WISENET

Network Camera

Online help

TNO-4040TR/TNO-4030TR
TNO-4041TR

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

- 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.
℃ Temperature	Shows the Average, Minimum, and Maximum temperatures of each temperature analytics ROI area. The temperature analytics ROI areas can be set in the [Setup]>[Analytics]>[Temperature detection] menu. If you select a temperature display unit between Fahrenheit and Celsius in [Temperature unit], the temperature appropriate for the unit will be displayed. Emissivity information can be entered in [Spot emissivity]. The emissivity you entered in [Setup]>[Video & Audio]>[Temperature setup]>[Spot emissivity] is displayed in [Spot emissivity] by default.
ⓘ Status	Check the connection information for each profile and for connected users at the same time.

Icon	Description of function
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.
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.
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.
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.
Microphone	Use the microphone function. To use the microphone function, the [Audio in] function should be activated for the relevant profile. To activate the audio input function, select [Enable] from [Setup]>[Basic]>[Video profile]>[Audio in].
Alarm output	When you click a desired alarm output number, the alarm will be outputted as previously set. The alarm can be set from the [Setup]>[Event]>[Alarm output] page. The number of alarm outputs varies depending on the camera.
Speaker	Adjust the audio volume of the live screen. Click the icon to activate the audio and adjust the volume.

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.

If image capture does not work in Windows 7 or later with the Internet Explorer browser, run the Internet Explorer browser as administrator.

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 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 use microphone

- Click the microphone icon( ).
- Adjust the audio volume using the Volume control bar.

If no sound is heard when connecting or disconnecting the audio jack from the PC while playing the audio, click the microphone icon( ) and enable it.

To use speaker

- Click the Speaker icon( ).

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.

Check temperature on the video screen

The information of your selection (area, average, minimum, maximum temperature) in [Setup]>[Analytics]>[Temperature detection]>[Temperature area overlay] is overlaid at the top of your camera video.
Click the camera video to display temperature of the currently selected spot.
Temperature is analyzed based on the emissivity information entered in [Spot emissivity]. You may change the emissivity information as necessary for precise temperature analytics. For emissivity information per material, see emissivity table in [Setup]>[Video & Audio]>[Temperature setup].

Color palette

For easy visual analysis of camera video, color palettes are provided. Select a color palette you want to see the color palette applied on the camera video screen.
For the characteristics of each color palette, go to [Setup]>[Video & Audio]>[Temperature setup]>[Color palette].

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, and sharpness 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.

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 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 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 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.
🔊 Speaker	Adjust the audio volume of the playback screen. 🔊 Click the button to activate the audio and adjust the volume.

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 [Apply] 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.

Backing up a searched image

To backup a recorded image, select a recorded image and click the [Export] button.

To backup a video searched

1. Click the [Export] button at the scene during playback.
2. Set the backup start and end time.
3. When you complete the setting, click the [Apply] button.
4. When the save window appears, select a path to save the backup and click the [Save] button.
5. The backup data of the selected time range will be created.
6. Click the [Apply] 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. [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. Orange boarders 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.

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.
- Record 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. This ‘Frame Lock profile’ option appears only when [Codec] is set to [h.264] or [h.265].

Audio in

When the camera has an internal microphone or an external microphone is connected, you can set external sounds to be inputted in the image.
To use the Microphone and Speaker functions on the Live page, [Enable] should be selected for [Audio in].

ATC mode

The ATC (Auto Transmit Control) mode adjusts the amount of data sent, by changing the properties of the image according to network bandwidth changes. The adjustment method for the sent amount varies according to the ATC mode.

- Disable: A fixed amount of sent data is maintained even if the network bandwidth changes.
- Enable - Control frame rate: If the network bandwidth changes, you can adjust the amount of data to be sent by changing the frame rate.
- Enable - Control compression: If the network bandwidth changes, you can adjust the amount of data to be sent by changing the data compression rate. Change in compression ratio may degrade the image quality.
- Enable – Event (MD): This mode can be used when Motion detection event is set. When a motion detection event is created and the network bandwidth changes, you can adjust the amount of data by changing the frame rate. When no motion is detected, reduce bandwidth use by outputting the minimum frames.

Sensitivity

Adjust the reflection speed of network bandwidth changes. The reflection speed is fastest when the ATC sensitivity is very high, while the reflection speed is the slowest when it is very low.
ATC sensitivity is activated only when [Enable - Control frame rate] or [Enable - Control compression] is selected for [ATC mode].

Limit

When the amount of video data transfer changes depending on the amount of the network bandwidth change, set the limit of ATC mode as to how much change you will allow for the property. Assuming no usage of the ATC mode as 100%, this value can be between 10-50%; the amount of video data transfer will not fall below this value.
In this case, decreasing this value too much might cause the flickering of screen. Therefore, you should adjust the limit setting by adjusting this setting.
ATC limit is activated only when [Enable - Control frame rate] or [Enable - Control compression] is selected for [ATC mode].

Note

- It is recommended to use ATC only in an environment where all cameras are supporting ATC.
- In an environment where the amount of network bandwidth change is drastic, set the ATC sensitivity to[Very low].
- Unstable network environment may result in screen flickering.

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.

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.

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].

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.

- 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.

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 other words, in an image with almost no motion, the GOV length set by the user in [Dynamic GOV] increases to the maximum, and when motion is detected, it is reduced to the length set in [GOV length] to output the image.

- 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] and [ATC mode] to [Disable]. If [Profile type]is set to [Record profile], Dynamic GOV is disabled.

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]. Dynamic FPS is also enabled when [ATC mode] is set to [Disable] whereas Dynamic FPS is disabled when [Profile type] is set to [Record profile].

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 available range of multicast IP address is from 224.0.0.0 to 239.255.255.254, but 255 for last three digits cannot be used.

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 password

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

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

- For enhanced security, it is recommended to create a password that combine 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.
  - It should be different from your ID.
  - You cannot use four consecutive letters of one type. (Ex: 1234, abcd)
  - You cannot repeat the same letter four or more times in a row. (Ex: !!!!, 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.

Guest settings

When you select [Allow guest access], a guest can connect to a web viewer screen. When you connect with a guest account, you can see only the live screen on the web viewer. Guest ID and password are 'guest/guest' and these cannot be changed.

Authentication setup

When you select [Allow RTSP connection without authentication], you can connect to the camera image using RTSP (Real Time Streaming Protocol) without login authentication.

Current users

You can set the connection information for user accounts other than the administrator, and set use permissions including audio in, audio out, alarm output and profile.
When a registered user logs in, only the functions set for that user are enabled. 10 current user accounts are set by default; you can add or delete an account. Up to 10 current IP user accounts can be used.

Note

- If you want to select the configured user that can use ONVIF, the use of the function may be restricted depending on the permission level set.

Use

Select the check box to enable the selected user account.

Name

Enter the ID

Password

Enter the password. The password setting rule is same as the administrator password setting rule.

Audio in

Set the permission for accessing the inputted audio. If audio in is selected, a user who connects to the relevant account can watch the screen and listen to audio at the same time; if audio in is not selected, the user can watch only the image screen.

Audio out

Set audio out permissions. When audio out is selected, a user who connects to a relevant account can send audio through the microphone.

Alarm output

Set alarm output permissions. When an alarm has been set, a user who connects to a relevant account can output the alarm.

Profile

When [Default] is set, the user can watch the image only in default mode; when [All] is set, the user can watch the image in all profiles.

Inputting a current user

1. Select the radio button of the current user account you wish to use. The current user account is changed to a status where input is available.
2. Select the check box in the [Use] column.
3. Enter the ID and password in the [Name] and [Password] columns.
4. Select a function to allow in the [Audio in], [Audio out] and [Alarm output] columns respectively, and select the type of profile to allow in the [Profile] column.
5. When the input of the current user account is completed, click the [Apply] button at the bottom of the page.
6. When the confirm window appears, click the [OK] button.

Note

- If the number of current user accounts is less than 10, you can add a current user account by clicking the [Add] button.

Modifying a current user

1. Select the radio button of the current user account you wish to modify.
2. Change the function settings and click the [Apply] button at the bottom of the page.
3. When the confirm window appears, click the [OK] button. The information of the user will be changed.

Deleting a current user

1. Select the radio button of the current user account you wish to delete and click the [Delete] button.
2. Click the [Apply] button at the bottom of the page.
3. When the confirm window appears, click the [OK] button. The information of the selected current user will be deleted.

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.
If [PPPoE] is used, enter the DNS address, ID and password.

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

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.

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.

ID

This is displayed when [PPPoE] is set for [IP type]. Enter the proper ID to connect.

Password

This is displayed when [PPPoE] is set for [IP type]. Enter the correct password to connect.

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). 65535 cannot be set for the HTTP port when connecting in browsers such as Safari and Google Chrome, due to the browsers' security policy. 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. 65535 cannot be set for the HTTP port when connecting in browsers such as Safari and Google Chrome, due to the browsers' security policy.

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.

Video setup

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

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.

Setting a privacy area (PTZ camera)

1. Select [Enable privacy area] and click the [Apply] button at the bottom of the page.
2. Drag with the mouse on the camera video screen to set the privacy area size.
3. In the [Privacy area] window, set the following:
   - ⊕ Drag the icon to place the desired video screen on a privacy area by adjusting the camera pan/tilt.
   - Enter the name of the privacy area in [Name], select the color to cover the image in [Color].
   - Select whether to enable [Zoom threshold]. The function ensures that a privacy area is used only if the image is magnified to higher than a zoom ratio set in [Set zoom threshold]. In other words, if the image is reduced below the zoom ratio, the privacy area is deleted from the image.
4. In the [Privacy area] window, click the [OK] button.
5. In step 3, if you selected [Enable] for the [Zoom threshold] option, then the [Set zoom threshold]window will appear. After setting the desired zoom ration, click the [OK] button.
6. A new privacy area is added to the list of privacy areas. The privacy area to which zoom threshold is applied will be marked as '[Zoom]' in the list of privacy areas. The color set in the camera's image screen is used to display the privacy area.

Setting a privacy area(zoom camera)

1. Select [Enable privacy area] and click the [Apply] button at the bottom of the page.

2. Drag with the mouse on the camera video screen to set the privacy area.
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].
   - Select whether to enable [Zoom threshold]. The function ensures that a privacy area is used only if the image is magnified to higher than a zoom ratio set in [Set zoom threshold]. In other words, if the image is reduced below the zoom ratio, the privacy area is deleted from the image.
4. In the [Privacy area] window, click the [OK] button.
5. In step 3, if you selected [Enable] for the [Zoom threshold] option, then the [Set zoom threshold]window will appear. After setting the desired zoom ration, click the [OK] button.
6. A new privacy area is added to the list of privacy areas. The privacy area to which zoom threshold is applied will be marked as '[Zoom]' in the list of privacy areas. The color set in the camera's image screen is used to display the 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.
The [Hallway view] feature provides a long vertical view of the screen which allows the user to operate the surveillance area more efficiently in a corridor or alley.

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

You can flip the camera image upside down. To flip the camera image, select [On].

Mirror

You can mirror the camera image. To mirror the camera image, select [On].

Hallway view

By rotating the camera image in an environment where a general camera cannot properly monitor the narrow aisles or hallways, you can magnify the vertical monitoring areas. You can rotate it 90 deg (Clockwise) or 270 deg (Clockwise) or set it to 0 deg to return to the original image.

Note

- In order to set the hallway view, you need to set the installed camera to 0 degree, or rotate to 90 degrees clockwise or 270 degrees clockwise, and select the same angle in [Hallway view].
- When you set [Hallway view], the web browser will close automatically. You will need to reconnect to the web viewer.

Video output

You can select the method of displaying camera video output.

USB

To display a camera image by using the USB, click [Enable].
Using the Wi-Fi dongle and smartphone app from Hanwha Techwin, you can access your camera over Wi-Fi. This is useful when you are trying to install a network camera for the first time or change the angular field of view or position of your camera, since you can see the camera screen on your smartphone without the hassle of getting an additional monitor to check the installation.

CVBS

To display a video by connecting a cable to the CVBS terminal, click [Enable].
It is useful since you can set it while checking the lens position or focus when installing the camera.

CVBS type

To use CVBS, select the CVBS video output type.

- NTSC: NTSC (National Television System Committee) is the US standard for color TVs. The number of frames per sec is 30 and the number of horizontal projection beam is 525, Since the number of frames per sec is high, the screen looks very natural. It is mostly used in USA, Japan, and Canada.
- PAL: PAL (Phase Alternation Line) method was proposed by Germany and it is similar to NTSC but differs in the way it handles the color signals. It is mostly used in Europe. Compared to NTSC, the number of frames per sec is lower but the number of horizontal beams is higher (625). Thus, the resolution is higher, the color deformation is less, and the broadcasting facility does not require high specifications.

Note

- To prevent degradation of the camera performance, turn off the video output function after installing a camera.

Audio setup

You can connect a microphone and speaker to a network camera and listen to the sound at a remote location where the camera is installed, or output audio from the camera to the location. When you complete the setting, click the [Apply] button at the bottom of the page.

Audio in

You can input audio into an image through a microphone connected to the camera. Input audio by selecting a source that fits the usage environment.

Source

Select an alarm input type.

- External microphone: An external microphone can be connected to the camera and used instead of the internal microphone. When you select [Apply power to Ext. Mic.], the camera supplies power to an external microphone.
- Line: Connect to sound equipment through a cable. For example, connect sound equipment such as an MP3 player and a camera through a cable, and select the MP3 player when you input recorded audio from it into the camera.

Codec

Select an audio codec.

- G.711: This is the standard audio codec for ITU-T, which is mainly used in telephone communication; the audio quality is low. It is also called the pulse code modulation of sound frequency; soundwaves can be delivered digitally in PSTN or through PBX.
- G.726: This is the standard audio codec for ITU-T, which is mainly used in telephone communication; the audio quality is low. It is possible to change and compress 64 Kbps PCM to 16, 24, 32 or 40 Kbps through Adaptive Differential Pulse Code Modulation (ADPCM).
- AAC: AAC (Advanced Audio Coding) is the international standard that succeeds MP3. It is more efficient than MP3 and has sound quality similar to an original copy of a CD. AAC enables the use of audio of a higher sampling rate than is the case when using the previous G.711 and G.726 codecs.

Note

- When an image is streamed through Firefox or Edge, the AAC codec is not supported even if the desired codec has been set in the audio setup page.

Sampling rate

This refers to the number of samplings per second when an analog sound source is converted to a digital sound source; as this value is higher, the sound quality is better. The sampling rate is fixed for each audio codec, and cannot be changed by the user. The sampling rate of the G.711 and G.726 codecs is 8 KHz, while the sampling rate of the AAC codec is 16 KHz.

Bitrate

The bitrate of the G.711 codec is 64 Kbps and cannot be changed. The bitrate of the G.726 codec is 16, 24, 32 and 40 Kbps; the compression ratio can be changed. Only 48 Kbps can be selected for the AAC codec.

Gain

Sets the amplification value of audio in. If the input sound is too low, you can increase the gain value to amplify the input audio signal. The range of gain value is from 1 to 10; a larger value means higher amplification.

Noise reduction

Select Noise Reduction if the surrounding noise is too strong to hear the sound of interest.
Noise reduction may not work properly if noise is indistinguishable from the surrounding voice sound, or if the sound pressure is high.

- Sensitivity: You can set the noise reduction sensitivity based on the level of ambient noise.

Audio out

You can output audio through the built-in speaker.

Audio out

To use audio out, select [Enable].

Gain

Sets the amplification value of audio out. If the output sound is too low, you can increase the gain value to amplify the output audio signal. The range of gain value is from 1 to 10; a larger value means a louder audio out. Gain is activated only when [Enable] is selected for audio out.

Note

- If an excessive audio level or gain value is set, a deterioration of sound quality or a howling sound may occur.

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.

Image preset mode

Select an image preset that best suits your camera environment.

- Indoor: Used in an indoor environment with a narrow range of temperature.
- Outdoor: Used in an outdoor environment with a wide range of temperature.

> **Note**
>
> - After selecting an image preset mode, change the detailed settings of camera image, such as SSDR and Exposure, 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.

LCE (Local Contrast Enhancement)

Displays the screen with a high contrast based on the set area.

Mode

Select an LCE mode you want.

If you select a mode option, the area to show the high contrast is displayed as a green box. For example, in the [Sky] mode, the green box appears on top of the video screen provide that the sky is shown in upper part of the screen, and correct the video to best represents the objects within the area. In the case, the recognition rate of subject may relatively be lowered on the bottom of the screen.
If you select [Custom], you can customize the area to best represents the contrast ratio.

> **Note**
> - If [Flip] is set to [On] in [Video & Audio]>[Video setup]>[Video rotation], the [Sky] and [Ground] modes of [LCE] will be reversed. This means that a green box will be displayed at the bottom of the screen in the [Sky] mode, and at the top of the screen in the [Ground] mode, and the contrast in the box area will be enhanced.

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.

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.

> **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].

Special

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

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 edge level is, the stronger and clearer the video edge is.

Contrast

Adjust the shade contrast of the image.

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, 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 camera title and set the location by moving the X and Y coordinates. 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.

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 X and Y coordinates.

Color

Set the color of OSD.

Transparency

Set the transparency of OSD.

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.
- Only Korean, English, numbers, and symbols are allowed.

Activation time

The camera always operates at a specific preset time. Set and use a desired image preset at the desired time.

Off

The camera operates at the time selected in the image preset.

Only scheduled time

You can set to allow a user to execute a desired image preset at a specific time. Select an image preset and set the start and end time. Set the image preset for each hour according to the usage of the camera.
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 by clicking or dragging on the time table with the mouse. The set 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].

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.

Temperature setup

You can set whether or not to use emissivity for your camera to refer to for temperature detection, color palette type to apply to camera video, temperature display unit, temperature color bar, etc.
Click the [Apply] button below when the setup is complete.

Temperature setup

Temperature unit

Temperature display unit can be set. Choose between Celsius and Fahrenheit.

Color palette

Color palette presents camera video in a convenient way for visual analysis.
If you select a color palette option, the color of the camera video screen changes depending on the selected option. The selected option also applies to [Live] page.
The color representation scheme for each color palette option is as follows.

- White hot: High to low temperature is represented by white to black.
- Black hot: High to low temperature is represented by black to white.
- Rainbow: High to low temperature is represented by red, orange, yellow, green, blue, and indigo
- Custom: High to low temperature is represented by orange to black
- Sepia: High to low temperature is represented by yellow to black.
- Red: High to low temperature is represented by black to red.
- Iron: High to low temperature is represented by yellow to violet.
- Red-WH: The set temperature section is represented by red. For all else, high to low temperature is represented by white to black. The temperature section can be set in [Levels].
- Iron-WH: The set temperature section is represented by yellow to violet. For all else, high to low temperature is represented by white to black. The temperature section can be set in [Levels].
- Midrange-WH: The set temperature section is represented by yellow to orange. For all else, high to low temperature is represented by white to black. The temperature section can be set in [Levels].

Levels

You can set the start and end temperatures on the temperature section so that only temperature section selected by user is displayed in colors. You can use it only after selecting the Red-WH, Iron-WH or Midrange-WH mode in [Color palette].
For example, if you select 'Midrange-WH' in [Color palette] and enter '20' and '60' for [Start] and [End] respectively in [Levels], only objects whose temperature lies within the range of 20 degrees to 60 degrees (Celsius) in the camera video are displayed in colors. Objects close to 20 degrees are shown in yellow while those close to 60 degrees are shown in orange.

Spot emissivity

Enter the emissivity information for camera to refer to when analyzing temperature. The value you entered here will be applied as a default value when you measure temperature by clicking mouse on the [Live] screen. You can get an appropriate temperature value that considers object's surface condition, texture, etc. by changing the emissivity value.
For emissivity information, see the table below. The table below lists defaults used as reference values. Since emissivity varies depending on various variables, including surface processing, color, temperature at the time of measurement, and air temperature, you need to experiment with different values to acquire the most appropriate value. Entering an accurate emissivity value assures more accurate temperature measurement.

Material	Emissivity (ε)
Aluminum foil	0.03
Aluminum, anodized	0.9
Asphalt	0.88
Brick	0.90
Concrete, rough	0.91
Copper, polished	0.04
Copper, oxidized	0.87
Glass, smooth (uncoated)	0.95
Ice	0.97
Limestone	0.92
Marble (polished)	0.89 to 0.92
Paint (including white)	0.9
Paper, roofing or white	0.88 to 0.86
Plaster, rough	0.89
Silver, polished	0.02
Silver, oxidized	0.04
Snow	0.8 to 0.9
Water, pure	0.96

(Source: http://en.wikipedia.org/wiki/Emissivity)

Temperature color bar

Temperature color bar displays the colors that currently appear on screen in the form of a bar. The color from the bottom to top represents high to low temperature.
If you select [Enable], temperature color bar will appear on the right side of the camera video screen.

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

The secure connection system is selected according to the service environment in consideration of the security level. HTTPS (HyperText Transfer Protocol over Secure Socket Layer) exchanges data through the encryption and decryption of the user's page request at the SSL sub layer below the hypertext transfer protocol layer. Therefore, it is considered to be more secure than HTTP mode. You can select whether a unique or public certificate is used for secure connection in HTTPS mode.

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.

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.

Install a public certificate

To select [HTTPS (Public Certificate in use)] 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 of the certificate to install.
- Key file: Select the path of the key file to install.

Note

- You cannot install or delete a public certificate when [HTTPS (Public Certificate in use)] mode is in effect. After changing to [HTTP (Secure Access not in use)] or [HTTPS (Private Certificate in use)] 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 from the open window and 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 on the bottom of [Public Certificate installation].

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 an authentication mode regulated in wireless networks and Point-to-Point protocols, and is designed for easy extension. The LEAP mode is a security-vulnerable authentication mode, so is recommended only for environments where EAP-TLS cannot be used.

- 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.

EAPOL version

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

ID

Enter the client certificate ID for [EAP-TLS] and the user ID for [LEAP].

Password

Enter the client private key for [EAP-TLS] and the user password for [LEAP]. 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	Certificates are necessary only when [EAP-TLS] is used. You can install or delete the relevant certificates and keys. • 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] (ssl.html)> [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.

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].
  - Alarm output: Select [Off] if you wish no alarm when an event is created; select the appropriate time if you wish to output an alarm. You can set a continuous alarm until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]> [Alarm output].

Note

- The alarm output column is displayed differently according to the number of alarms supported by the camera. For example, if the number of alarms to be outputted is 2, the ‘Alarm output 1’ and ‘Alarm output 2’ columns are displayed and the alarm output for each event can be set.

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 have completed the settings, click th [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.
   - 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 [Apply].

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

---

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. When a frame skip occurs, an image is recorded at a minimum rate of one image 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 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 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

Record profile

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

Normal 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 normal recording.
- Full frame: Records full frame normal 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.

Normal record 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].

Alarm output

Sets how to control an alarm when an alarm is outputted by the user or when an event is created. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on the alarm output event applies to [Alarm output] in [Event]>[Event setup] pages equally.
When changing the type of alarm output, the alarm output button on the Live page and the type of alarm output in the Event setup are changed.

Alarm output no.

You can select an alarm output number and change the detailed setting of each alarm output.
The number of alarm outputs supported may vary depending on the camera. The alarm output number is displayed according to the number of alarm outputs supported by the camera.

Alarm output

Type

Selects the alarm output type.

- N.O. (Normal Open): The alarm output sensor is open by default and when it is closed, an alarm is outputted.
- N.C. (Normal Close): The alarm output sensor is closed by default and when it is open, an alarm is outputted.

Mode

Sets the control type when an alarm is outputted.

- Pulse: An alarm is outputted for the time set in [Duration] and the alarm turns off automatically.
- Active/Inactive: When you press the alarm output button on the monitoring screen, an alarm will turn on; when you press the button again, the alarm will turn off.

Duration

Sets the alarm output time when [Pulse] is selected in [Mode].

Alarm input

When an alarm is inputted, an alarm input event can be created. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on the alarm input event applies to [Alarm input] in [Event]>[Event setup] pages equally.

Alarm input no.

You can select an alarm input number and change the detailed setting of each alarm input. The number of alarm inputs supported may vary depending on the camera.

Input device setup

Input device setup

To use an alarm device selected from [Alarm input No.], select [Enable].

Type

Select the alarm input type.

- N.O. (Normal Open): The alarm input sensor is open by default; when it is closed, an alarm input event is created.
- N.C. (Normal Close): The alarm input sensor is closed by default and when it is open, an alarm input event is created.

Event action settings

FTP

To save an image on an FTP server when an alarm input 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 alarm input 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 alarm input event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Alarm output

You can set the alarm output for a specific alarm number when an alarm input event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output an alarm. You can set a continuous alarm

until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]>[Alarm output]. Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display ‘Alarm output 1’ and ‘Alarm output 2’.

Event activation time

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

Always

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

Only scheduled time

The event action settings are executed when an alarm input 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].

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 settnigs.

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].

Alarm output

You can set the alarm output at a specific alarm number when a network disconnection event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output the alarm. You can set a continuous alarm output, until the user stops the alarm, by selecting [Always] or set the alarm output for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]>[Alarm output].
Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display ‘Alarm output 1’ and ‘Alarm output 2’.

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].

Temperature detection

If a sudden temperature change occurs in the user-specified area of interest, a temperature detection event can be triggered. When you have completed the settings, click the [Apply] button at the bottom of the page. The settings for temperature detection events are the same for [Temperature detection] on the [Event]> [Event Setup] page.

Temperature detection

Enable temperature detection

To enable Temperature detection events, select [Enable temperature detection].

Area

Set the area to detect the temperature change. You can change the size of the area of interest by moving the lower right corner of the area you set. To move the area, click and drag the area with your mouse. To delete an area, right-click the area on the screen and click the [OK] button in the Delete confirmation window.
Up to three areas can be set, and temperature detection rules can be set for each area.

Temperature type

Select a temperature type to observe.
The three types of temperature are provided in the area set in [Area]. Select a temperature type among 'Min', 'Avg', and 'Max' temperature that will be the analytic basis for temperature change in the selected area.

Detection condition

Select a temperature condition to observe.
To detect if the temperature under observation changes above or below a certain degree, select [Above] or [Below]. To detect if the temperature under observation increases or decreases by a certain degree (the amount of temperature change), select [Increase] or [Decrease].

Detection

Enter a temperature value.
If [Above] or [Below] is selected in [Detection condition], enter a temperature to detect. Also, if [Increase] or [Decrease] is selected in [Detection condition], enter the amount of temperature change (increased or decreased amount) to detect.

Minimum duration (s)

Sets the minimum duration it will takes for an event to occur since the detection of temperature. For temperature detection event to occur, depending on the [Detection condition] setup, a certain temperature degree above or below the minimum duration

should be persisted, or increased/decreased temperature change should be persisted for the minimum duration. You can set a value of 1 to 60 sec. You can directly enter the value in the entry field or adjust the slide bar to change the value.

Temperature detection event setup example (1)

To generate an event notification when the maximum temperature value is equal to or above Celsius 100 degrees for at least 3 sec in Area 1, set as follows:

- Area: Select Area 1.
- Temperature type: Select 'Max'.
- Detection condition: Select 'Above'.
- Detection: Enter '100'.
- Minimum duration: Enter '3'.

Event notification action and schedule can be set in the [Event action settings] and [Event activation time] menus.

Temperature detection event setup example (2)

To generate an event notification when the minimum temperature value increases above the reference temperature by Celsius 30 degrees or more for at least 5 sec in Area 3, set as follows:

- Area: Select Area 3.
- Temperature type: Select 'Min'.
- Detection condition: Select 'Increase'.
- Detection: Enter '30'.
- Minimum duration: Enter '5'.

Event notification action and schedule can be set in the [Event action settings] and [Event activation time] menus.

Temperature area overlay

Select the options to display on the camera video screen. After selecting an area in [Area], you can select what to display in each area.

- Area: Selects whether or not to display area number.
- Average: Selects whether or not to display average temperature of the set area on screen.
- Min: Selects whether or not to display minimum temperature of the set area on screen.
- Max: Selects whether or not to display maximum temperature of the set area on screen.

Selected options are overlaid on top of the [Live] video screen.

Area emissivity

You can set an emissivity value for each area. Appropriate emissivity values are needed for more accurate temperature measurement of the areas.

Note

For emissivity, see the table in [Video & Audio]>[Temperature setup]>[Spot emissivity]. Since emissivity varies depending on various variables, including surface processing, color, temperature at the time of measurement, and air temperature, you need to experiment with different values to acquire the most appropriate value. Entering an accurate emissivity value assures more accurate temperature measurement.

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 temperature 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 temperature 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 temperature 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 temperature detection event is created, select [Enable]. Detailed settings for storage can be done from [Event]> [Storage]. **Alarm output** It is possible to set the alarm output number for a specific alarm when a temperature detection event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output an alarm. You can set a continuous alarm until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]> [Alarm output]. Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display ‘Alarm output 1’ and ‘Alarm output 2’.
Event activation time	This sets the event action from [Event action settings] to always operate, or only at the set time when a temperature detection event is created. **Always** The event action settings are always executed when a temperature detection event is created. **Only scheduled time** The event action settings are only executed when a temperature 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].

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].

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].

Alarm output

It is possible to set the alarm output number for a specific alarm when a shock detection event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output an alarm. You can set a

continuous alarm until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]> [Alarm output].
Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display 'Alarm output 1' and 'Alarm output 2'.

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].

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.

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.

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

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].

Alarm output

It is possible to set the alarm output number for a specific alarm when a motion detection event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output an alarm. You can set a continuous alarm until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]> [Alarm output].
Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display 'Alarm output 1' and 'Alarm output 2'.

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 tamper 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 tamper detection event applies to [Tamper detection]in [Event]>[Event setup] pages equally.

Tampering detection

Enable tampering detection

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

Level of detection

This sets the standard level of tamper detection. A tamper 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 tamper 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 tamper detection event is created only when tampering persists for the minimum duration.

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 tamper 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 tamper 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 tamper 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 tamper detection event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Alarm output

It is possible to set the alarm output number for a specific alarm when a tamper detection event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output an alarm. You can set a continuous alarm until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]> [Alarm output].
Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display ‘Alarm output 1’ and ‘Alarm output 2’.

Event activation time

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

Always

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

Only scheduled time

The event action settings are only executed when a tamper 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].

Virtual line

The motion of an object is detected based on the virtual line and direction set 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.

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.

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]. **Alarm output** It is possible to set the alarm output number for a specific alarm when an IVA event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output an alarm. You can set a continuous alarm until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]>[Alarm output]. Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display ‘Alarm output 1’ and ‘Alarm output 2’.
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].

Audio detection

An audio detection event can be created when audio above a set level is detected 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 the audio detection event applies to [Audio detection] on the [Event]> and [Event setup] page equally.

Audio detection

Enable audio detection

To apply the audio detection event, select [Enable audio detection].

Level of detection

This sets the level standard for audio detection. An audio detection event is created when audio above the set level is detected.
When audio is detected, a graph will appear, and when an audio detection event is created, the graph color will change.

Note

- The lower the level of detection is, the smaller change in sound it can detect.
- The audio level of detection value is designed to detect a sound at the threshold level or higher by normalizing the input data to a value between 1 and 100, and it is irrelevant to the decibel (dB) values.
- Go to [Video & Audio]>[Audio setup]>[Source] to select Microphone and set the sufficient level of sound so that the audio detection function can operate properly.
- Audio gain can be set from [Video & Audio]>[Audio setup]>[Gain].

Event action settings

FTP

To save an image on an FTP server when an audio detection event occurs, 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 audio 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 an audio detection event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Alarm output

It is possible to set an alarm output number for a specific alarm when an audio detection event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output an alarm. You can set a continuous alarm until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]> [Alarm output].
Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display 'Alarm output 1' and 'Alarm output 2'.

Event activation time

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

Always

The set event action settings are always executed when an audio detection event is created.

Only scheduled time

The set event action settings are executed when an audio detection event occurs 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].

Sound classification

The type of sound detected while the camera is capturing an image can be classified and created as a sound classification event. When you complete the setting, click the [Apply] button at the bottom of the page. The setting on the sound classification event applies to [Sound classification] on the [Event]>[Event setup] pages equally.

Sound classification

Enable sound classification

To use the sound classification event, select [Enable sound classification].

Configuration

Noise filter

To use the noise removal filter, select [Enable]. If the noise from the surrounding environments is higher than 55dB~65dB, use [Noise filter]. Using the noise reduction function according to environments reduces original sound so that the sound classification performance may deteriorate, or a malfunction may occur. If the noise reduction filter is used in a quiet environment, the sound classification performance may deteriorate.

Level of classification

Sets the level of audio energy to classify the sound. The level value of input audio energy is drawn on the area while being renewed periodically from right to left. The sound classification applies only to audio over the set level. In other words, it is classified as the sound source only when the energy of the audio input is higher than the reference line. If the reference line is lowered, there is more target data for the sound classification, and a higher possibility of false detections. If the reference line rises, there are less target data for the sound classification and a higher probability of missing detections. Set it properly according to the surrounding noise level.

Categories

This detects the type of sound and creates an event. The type of sound to detect can be selected and can be selected repeatedly.

- Scream: Triggers an event by detecting a sudden loud sound, including a scream or shout made by a person such as an adult male, female, or child.
- Gunshot: Triggers an event by detecting a gunshot that does not occur repeatedly.
- Explosion: Triggers an event by detecting a sudden sound caused by destruction.
- Crashing glass: Triggers an event by detecting the sound of breaking glass.

Note

- If [Line] is set for [Source] in [Video & Audio]>[Audio setup]>[Audio in], the sound classification function does not operate.
- It is recommended to set a number between 4 and 6 for [Gain] in [Video & Audio]>[Audio setup]>[Audio in].

- If [External microphone] is set for [Source] in [Video & Audio]>[Audio setup]>[Audio in], the recommended specifications of the microphone are as follows. (If the microphone is out of spec, then the sound classification function might not work well.)
  - Frequency range: 40 ~ 16,000Hz
  - Impedance: 1,500 Ω
  - Sensitivity: -40±3 dB (7.1~14.1 mV)
- In any of the following cases, the sound classification performance may deteriorate or a malfunction may occur.
  - When repeated gunshots occur, such as the sound of machine gun, only one time gunshot is included in the category for the gunshot
  - When the sound is too large, so that noise and the target sound cannot be distinguished
  - When two or more different sounds are inputted at the same time
  - When the object of focus has changed due to camera position change
  - If the noise removal function is used in a quiet place and the sound classification is applied
  - If the source of clapping sounds or screams is close to the camera (within 1 meter)
  - If a sound that does not belong to the sound classification categories, such as airplanes sounds, siren sounds, is loudly heard all of sudden

Event action settings

FTP

To save an image on an FTP server when a sound classification 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 sound classification 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 sound classification event is created, select [Enable]. Detailed settings for storage can be done from [Event]>[Storage].

Alarm output

It is possible to set the alarm output number for a specific alarm when a sound classification event is created. After selecting an alarm output number, select [Off] if you wish no alarm, or select the output time if you wish to output an alarm. You can set a continuous alarm until turned off by the user by selecting [Always] or set the alarm for 5, 10 or 15 seconds. Detailed settings for alarm output can be done from [Event]>[Alarm output].
Depending on the number of output alarms supported by your camera, the display of Alarm output option will vary. For example, if there are 2 alarms for output, the option will display ‘Alarm output 1’ and ‘Alarm output 2’.

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 sound classification event occurs. The handover receiving camera can be set in the [Event] > [Handover] menu.

Event activation time

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

Always

The set event action settings are always executed when a sound classification event is created.

Only scheduled time

The set event action settings are executed only when a sound classification 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].

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.

Note

- Korean characters cannot be entered - only English uppercase and lowercase letters, numbers and special characters can be entered.
- The special characters that can be entered are as follows: ~`!@$^()_-|{}[];,.?/

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.

Configuration backup & restore

You can backup and save the current camera setup or restore a desired configuration. You can create a number of backup files for desired configurations, or restore and use a desired configuration according to the purpose or environment when using the product.

Backup

When you click the [Backup] button, a backup file of 'model name Config.bin' will be created.

Restore

When you click the [Restore] button, a window where you can select a backup file to restore will appear. When you select a backup file and press the [Open] button, the configuration will be restored based on the relevant backup file.

> **Note**
>
> - When you restore the configuration, the connection with the camera will be terminated automatically and you will need to reconnect to the web viewer.
> - If you use an imported backup file for a different model than the product you are currently using, the product may malfunction. Do not use a backup file for a different model or change the configuration manually.

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.

Event log

You can check the date & time and detailed information for an event which has occurred in the system.

Log type

You can check occurrence date & time and detailed information for a selected event. When you select All, you can check the date & time and detailed information for all events occurring in the system.

Export

You can backup the selected log type as a text file. To backup the event 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)).

Head Office

6, Pangyo-ro 319 beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 463-400 Rep. of KOREA
Tel: +82.70.7147.8753 Fax: +82.31.8018.3740
www.hanwha-security.com

Hanwha Techwin America

500 Frank W. Burr Blvd. Suite 43 Teaneck, NJ 07666
Toll Free +1.877.213.1222 Direct +1.201.325.6920
Fax +1.201.373.0124
www.hanwha-security.com

Hanwha Techwin Europe

Heriot House, Heriot Road, Chertsey, Surrey, KT16 9DT, United Kingdom
Tel +44.1932.57.8100 Fax +44.1932.57.8101
www.hanwha-security.eu