Select the path to the certificate to install.
- Key file: Select the path to the key file to install.

Note

- You cannot install or delete a public certificate when [HTTPS (Secure connection mode using the public certificate)] mode is in effect. After changing to [HTTP (Do not use a secure connection)] or [HTTPS (Secure connection mode using a unique certificate)] mode, be sure to install or delete the certificate.

Installing a public certificate

1. Enter the name of the certificate to install in [Name for the certificate].
2. Click the [...] button in [Certificate file], select a certificate file in the Open window, and then click the [Open] button.
3. Click the [...] button in Key file, select a key file from the open window and click the [Open] button.
4. Click the [Install] button. Installation of the certificate is complete.

Deleting a public certificate

Click the [Delete] button under [Install a public certificate].

802.1x

You can select whether or not to use the 802.1x protocol when connecting to a network, and install the certificates. When you complete the setting, click the [Apply] button at the bottom of the page.

IEEE 802.1x Setup

IEEE 802.1x

To use IEEE 802.1x protocol for connecting to the network, select [Enable]. IEEE 802.1x is a part of the network protocol group called IEEE 802.1 and is the IEEE standard regarding port-based Network Access Control (PNAC). IEEE 802.1x is mainly used for reinforcing security in a wireless LAN (Wi-Fi) environment.

EAP Type

EAP (Extensible Authentication Protocol) is a protocol that allows easier extension using the authentication method defined by wireless network and Point-to-Point Protocol. It is recommended to be used only in an environment where EAP-TLS, PEAPv0/MSCHAPv2 cannot be used since LEAP is an insecure authentication method.

- EAP-TLS: EAP-TLS (Transport Layer Security) carries out mutual authentication that requires a client certificate with the server; a dynamic WEP key is used for security after connection is made.
- LEAP: LEAP (Lightweight Extensible Authentication Protocol) does not require certificates and uses only a dynamic WEP key, so a strong password should be used.
- PEAPv0/MSCHAPv2: PEAP/MSCHAPv2 (Protected Extensible Authentication Protocol/Microsoft Challenge Handshake Authentication Protocol) authentication performs authentication based on the ID and password of user through an EAP-TLS session generated from the server-side authentication only.

EAPOL version

Select [1] or [2] for the version of the [EAPOL] (EAP over LANs) used in the network switch.

ID

Enter your client certificate ID for [EAP-TLS] and enter your user ID for [LEAP] and [PEAPv0/MSCHAPv2].

Password

Enter your client private key for [EAP-TLS] and enter your user password for [LEAP] and [PEAPv0/MSCHAPv2]. This is not necessary if an unencrypted key is used in [EAP-TLS].

Note

- If the connected network equipment does not support 802.1x, it may not operate properly even if [Use] is set for 802.1x.

Certificates

Certificate is needed only when using [EAP-TLS] or [PEAPv0/MSCHAPv2]. The corresponding certificate and key can be installed or deleted. Enter only [CA certificate] for [PEAPv0/MSCHAPv2].

- CA certificates: Select if CA certificates include an open key.
- Client certificate: Select if CA certificates include a client authentication key.
- Client private key: Select if CA certificates include a client private key.

Installing a Certificate

1. Click the [...] button, select a certificate or key and then click the [Open] button.
2. Click the [Install] button. When certificate installation is complete, a message saying 'Installed' is displayed.

Deleting a Certificate

Click the [Delete] button beside the installed certificate or key. When a certificate or key is deleted, a message saying 'Not available' is displayed.

QoS

QoS (Quality of Service) is the function that sets the priority of data transmission and secures the data transmission quality according to set priorities when overload (simultaneous traffic increase, network failure, etc.) occurs on the network. A QoS IP address can be entered in IPv4 or IPv6. When you finish the setting, click the [Apply] button at the bottom of the page.

IPv4

A QoS IP address can be added or deleted in IPv4. The default values are 32 for Prefix and 63 for DSCP.

- Prefix: This value can set the IP range, and a value from 1 to 32 can be set in IPv4.
- DSCP: The QoS priority is DSCP (Differentiated Services Code Point). A value of 0 to 63 can be set for the DSCP value; as the value gets closer to 0, the priority becomes lower.

Note

- Addresses from 224.0.0.0 to 239.255.255.254, which are used for multicast, are not available.

Adding an IPv4 address

1. Click the [Add] button. A field where an IPv4 address can be entered will be created.
2. Enter the IP, Prefix and DSCP information.
3. QoS can be applied to the relevant IPv4 address only after the [Use] check box is selected.
4. Clicking the [Apply] button at the bottom of the page will save all information added to the list.

Deleting an IPv4 address

1. Select an IPv4 address you wish to delete.
2. Click the [Delete] button.
3. Click the [OK] button on the delete confirm window. The IPv4 address will be deleted.

IPv6

A QoS IP address can be added or deleted in IPv6. The default values are 128 for Prefix and 63 for DSCP.

- Prefix: This value can set the IP range; a value from 1 to 128 can be set in IPv6.
- DSCP: The priority for QoS is DSCP (Differentiated Services Code Point). A value of 0 to 63 can be set for the DSCP value; as the value gets closer to 0, the priority becomes lower.

Adding an IPv6 address

1. Click the [Add] button. A field where an IPv6 address can be entered will be created.
2. Enter the IP, Prefix and DSCP information.
3. QoS can be applied to the relevant IPv6 address only after the [Use] check box is selected.

4. Clicking the [Apply] button at the bottom of the page will save all information added to the list.

Deleting an IPv6 address

1. Select an IPv6 address you wish to delete.
2. Click the [Delete] button.
3. Click the [OK] button on the delete confirm window. The IPv6 address will be deleted.

SNMP

SNMP (Simple Network Management Protocol) is a network management protocol which can collect information from the equipment on the network, and manage the network. When you finish the setting, click the [Apply] button at the bottom of the page.

SNMP v1/v2c

SNMP v1 protocol is not encrypted and has almost no security function. It also tends to use excessive bandwidth, so if there is much equipment, it may be difficult to manage the network. An algorithm has been added to SNMP v2c protocol for data and authentication security, allowing for more efficient bandwidth than with SNMP v1.

SNMP v1

To use SNMP v1, select [Enable].

SNMP v2c

To use SNMP v2c, select [Enable]. When [SNMP v2c] is selected, the Read community and Write community will be enabled.

Read community

Enter the read-only community name to access SNMP information. The default value is public.

Write community

Enter the write-only community name to access SNMP information. The default value is write.

SNMP v3

SNMP v3 authentication has stronger security than v1 and v2c; transmission without data transformation is possible. The packet is also encrypted to block unauthorized users from accessing data.

SNMP v3

To use SNMP v3, select [Enable].

Password

Set the user password for SNMP v3. Passwords must be between 8 and 16 characters. The default password is weak, so changing it to a new password is highly recommended immediately after installing the product. Users are responsible for security and other issues due to continued use of the default password.

Note

- To use SNMP v3, the 'Secure connection system' needs to be set to '[HTTPS]' mode. Go to [Network] > [HTTPS]> [Secure connection system] and then select [HTTPS (Secure connection mode using a unique certificate)] or [HTTPS (Secure connection mode using the public certificate)].
- Failure to use SNMP v3 may result in security issues.

SNMP traps

The SNMP Trap is a function that delivers specific events in the equipment on the network to the management system.

SNMP traps

To use SNMP Trap, select [Enable].

Community

Enter the name of the trap community that receives the message.

IP address

Enter the IP address of the user sending the message.

- Authentication failure notification: Set whether or not to deliver an event to the management system when community information is incorrect.
- Network connection notification: Set whether or not to deliver an event to the management system when the disconnected network is reconnected.

Auto IP configure

You can set the camera IP automatically. You can assign an IP address that can connect to an additional camera on the same local network or set the camera IP to check for a camera connected to the network on Windows or Mac OS. When you finish the setting, click the [Apply] button at the bottom of the page.

Link-Local IPv4 address

You can assign an additional IP that can connect to a camera from the same local network.

Auto configure

To use auto configuration of a Link-local IPv4 address, select [Enable].

- IP address: The assigned IP address is displayed.
- Subnet mask: The subnet mask of the assigned IP address is displayed.

UPnP discovery

You can search for a camera automatically from clients and OS that support the UPnP (Universal Plug and Play) protocol.

UPnP discovery

To use UPnP discovery, select [Enable].

- Friendly name: The camera name is displayed. The friendly name is displayed in order of WISENET - model name - MAC address.

Bonjour

You can search for a camera automatically from clients and OS that support the Bonjour protocol. Connected cameras are displayed on the Bonjour bookmark of the Safari web browser on Mac OS, which supports Bonjour by default.

Bonjour

To use Bonjour, select [Enable].

- Friendly name: The camera name is displayed. The friendly name is displayed in order of WISENET - model name - MAC address.

Note

- If the bookmark is not displayed, check Bookmarks in the ‘Preferences’ menu.

I/O box

An external I/O device can be connected to the camera for use.
In [I/O box] page, the information of I/O box to be connected to the camera can be entered, and the connection status of the I/O box and camera can be checked. Once the setup is complete, click the [Apply] button at the bottom of the page.

I/O box

The IP type, protocol type, IP address, port number, etc. of an external I/O box to be connected to the camera can be set.
To connect an external I/O box to the camera and use it, select [Enable I/O box].

IP type

Selects between IPv4 and IPv6 for the IP address type to use when I/O box communicates with the camera.

HTTP/HTTPS

Selects between HTTP and HTTPS for the communication method to use when I/O box communicates with the camera.

IP address

Enter the IP address of the I/O box.

HTTP port/HTTPS port

Enter the port number of the I/O box.
Depending on the value selected for [HTTP/HTTPS], the option name is displayed as either [HTTP port] or [HTTPS port].

ID

Enter the ID to access the I/O device.

Password

Enter the password to access the I/O device.

Status

Displays the connection status between the I/O device and camera. If the camera and I/O device is properly connected, [Connected] is displayed; if they are in the process of being connected, [Connecting] is displayed.

Event setup

You can manage events and event action settings supported by the camera in one location. When you change event action settings on the current page, the event action settings on the detailed configuration page for each event will also be changed. When you complete the setting, click the [Apply] button at the bottom of the page.

Event list

- Use: When check boxes in the [Use] column are selected, only the selected event(s) will operate.
- Type: Selecting an event name in the [Type] column will take you to the detailed setup page for the relevant event.
- Event action settings: Determines which event action settings will be carried out by the camera when an event is created.
  - FTP: To capture and send an image screen to an FTP server, select the check box in the [FTP] column. Detailed settings for FTP can be done from [Event]> [FTP/E-mail].
  - E-mail: To capture and send an image screen by e-mail, select the check box in the [E-mail] column. Detailed settings for e-mail can be done from [Event]> [FTP/E-mail].
  - Record: To record an image, select the check box in the [Record] column. Detailed settings for storage can be done from [Event]>[Storage].
  - Goto preset: Moves to the PTZ preset location designated by the camera.

Handover

Handover is a function that the receiver camera moves to the PTZ preset position when an event occurs. On this page, you can set the camera and preset position to move to the preset position. When you complete the setting, click the [Apply] button at the bottom of the page.

Receiver camera

You can add or delete PTZ cameras for receiving. Up to 32 receiver cameras can be registered.
Information of cameras registered as the receiver camera is displayed.

How to add a receiver camera

1. Click the [Add] button.
2. In the [Add Camera] window, enter the PTZ camera information to receive the handover.
   - No.: Set the receiver camera number. In the [Analytics] submenu, the receiver camera number is used when setting the handover receiver camera.
   - IP type: Set the IP address type between IPv4 and IPv6.
   - HTTP/HTTPS: Select which communication type to use between HTTP and HTTPS.
   - IP address: Enter the IP address of the receiver camera.
   - Port: Enter the port number of the receiver camera.
   - User: Enter the access ID to access the receiver camera.
   - Password: Enter the password to access the receiver camera.
   - Preset no.: Enter the preset position number to which the receiver camera will move. The preset number should be set in advance in the PTZ camera for reception. In the handover menu, enter the preset PTZ number.
3. Click [OK].

How to delete a receiver camera

1. Click a check box in the list of receiver cameras, and select the camera you want to delete.
2. Click the [Delete] button, and when the confirmation window appears, click [OK].

FTP / E-mail

When an event is created while the camera is capturing an image, the captured image can be sent to an FTP server or by e-mail. Enter the appropriate FTP server and e-mail configuration information to be used.
When you enter FTP server or e-mail server information and click the [Apply] button at the bottom of the page, an FTP server connection test or an e-mail test will be carried out. If an incorrect FTP server address or e-mail server address is entered, a message saying ‘Failed’ will be displayed. If the test is succesfully done, the message saying ‘Successful’ will be displayed

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FTP configuration

Server address

Enter the IP address for the FTP server where an event creation image will be sent.

ID

Enter the ID for the FTP server login account.

Password

Enter the password for the FTP server login account.

Upload directory

Enter the directory of the FTP server where an event creation image will be recorded.

Port

Enter the port value of the FTP server. The default port value of the FTP server is 21, which can be changed according to the FTP server settings. The port can be changed within a range of 1 to 65535.

Passive mode

Select [Enable] when connection in passive mode is necessary due to firewall or FTP server configuration.

E-mail configuration

Server address

Enter the e-mail SMTP server address for sending an event creation image by e-mail.

Authentication

Select whether or not to authenticate with an ID and password each time an e-mail is sent.

TLS

Set whether or not to use TLS. Select [Enable] if using an e-mail server that requires security.

ID

Enter the ID for the login account connected to the e-mail SMTP server.

Password

Enter the password for the login account connected to the e-mail SMTP server.

Port

Enter the port value of the e-mail SMTP server. The default port value of the e-mail server is 25; the port value when using TLS is 465.

Recipient

Enter the email address of the e-mail recipient.

Sender

Enter the email address of the e-mail sender. If the address of the sender is not correct, the intended recipient may not receive the e-mail.

Subject

Enter the subject of the e-mail to be sent when an event is created.

Message

Enter the body information for the e-mail to be sent when an event is created. When an event is created, the captured image will be sent as an e-mail attachment.

Storage

You can select a device to capture a camera image and set the recording conditions. When you complete the setting, click the [Apply] button at the bottom of the page.

Storage action setup

Selecting a recording device and selecting [On] allows you to change the setting for the relevant device.
If data is being recorded on the device, 'Recording' is displayed in [Status] in the device list. When 'Error' is displayed in [Status], check if the recording device is connected properly.
When [On] is set for an SD card and NAS at the same time, NAS is processed by priority.

- SD: You can set whether or not to use an SD card. When an SD card is recognized, the free space, total capacity and status are displayed. To format the SD card, click the [Format] button.
- NAS: You can set whether or not to use NAS (Network Attached Storage). When a connection to NAS is established, the free space, total capacity and status are displayed. To format the default folder on NAS, click the [Format] button.

Overwrite

Sets whether or not to use the overwrite function of an SD card or NAS. When the device capacity has been reached, new data will be recorded over the oldest data. When the device capacity has been reached, a message saying 'Full' is displayed in [Status] in the device list.

Auto delete

Sets whether or not to use the auto delete function. The most recent data for the set number of days is kept and the rest will be deleted. The number of auto delete days can be set from 1 to 180. The [Auto delete] function is activated only when [Enable] is set for [Overwrite].

Note

- When 'Error' is displayed in [Status] in the device list, check whether the recording device is connected properly, whether the file system of the recording device is damaged or not, and whether the recording device is physically damaged. If the 'Error' message persists after checking the recording device, format or replace the device.
- Recording may not be possible due to temporary network disconnection when NAS is used, so it is recommended to use an SD card also.
- When resolution, bit rate and frame rate are set at high, the amount of image data also increases. If the amount of data increases, a frame skip may occur even if set to full frame. If frame skipping occurs, then at least one image is saved per second.
- Before removing the (Micro) SD card, first switch to [Off]. If you remove it on your own or power up the camera with a unstable source of electricity without switching to [Off], it can damage the (Micro) SD card.
- If you use the (Micro) SD memory card below the recommended speed, it can cause frame skipping. If you use the (Micro) SD memory card with too large capacity, it can slow down the format speed.

- If you use NAS, auto deletion is supported only when the NAS capacity is above the recommended specifications.
- Deleted data cannot be restored.

SD File System

This menu is displayed only when [SD card] is selected in the[Device] column of [Storage action setup], allowing you to select the file system on the SD card. SD cards support VFAT and EXT4 file systems, so select the file system according to the SD card of the camera you are using. If the file system of the SD card is EXT4, Windows OS can recognize it only when a separate application is installed.

Type

Select either VFAT or EXT4 for the file system of the SD card. When the setting is changed, all existing data will be formatted. Be sure to back up data before changing the setting.

Note

- High Endurance SD Cards are recommended. For detailed information, refer to the Hanwha Techwin website.
- It can take up to 10 minutes to format the (Micro) SD card with the EXT4 file system.

Encryption

SD card encryption allows you to save video data in your encrypted SD card (or microSD card). This keeps your SD card safe and secured even when you lost it. The SD card encryption option appears when you select [SD] for [Device] under the [Storage action setup] column.

Note

- If you change the SD card setting to encrypt or decrypt it, all of its data will be deleted and the SD card will be formatted.

SD card encryption

Selecting [Enable] encrypts the SD card while deselecting [Enable] decrypts it.

Encrypting SD card

1. Select [Enable] under [Encryption].
2. Enter your [New password] in the field, and enter the same password again in the [Confirm new password].
3. Click the [Apply] button at the bottom of the screen.
4. If SD card encryption is working properly, the ‘Encrypted’ message will appear.

Decrypting SD card

1. Deselect [Enable] under [Encryption].
2. Click the [Apply] button at the bottom of the screen. If SD card encryption is disabled, so the SD card data is not encrypted, ‘Unencrypted’ message will appear.

Changing password

You can change the password for SD card encryption.
If the password of the encrypted SD card and the password entered by user do not match, ‘Password error’ message will appear in the [Status] column of [Storage action setup].

1. Click the [Change password] button.
2. Enter the current password in the [Current password] field.
3. Enter the new password in the [New password] and [Confirm new password] fields.
4. Click the [Apply] button at the bottom of the screen.

Note

- Once forgotten or lost, your password cannot be recovered. You can reset your password instead, but then the SD card will be formatted and all of its data will be deleted.
- The password length and restrictions are as follows:
  - For password of 8 to 9 digits, you need to combine at least three different types of the following: uppercase and lowercase alphabets, numbers, and special characters.
  - For password of 10 to 15 digits, you need to combine at least two different types of the following: uppercase and lowercase alphabets, numbers, and special characters.
  - You cannot use four or more consecutive characters (e.g. 1234, abcd).
  - You cannot use the same character four or more times in a row (e.g. !!!!, 1111, aaaa).
  - Only ~`!@#$%^*()_-+=|{}[].?/ are allowed for special characters.

NAS connection setup

This menu is displayed only when [NAS] is selected in the[Device] column of [Storage action setup] and the NAS access information is entered. Enter NAS information and click the [Test] button to see if the connection to NAS is established. If a connection is made, a ‘Success’ message is displayed. If a connection is not made, a ‘Failure’ message is displayed.

IP address

Enter the NAS IP address.

ID

Enter the ID for the account registered on NAS.

Password

Enter the password for the account registered on NAS.

Default folder

Designate the default folder where NAS will record image data.

Note

- If a failure message is displayed when you test after entering NAS information, check the following items:
  - Check if the IP address, ID, password, and default NAS folder are entered correctly.
  - Check if the IP address type of NAS and the IP address type of the camera are identical. (e.g.: The default value of NAS and the camera is 255.255.255.0. If the IP address is 192.168.20.32, the NAS IP address should be between 192.168.20.1 and 192.168.20.255.)

- For the NAS default folder, only one folder should be used in one camera, with no duplication.
- Check if the device is recommended NAS equipment. Refer to ‘Recommended NAS specifications’ in the user's manual.

- If [Overwrite] in the storage setup for NAS is not used and the free space for NAS is less than 20%, images will be recorded on the SD card.
- If an SD card which was used in another camera is inserted while data is being recorded on NAS, images may not be recorded.
- If the NAS setup is changed while data is being recorded on NAS, the change will not apply immediately.
- If NAS equipment is removed or the network connection is terminated while data is being recorded on NAS, the NAS recording action may be terminated.
- When resolution, bitrate and frame rate are set at high, the amount of image data also increases. If the amount of data increases, a frame skipping may occur even if set to full frame rate. If frame skipping occurs, then at least one image is saved per second.
- Check if you are trying to access as another user without formatting the default folder that is saved or used already.

Record setup

Edge recording profile

The name of the video profile which will be used for recording is displayed. The profile set as ‘Edge recording profile’ from [Basic]>[Video profile] > [Profile type] is displayed.

Continuous recording

Sets for normal recording with no event; Video is saved with a fixed frame rate at all times in an ordinary situation without an event.

- None: No camera image is recorded.
- I-Frame: Records I-Frame only for continuous recording.
- Full frame: Records full frame for continuous recording.

Event recording

Sets the recording type when an event occurs.

- I-Frame: Records only I-Frame when an event occurs.
- Full frame: Records full frame when an event occurs.

Pre event duration

Sets the image recording time before an event occurs. An image can be recorded at 1 second, 3 seconds and 5 seconds prior to the occurrence of an event.

Post event duration

Sets the image recording time span after an event. An image can be recorded for 5 seconds, 10 seconds, 30 seconds, 60 seconds or 120 seconds after the occurrence of an event.

Record file type

Sets the file format for recording an image. When the file recording format is changed, the existing data will be erased.

- STW: This is the unique file type for Hanwha Techwin.
- AVI: This is an AVI file.

Continuous recording schedule	You can set the time to record an image on the recording device.

Always

Always records an image on the recording device.

Only scheduled time

Records an image only at the scheduled time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for recording by clicking or dragging on the time table with the mouse. The set time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Time schedule

The time schedule event can send an image file according to the event action settings in the transfer interval. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on the time schedule event applies to [Time schedule] in [Event]>[Event setup] pages equally.

Event setup schedule

To use the event schedule, select [Enable].

Transfer interval

Sets the transfer interval of an image. This sets for how many seconds or minutes each image is created as an event. Click the drop-down menu and select a number and a unit.

> **Note**
> - Image can be transmitted only if the transfer interval is set lower than the operation interval in the event action settings.

Event action settings

FTP

To save an image on an FTP server when a time schedule event is created, select [Enable]. Detailed settings for FTP can be done from [Event]>[FTP/E-mail].

Event activation time

This sets the event action settings in [Event action settings] to always operate, or only at the set time when a time schedule event is created.

Always

The event action settings are always executed when a time schedule event is created.

Only scheduled time

Periodically performs a specific operation at the predetermined time and day. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.

You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Network disconnection

When network connection is terminated, an event can be created. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on the network disconnection event applies to [Network disconnection] in [Event]>[Event setup] pages equally.

Network disconnection

To use the network disconnection event, select [Enable].

Event action settings

Record

To save an image on an SD card or NAS when a network disconnection event is created, select [Enable]. Detailed settings for storage can be done from [Event]> [Storage].

Goto preset

You can set the position of camera to move to a preset position when a network disconnection event is created. The camera preset can be set in [Preset] tab of [PTZ]> [PTZ setup].

Event activation time

Sets the event action settings in [Event action settings] to always operate, or only at the set time when a network disconnection event is created.

Always

The event action settings are always executed when a network disconnection event is created.

Only scheduled time

The event action settings are executed only when a network disconnection event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

App event

An event can be created according to the rules defined in the application installed from [Open platform]. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on the app event applies to [App event] in [Event]>[Event setup] pages equally.

App event

To use the app event, select [Enable].

Event action settings

FTP

To save an image on an FTP server when an app event is created, select [Enable]. Detailed settings for FTP can be done from [Event]>[FTP/E-mail].

E-mail

To send an image by e-mail when an app event is created, select [Enable]. Detailed settings for e-mail can be done from [Event]>[FTP/E-mail].

Event activation time

This sets the event action settings in [Event action settings] to always operate, or only at the set time when an app event is created.

Always

The event action settings are always executed when an app event is created.

Only scheduled time

The event action settings are executed when an app event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Shock detection

If a shock or vibration is detected on the camera or a change in physical position is detected, a shock detection event can be generated. When the setting is completed, click the [Apply] button at the bottom of the page. The settings for shock detection events are the same for [Shock detection] on the [Event]> [Event Setup] page.

Shock detection

Enable shock detection

To enable shock detection events, select [Enable shock detection].

> **Adjusting the PTZ**
>
> You can adjust the pan, tilt, and zoom actions of the camera.
> - When you drag the ⊕icon with the mouse, the camera will pan and tilt accordingly.
> - By using the zoom bar, you can adjust the video zooming ratio. Or, click the ⊕ icon to magnify the screen or click the ⊖ icon to reduce the screen.
> - Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
> - To adjust the camera focus automatically for one shot, click the ⊡ icon.

Level of detection

Set the level value that is the basis of shock detection. If a shock is detected above the set level value, a shock event is generated.
When a shock or vibration is detected, a graph showing the shock or vibration value applied to the camera is displayed, and when a shock detection event occurs, the graph color changes.

Sensitivity

The higher the sensitivity, the more sensitive the detection level graph will be.

Event action settings

FTP

To save an image on an FTP server when a shock detection event is created, select [Enable]. Detailed settings for FTP can be done from [Event]>[FTP/E-mail].

E-mail

To send an image by e-mail when a shock detection event is created, select [Enable]. Detailed settings for e-mail can be done from [Event]>[FTP/E-mail].

Record

To save an image on an SD card or NAS when a shock detection event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Goto preset

You can set the position of camera to move to a preset position when a queue management event is created. The camera preset can be set in [Preset] tab of [PTZ]> [PTZ setup].

Event activation time

This sets the event action from [Event action settings] to always operate, or only at the set time when a shock detection event is created.

Always

The event action settings are always executed when a shock detection event is created.

Only scheduled time

The event action settings are only executed when a shock detection event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Motion detection

A motion detection event can be created when a motion detection area and the exclude area are set and a motion is detected from inside the area set by the user. When you complete the setting, click the [Apply] button at the bottom of the page.
The setting on the motion detection event applies to [Motion detection] on the [Event]>[Event setup] pages equally.

Motion detection

Enable motion detection

To use the motion detection event, select [Enable motion detection].

Type

To set the same motion detection for all presets, select [Global]. To set a different motion detection for each PTZ preset, select [Preset].
The [Preset] option will be activated only when a preset is set from the [Preset setup] page. If you select [Preset] and set motion detection for each preset, you may not be able to set some of the features in the detailed settings.

Note

- The motion detection area and the exclude area are set and used according to the size range of the motion.
- In any of the following cases, the performance of the motion detection event may deteriorate and a malfunction may occur:
  - If an object is similar in brightness or color to the background on the screen
  - If a small motion occurs near the edge of the screen
  - If an overall change on the screen occurs continuously at random due to factors such as scene changes and sudden illumination changes
  - If a moving object comes too close to the camera
  - When one object hides another object
  - When the motion of an object is too fast
  - When reflection, blurring or shading occur due to strong light such as direct sunlight, high illumination or headlights from a vehicle
  - In cases of severe snow, rain or wind, or sunset or sunrise.

Include area

The area designated by the user is set as the motion detection area.

Setting an area

When you select 4 corners of an image with the mouse, it is set as the motion detection area and the color of the number buttons in [Area] changes.
Up to 8 areas can be set and the level, sensitivity, and minimum duration can be set separately for each motion detection area.

Changing an area

You can change the size of a motion detection area by moving a corner of the motion detection area. To move a motion detection area, click and drag the relevant area with the mouse.

Deleting an area

To delete a motion detection area, click the right mouse button at the relevant area on the screen and click the [OK] button on the delete confirm window.

Adjusting the PTZ

- When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
- Select an image magnification by adjusting the zoom slide bar, or by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out.
- Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
- To adjust the camera focus automatically for one shot, click the ⛶ icon.

Area

When a motion detection area is added, the color of the number buttons in [Area] will change. When you click the number button, the relevant motion detection area will appear from the preview screen.

Level of detection

This sets the standard level of motion detection. You can set the level for each motion detection area in [Area], and when a motion is larger than the set level, a motion detection event will be created.
Also, as a motion in each area is detected, a motion graph will appear, and when a motion event is created, the color of the graph will change.

Sensitivity

This sets the motion detection sensitivity for each area. Set a lower sensitivity for an environment where the background and an object are clearly distinguishable and a higher sensitivity for an environment where the background and an object are not clearly distinguishable.

Minimum duration (s)

Minimum duration (s): Sets the minimum amount of time to trigger an event after detection. When the movement lasts longer than the set period of time, the event is triggered.

Exclude area

The area designated by the user is set as the exclude area.

Setting an exclude area

When you select 4 corners of an image with the mouse, it is set as the exclude area, and the color of the number buttons in [Area] changes. Up to 8 exclude areas can be set.

Changing an exclude area

You can change the size of an exclude area by moving a corner of the exclude area. To move an exclude area, click and drag the relevant area with the mouse.

Deleting an exclude area

To delete an exclude area, click the right mouse button at the relevant area on the screen and click the [OK] button on the delete confirm window.

Area

When an exclude area is added, the color of number buttons in [Area] will change. When you click the number button, the relevant exclude area will appear from the preview screen.

Common

Sets the min and max sizes of an object to detect.

Size

Click the bottom right corner and drag the mouse to change the size. Changing the size also changes the [Minimum] and [Maximum] values under [Size].

> **Note**
>
> - If the ROI and Exclude areas are identical or overlap each other, the Exclude area has priority over the other.
> - Any movement smaller than the specified minimum size or larger than the specified maximum size will not be detected. please determine the best values for the minimum/maximum detection sizes that are appropriate for the installation environment in order to avoid any false detection arising out of small and/or large noises. Remember that the same movement in the same spot does not always result in the same detection size. Therefore, it is recommended to allow small/big enough rooms for your minimum/maximum size limits in consideration of the deviation in detected sizes.

Handover

Handover

Select a handover receiver camera number. Select [Off] if you don't want to use the handover function.
Handover is a function that the receiver camera moves to the PTZ preset position when a motion detection event occurs. The handover receiving camera can be set in the [Event] > [Handover] menu.

> **Note**
>
> - You can set the handover receiver camera for each ROI area. The handover function can be used after setting the ROI area first.

Overlay

Click [Enable] to overlay the detected area on the video screen.

Event action settings

FTP

To save an image on an FTP server when a motion event is created, select [Enable]. Detailed settings for FTP can be done from [Event]>[FTP/E-mail].

E-mail

To send an image by e-mail when a motion detection event is created, select [Enable]. Detailed settings for e-mail can be done from [Event]>[FTP/E-mail].

Record

To save an image on an SD card or NAS when a motion detection event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Goto preset

You can set the position of camera to move to a preset position when a motion detection event is created. The camera preset can be set in [Preset] tab of [PTZ]>[PTZ setup].

Event activation time

This sets the action settings set from [Event action settings] to always operate, or only on the set time when a motion detection event is created.

Always

The set event action settings are always executed when a motion detection event is created.

Only scheduled time

The event action settings are executed when a motion detection event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Tampering detection

A tampering detection event can be created when the screen is blocked or the camera position is changed. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on the tampering detection event applies to [Tampering detection]in [Event]>[Event setup] pages equally.

Tampering detection

Enable tampering detection

To use the tampering detection event, select [Enable tampering detection].

Adjusting the PTZ

- When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
- Select an image magnification by adjusting the zoom slide bar, or by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out.
- Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
- To adjust the camera focus automatically for one shot, click the ⛶ icon.

Level of detection

This sets the standard level of tampering detection. A tampering detection event is created when a tampering of the set level is detected.
Also, when a tampering is detected, a graph showing the level of tampering will appear, and when a tampering detection event is created, the color of the graph will change.

Sensitivity

Higher sensitivity results in a more sensitive response of the detection level graph.

Minimum duration (s)

This sets the minimum time to detect a tampering and create an event. A tampering detection event is created only when tampering persists for the minimum duration.

Except dark images

To exclude a sudden decrease in brightness on the screen, as such in the case of a sudden extinction of lights or blocking of lights, from the tampering detection event, select [Enable].

Note

- The detection performance may deteriorate on a uniform background, or in a night-time, low-light environment.
- If the camera shakes too much or if there is sudden change in light, the tampering detection may not function properly.
- It may take up to 5 seconds for a tampering detection event to be created after a tampering occurs.

- When a camera tampering is detected, the function will restart after stabilizing for approximately 5 seconds, and any tampering will not be detected during the stabilization process.
- When an incorrect event is repeatedly being created, errors can be minimized by gradually lowering the level.
- If you set the level of detection too low, then it is possible to trigger an alarm out of quite small changes on the screen, but it can also lead to false detection cause by objects in motion or change in brightness.

Handover

Handover

Select a handover receiver camera number. Select [Off] if you don't want to use the handover function.
Handover is a function that the receiver camera moves to the PTZ preset position when a tampering detection event occurs. The handover receiving camera can be set in the [Event] > [Handover] menu.

Event action settings

FTP

To save an image on an FTP server when a tampering detection event is created, select [Enable]. Detailed settings for FTP can be done from [Event]>[FTP/E-mail].

E-mail

To send an image by e-mail when a tampering detection event is created, select [Enable]. Detailed settings for e-mail can be done from [Event]>[FTP/E-mail].

Record

To save an image on an SD card or NAS when a tampering detection event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Goto preset

You can set the position of camera to move to a preset position when a tampering detection event is created. The camera preset can be set in [Preset] tab of [PTZ]>[PTZ setup].

Event activation time

This sets the event action from [Event action settings] to always operate, or only at the set time when a tampering detection event is created.

Always

The event action settings are always executed when a tampering detection event is created.

Only scheduled time

The event action settings are only executed when a tampering detection event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Fog detection

You can correct the image by creating a fog detection event and executing defog in foggy conditions when it is difficult to distinguish the image. When you complete the setting, click the [Apply] button at the bottom of the page. The setting for fog detection events applies to [Fog detection] on [Event]>[Event setup] pages equally.

Fog detection

Enable fog detection

To use fog detection, select [Enable fog detection].

Adjusting the PTZ

- When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
- Select an image magnification by adjusting the zoom slide bar, or by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out.
- Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
- To adjust the camera focus automatically for one shot, click the ⛶ icon.

Level of detection

The current fog level will appear in the level graph. An alarm occurs when the current level is higher than the set level of detection. A smaller level of detection enables the detection of an image even if it is blurred minutely by fog.

Sensitivity

The higher the sensitivity, the higher the level graph is for the same image.

Minimum duration (s)

This sets the minimum time between detecting fog and creating an event. An alarm occurs when the level status over the level of detection persists for the set minimum duration.

Note

- In order to receive an alarm indicating fog detection after it has occurred previously, the status must return to the stable status at least once. The improvement of image due to defog operation is not recognized as a stable status. Instances of returning to the stable status are as follows.
  - When [Enable fog detection] is deselected
  - When fog or smoke has disappeared to the extent that an image can be distinguishable
- In any of the following cases, the fog detection performance may deteriorate or a malfunction may occur.
  - Monitoring an environment with a monotonous background, at night time, and/or in a low light environment
  - Sudden illumination change (e.g. an indoor light is turned off)
  - Blocked lens or appearance of a large object which covers the most of the screen
  - The object of focus is changed due a change of the camera position

Event action settings

FTP

To save an image on an FTP server when a fog detection event is created, select [Enable]. Detailed settings for FTP can be done from [Event]>[FTP/E-mail].

E-mail

To send an image by e-mail when a fog detection event is created, select [Enable]. Detailed settings for e-mail can be done from [Event]>[FTP/E-mail].

Record

To save an image on an SD card or NAS when a fog detection event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Goto preset

You can set the position of camera to move to a preset position when a fog detection event is created. The camera preset can be set in [Preset] tab of [PTZ]>[PTZ setup].

Defog

To execute defog when a fog detection event is created, select [Enable].

Event activation time

This sets the event action set from [Event action settings] to always operate, or only at a set time when a fog detection event is created.

Always

The set event action settings are always executed when a fog detection event is created.

Only scheduled time

The set event action settings are executed when a fog detection event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Face/upper body detection

A face/upper body detection event can be created when a face or an upper body is detected within the area designated by the user while the camera is capturing an image. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on face/upper body detection events applies to [Face/upper body detection] on [Event]>[Event setup] page equally.

Face/upper body detection

Enable face/upper body detection

To use the face/upper body detection event, select [Enable face/upper body detection].

Include area

Setting an area

Of the whole screen, a area selected by the user can be set as the area. The minimum face/upper body detection size is displayed as a face icon in the detection area. Any face which is larger than the face icon is detected in the detection area.

Changing an area

You can change the size of the detection area by clicking the bottom right corner of the set area and dragging the relevant area with the mouse.

Adjusting the PTZ

- When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
- Select an image magnification by adjusting the zoom slide bar, or by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out.
- Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
- To adjust the camera focus automatically for one shot, click the ⊡ icon.

Sensitivity

This sets the sensitivity of the face/upper body detection event. The higher the sensitivity, the more detailed the face/upper body detection that is possible.

Motion based dynamic area

Select [Enable] if you want the face/upper body detection area to be automatically changed according to the motion analysis.If [Enable] is not selected, faces will be detected only in the set ROI area.
If the ROI area is set, the face will be detected only within the set area, and the detection efficiency of the small face at a long distance may be deteriorated. If 'Motion based dynamic area' function is used, when motion is detected on the whole screen, area for face/upper body detection is automatically changed, and thus the face/upper body detection efficiency is improved.

Note

- When the 'Motion based dynamic area' function is used, only the area where motion occurs is designated as the face/upper body detection area.

- Continuous face/upper body detection is impossible because the detection area is actively changed to detect faces in various areas.

Exclude area

Setting an exclude area

Of the whole screen, a area selected by the user can be set as the exclude area. When you select 4 corners of the image with the mouse, the area is set as the exclude area and the color of the number buttons on [Area] changes. Up to 8 exclude areas can be set.

Changing an exclude area

You can change the size of the exclude area by clicking the corner of the current exclude area and dragging the relevant area with the mouse.

Deleting an exclude area

To delete an exclude area, click the right mouse button at the relevant area on the screen and click the [OK] button on the delete confirm window.

Area

When an exclude area is added, the color of the number button will also change. When you click the number button, the relevant exclude area will disappear from the preview screen.

Note

- If the detection area and the exclude area are identical or overlap, the exclude area has priority.

Overlay

Click [Enable] to overlay the detected area on the video screen.

Event action settings

FTP

To save an image on an FTP server when a face/upper body detection event is created, select [Enable]. Detailed settings for FTP can be done from [Event]>[FTP/E-mail].

E-mail

To send an image by e-mail when a face/upper body detection event is created, select [Enable]. Detailed settings for e-mail can be done from [Event]>[FTP/E-mail].

Record

To save an image on an SD card or NAS when a face/upper body detection event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Goto preset

You can set the position of camera to move to a preset position when a face/upper body detection event is created. The camera preset can be set in [Preset] tab of [PTZ]> [PTZ setup].

Event activation time

This sets the operation time of the face/upper body detection event action settings. Set the event action settings from [Event action settings] to always operate, or only at the set time.

Always

The set event action settings are always executed when a face/upper body detection event is created.

Only scheduled time

The set event action settings are executed when a face/upper body detection event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

IVA

An IVA event can be created when the rule for video analytics is set and a motion which satisfies the event rule condition is detected. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on the IVA event applies to [IVA] on [Event]>[Event setup] pages equally.

IVA (Intelligent Video Analytics)

Enable IVA

To use the IVA event, select [Enable IVA].

Type

To set the same IVA (Intelligent video analytics) for all presets, select [Global]. To set a different IVA (Intelligent video analytics) for each PTZ preset, select [Preset]. The [Preset] option will be activated only when a preset is set from the [Preset setup] page.

Virtual line

Detects passing objects based on the virtual line and its direction configured by the user.

Setting a virtual line

When you click the start point and the end point of the line at each desired position on the camera image screen, the virtual line will be set and the color of the number button in [Line] will change.
You can change the direction from A to B, B to A or both directions by clicking the arrow in the middle of the virtual line, or you can select a desired direction from [Direction] in [Categories].
Up to 8 virtual lines can be set.

Changing a virtual line

You can change the size of the virtual line by moving a corner of the set virtual line. You can change the position of the virtual line by clicking and dragging the virtual line with the mouse.

Deleting a virtual line

To delete a virtual line, click the right mouse button at the relevant area on the screen and click the [OK] button on the delete confirm window.

Adjusting the PTZ

- When you drag the ⊕ icon with the mouse, the camera moves to the pan and tilt.
- Select an image magnification by adjusting the zoom slide bar, or by clicking the ⊕ icon to zoom the screen in or clicking the ⊖ icon to zoom the screen out.
- Move the focus near by clicking the 👤 icon or move the focus far by clicking the ▲ icon.
- To adjust the camera focus automatically for one shot, click the ⛶ icon.

Line

When a virtual line is added, the color of the number buttons in [Line] will change. When you disable a virtual line by clicking the number buttons, the relevant virtual line will be displayed on the preview screen.

Categories

- Crossing: To create an event when an object which passes the set virtual line is detected, select the check box.
- Direction: This sets the direction for an object to pass the virtual line.

Virtual area

The user sets the virtual area and applies the image rule of intrusion, enter/exit, appear (disappear) and loitering in the relevant area to detect the motion of an object.

Setting a virtual area

On the preview screen, use your mouse to select 4 corners or drag to draw a quadrilateral shape which will then be your ROI area.
Up to 8 virtual areas can be set and an image analysis rule can be set for each area.

Changing a virtual area

You can change the size of the virtual area by moving a corner of the set virtual area.
To create a polygon (N-gon), first select and create a quadrilateral. When a + sign appears, click it to add another point. You can add up to 4 additional points to create a polygon of your choice.
To move the set virtual area, click and drag the relevant area with the mouse. When a corner is created after clicking a line, you can set a polygonal virtual area by moving the corner.

Deleting a virtual area

To delete a virtual area, click the right mouse button at the relevant area on the screen and click the [OK] button on the delete confirm window.

Area

When a virtual area is added, the color of the number buttons in [Area] will change. When you disable a virtual area by clicking the number buttons, the relevant virtual area will be displayed on the preview screen.

Categories

You can set the rule to apply for each virtual area.

- Intrusion: When an object moves inside the set area, an event will be created.
  - Minimum duration (s): Sets the minimum amount of time to trigger an event after detection. When the movement lasts longer than the set period of time, the event is triggered.
- Enter: When an object enters the area set by the user, an event will be created.
- Exit: When a moving object exits the area set by the user, an event will be created.
- Appear (Disappear): When an object which does not exist inside the area designated by the user appears inside the area without passing the area line and remains for a certain period of time, or if an object which exists inside the area disappears, an event will be created.
  - Minimum duration (s): This sets the minimum timeframe for an object to be detected as appearing (disappearing). When an object which exists in the detection area for the set time disappears, it is detected as disappearing, and when an object which does not exist appears for the set amount of time, it is detected as appearing.

- Loitering: When a loitering object in the set detection area is detected, an event will be created.
  - Minimum duration (s): This sets the minimum length of time for a loitering object to be detected and an event created. When an object which loiters longer than the set time is detected, an event will be created.

> **Note**
> - When loitering detection is used together with other IVA event detection, the performance may deteriorate to a certain degree in comparison with separate use of loitering detection.
> - In the cases below, the loitering detection function may not work as the camera considers the object disappeared.
> - When a loitering object overlaps with another object
> - When an object that was loitering stops in a place for some time
> - When the environment is complex and there is a moving object in proximity to the loitering object

Exclude area

This sets the exclude area where motion will not be detected when the analytics rule is applied to the virtual line and the virtual area.

Setting an exclude area

On the preview screen, use your mouse to select 4 corners or drag to draw a quadrilateral shape which will then be your Exclude area. Up to 8 exclude areas can be set.

Changing an exclude area

You can change the size of an exclude area by moving a corner of the set exclude area.
To create a polygon (N-gon), first select and create a quadrilateral. When a + sign appears, click it to add another point. You can add up to 4 additional points to create a polygon of your choice.
You can move the position of an exclude area by selecting and dragging the exclude area with the mouse.

Deleting an exclude area

To delete an exclude area, click the right mouse button at the relevant area on the screen and click the [OK] button on the delete confirm window.

Area

When an Exclude area is added, the color of the number buttons in [Area] will change one by one. If you click the number buttons to deactivate them, then the Exclude area will be selected on the preview screen.

Common

This sets the sensitivity and the minimum and maximum size of an object to be detected that will be applied to both the virtual line and the virtual area.
This is a setting you can apply to raise the detection accuracy and minimize the occurrence of false detection depending on your environment.

Sensitivity

This sets the motion detection sensitivity for the virtual line and the virtual area. Set a lower sensitivity for an environment where the background and an object are clearly distinguishable and a higher sensitivity for an environment where the background and an object are not clearly distinguishable.

Size

This sets the minimum and maximum size of an object to be detected that will be applied to both the virtual line and the virtual area. You can change the size by clicking and dragging a corner with the mouse. When the size is changed, [Minimum] and [Maximum] in [Size] also change.

> **Note**
> - If the detection area and the exclude area are identical or overlap, the exclude area has priority.
> - Any movement smaller than the specified minimum size or larger than the specified maximum size will not be detected. please determine the best values for the minimum/maximum detection sizes that are appropriate for the installation environment in order to avoid any false detection arising out of small and/or large noises. Remember that the same movement in the same spot does not always result in the same detection size. Therefore, it is recommended to allow small/big enough rooms for your minimum/maximum size limits in consideration of the deviation in detected sizes.

Handover

Handover

Select a handover receiver camera number. Select [Off] if you don't want to use the handover function.
Handover is a function that the receiver camera moves to the PTZ preset position when an IVA event occurs. The handover receiving camera can be set in the [Event] > [Handover] menu.

> **Note**
> - You can set the handover receiver camera for each virtual line and ROI area. You can use the handover function after setting the virtual line or ROI area first.

Overlay

Click [Enable] to overlay the detected area on the video screen.

Event action settings

FTP

To save an image on an FTP server when an IVA event is created, select [Enable]. Detailed settings for FTP can be done from [Event]>[FTP/E-mail].

E-mail

To send an image by e-mail when an IVA event occurs, select [Enable]. Detailed settings for e-mail can be done from [Event]>[FTP/E-mail].

Record

To save an image on an SD card or NAS when an IVA event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Goto preset

You can set the position of camera to move to a preset position when an IVA event is created. The camera preset can be set in [Preset] tab of [PTZ]>[PTZ setup].

Event activation time

This sets the operation time of the IVA event action settings. Set the event action settings from [Event action settings] to always operate, or only at the set time.

Always

The event action settings are always executed when an IVA event is created.

Only scheduled time

The event action settings are executed only when an IVA event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the time table shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the time table with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Auto tracking

The Auto tracking function is used to recognize and track an object through video analytics. You can set the details for using auto tracking.
When you complete the setting, click the [Apply] button at the bottom of the page.

> **Note**
>
> The method of using camera auto tracking is as follows.
> - Click the Auto tracking icon to analyze, select, and track a tracking object from the entire area.
> - When you click the right mouse button on the video screen at the [Live] page, the motion will be analyzed based on the clicked area and auto tracking will begin.
> - When [Follow-up action] is set to 'Auto tracking' in the [PTZ] > [PTZ setup] > [Preset] > [Preset setup], the camera will move to the relevant preset and the auto tracking function will be executed automatically.

Adjusting the PTZ

You can adjust the pan, tilt, and zoom actions of the camera.

Adjusting the PTZ

- When you drag the icon with the mouse, the camera will pan and tilt accordingly.
- By using the zoom bar, you can adjust the video zooming ratio. Or, click the icon to magnify the screen or click the icon to reduce the screen.
- Move the focus near by clicking the icon or move the focus far by clicking the icon.
- To start auto tracking, click the icon. Click the icon to stop auto tracking.
- To adjust the camera focus automatically for one shot, click the icon.

Exclude area

The list of excluded areas from detecting a tracking object is displayed. Up to 8 areas can be set.

Setting an excluded area

1. Set an excluded area by dragging the mouse on the camera image screen.
2. Enter the name of exclude area on the [Auto tracking] dialog box and click the [OK] button.

Deleting an excluded area

1. Select a number you wish to delete from the list of excluded areas.
2. Click the [Delete] button.

> **Note**
>
> - The auto tracking exclude function operates only when [Auto tracking setup] > [Area activation] is selected.
> - An auto tracking excluded area means that it is excluded from the initial object detection areas. If an object under tracking is in an excluded area, it will be tracked continuously. That is, the set areas do not stop the action of tracking when the tracking target enters into those areas.

Enable object auto tracking Click [Enable object auto tracking] to automatically track the movement of selected objects when motion is detected.

Enabling the object auto tracking function

Object auto tracking is a function that automatically tracks the movement of objects when detecting objects. You can set it to detect only specified objects and automatically track them.

1. Select the object type to track movement.
2. Clicking the icon detects the set object type and automatically tracks the object's movement.
3. Click the auto tracking icon once more to stop auto tracking.

Configuration

Camera height

Sets the camera height. The auto tracking function operates more precisely if you enter a height closer to the actual installation height of the camera.

Zoom

Selects whether or not to use the zoom operation for auto tracking.

Maintain object size

Set the desired size of tracking target to be maintained on the screen, if zoom is enabled. The size of the auto-tracking object is adjusted in comparison to the size of the overall image screen, and auto tracking is carried out while maintaining the size of the tracking object.
It operates only when [Enable] is selected from [Zoom].

Display indicator

Selects whether or not to use an indicator that indicates a tracking object on the image screen.
When [Enable] is selected for the indicator display, the indicator is also displayed on the recorded image.

Exclude area

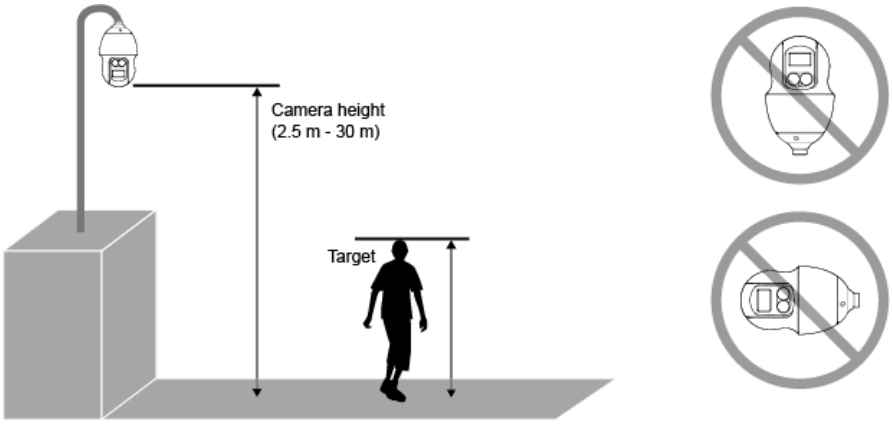
An object detected from the set area is excluded from auto tracking. For how to set an excluded area, refer to 'Setting an excluded area'.
If [Enable] is selected, all set excluded areas will be used.
In these areas, detection of any motion won't trigger auto tracking.

Auto release

Sets whether or not to terminate the auto tracking function automatically. When [Enable] is selected, the auto tracking function will be terminated automatically, meaning the tracking operation will no longer be maintained when a tracking object is

not detected for a certain period of time (60 seconds). When [Enable] is not selected, the auto tracking operation can be maintained throughout the search for a tracking object.

Note

- The following conditions are required for the auto tracking function to work.
  - Installation height: Minimum 2.5m and maximum 30m.
  - Installation type: Indoor or outdoor ceiling type with even level without tilt
  - Tracking target: A person (height of about 170cm) walking upright on a flat ground
- 

- In any of the following cases, it is not possible to track a target or malfunction might occur:
  - If there are multiple moving objects in the recording areas,
  - If blocked by another objects in motion or facilities,
  - If the contrast between the moving object and the background is negligible
  - If the object is too small or big
  - If the movement speed is too fast or slow
  - If the moving object passes right under the installed camera
  - If the moving object's path is not a flat ground at the installation height
  - Extreme weather conditions, such as storm, snow, rain, etc.
  - If the recording area is dark
  - If there is a sudden change in light
  - If the light blinks toward the camera or in the recording area
  - If there is a strong amount of light directed toward the camera, such as reflected lights or flashlights
  - If the video is unstable due to the camera shaking
  - If the lens cover or rheostat cover is contaminated or wet
  - If the axis of camera lens changed

Event action settings

E-mail

To send an image by e-mail when an auto tracking event is created, select [Enable]. Detailed settings for e-mail can be done from [Event]>[FTP/E-mail].

Record

To save an image on an SD card or NAS when an auto tracking event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Event activation time

This sets the event action settings in [Event action settings] to either operate at all times or the set time when an auto tracking event is created.

Always

The event action settings are always used when an auto-tracking event is created.

Only scheduled time

The event action settings are used when an auto-tracking event is created during the set time. The date from Sunday to Saturday, based on the current camera time, is displayed on the timetable shown when [Only scheduled time] is selected. You can set the time for event action settings by clicking or dragging on the timetable with the mouse. The set event activation time is executed repeatedly on the relevant weekday and time.
You can change the time view unit by clicking the [1 min], [30 min] or [1 h] button. When you click the [Reset] button, all set event activation times will be deleted. To confirm or change the camera time, refer to [Basic]>[Date & Time].

Product information

Check the model name and serial number of the product and set the device name, location, description and language. When you complete the setting, click the [Apply] button at the bottom of the page.

Product information

Model

The model name of the product you are currently using is displayed. Changes cannot be made to the model name.

Serial number

The serial number of the product you are currently using is displayed. Changes cannot be made to the serial number.

Device name

Enter the device name of the product you are currently using. If you have installed a number of cameras, a different device name for each camera is recommended.

Location

Enter the installation location of the product you are currently using. If you have installed a number of cameras, a different location name is recommended to distinguish between them.

Description

Enter the description of the product you are currently using. You can enter other necessary information, including the installation date and location where the screen is showing.

Memo

Enter the description of the product you are currently using. Enter other necessary information that were not entered on the description section.

Language

Select the language of the product you are currently using. When you select a language and click Apply, all UI will be changed to the relevant language.

Open source license

We provide open source licenses used by this product.Click the [View]button to see the information of the open source licenses used by this product and full license texts.

Note

- For [Device name], #'"&+:<>=\%* cannot be entered - only English uppercase and lowercase letters, numbers and special characters can be entered. Up to 8 characters can be entered.
- For [Location], [Description], and [Memo], you can only use alphanumeric characters, space, and the following special characters: ~`!@$^()_-|{}[];,./? You can enter up to 32 characters.

Upgrade / Restart

You can upgrade the software of the product you are currently using, perform a factory default, back up or restore the configuration, or restart.

Upgrade

Software can be upgraded as new firmware versions are released.

Software

The software version of the product you are using is displayed. Changes cannot be made to the software version.
You can view the software details, including the ISP version applied to the software and SUNAPI version, by clicking the [Info] button.

Software upgrade

You can upgrade the software of the product you are using. To upgrade the software, click the [...] button. Select an upgrade file and click the [Open] button. When you click the [Upgrade] button, upgrading will begin. You can view the upgrading progress in %. When upgrading has ended, the camera will reboot and the connection will be terminated automatically. You will need to reconnect to the web viewer.

Note

- Upgrade can take up to 10 minutes. Do not terminate the program while upgrading is in progress. Doing so may result in the program failing to upgrade properly.
- For the web viewer to work properly, you need to delete all the browser caches before connecting again after the software upgrade.
- You can download the latest software version from Hanwha Techwin's website: http://www.hanwha-security.com

Factory default

Resets the system configuration to what it was at the time of product purchase. When you click the [Reset] button and then click the [OK] button in the confirm window, the factory default reset will be carried out. (Logs won't be reset though.)

If you wish to reset the system configuration (except for the network configuration and installed open platform configuration) to factory default, select [Except network parameter & open platform]. When a factory default is carried out, the connection with the camera will be terminated. When you reconnect to the web viewer for the first time, you will need to enter the password again.

Restart	Restart the camera system. Click the [Restart] button, and when the confirm window appears, click the [OK] button. The camera will restart and the web viewer window will close. You will need to reconnect to the web viewer.

Log

You can check camera-related logs. You can check information including camera access, system changes and events which have occurred, and backup log information for each log type.

> **Note**
> The maximum number of logs that can be displayed on one page is 15.
> Logs can be checked in order of most recent log first.
> Up to 1,000 logs can be saved.
> When the number of logs that are saved exceeds 1,000, a new log is saved after deleting the oldest log.

Access log

You can check login and logout information for each access account.

Log type

You can check accounts which have accessed the camera, login and logout date, and time information. When you select All, you can check login and logout, date & time, and detailed information for all access IDs.

Export

You can backup the selected log type as a text file. To backup the access log, click the [Export] button. The log file information is displayed as camera model name_log type_backup date, and time.

System log

You can check date & time and detailed information for system changes.

Log type

This allows you to check camera system setup change information, along with the date and time. When you select All, you can check date & time and detailed information for all system changes.

Export

You can backup the selected log type as a text file. To backup the system log, click the [Export] button. The log file information is displayed as camera model name_log type_backup date, and time.

Open platform

When you install an additional application on the camera, you can use the functions of the installed application in addition to existing functions.

Open platform

Installing an open platform

1. Click the [...] button, select an application and then click the [Open] button.
2. Click the [Install] button. When installation of the application is complete, a message saying 'Installed' is displayed and information about the installed application is displayed in the list.

No.

A number is assigned in the installation order of application.

Application name

The application name, installed date and version are displayed.

- Uninstall: Deletes an installed application.
- Go App: Moves to the screen provided by each application.

Status

Displays the running status of an application.
When an application is running, 'Running' is displayed, and when an application is stopped, 'Stopped' is displayed.

- Start: Executes the installed application.
- Stop: Stops a running application.
- Health: The resource usage rate, thread count and running time of currently-running applications are displayed. This is activated only when at least one application is running.

Setup

Sets the execution priority and auto start of applications. Set to your preference and click the [Apply] button.

- Priority: Sets the priority among applications that are running. If the resource usage of the whole camera (including the main task of the camera and applications) becomes too high, some applications that are running will be forcibly closed. Applications set as 'low priority' by the user are closed first.
- Auto start: When [Enable] is selected, an application will be executed automatically when the camera is powered on and the main task is executed.

Application manager

The resource usage rate of applications currently running in the camera is displayed.

- Application name: The application name is displayed.

- Memory usage (%): The memory usage rate of each application is displayed.
- CPU usage (%): The CPU usage rate of each application is displayed.
- Thread count: The number of threads created by each application is displayed.
- Duration: The total operating time of each application is displayed.
- Action: The action status of each application is displayed. To stop the application, click [Kill App].
- Total usage: The total resource usage rate (including the main task of the camera and applications) currently used in the camera is displayed.

Note

- For questions regarding the installation and usage of applications, contact the developers' website of Hanwha Techwin (https://step.hanwha-security.com/kor_EN/Default.aspx (https://step.hanwha-security.com/kor_EN/Default.aspx)).

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