Class A Device (Commercial Broadcasting & Communication Equipment)
This equipment is Industrial (Class A) electromagnetic wave suitability equipment and seller and user should take note that this equipment is not designed to be used in the home.
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Important Safety Precautions

1) Read these instructions carefully.
2) Keep these instructions separately.
3) Heed all warnings.
4) Follow all the instructions.
5) Do not use this apparatus near water or in damp places.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9) Be careful not to step on UTP cable or twist it. Pay particular attention if the UTP cable is located near an electrical outlet.
10) Only use the attachments/accessories specified by manufacturer.
11) Only use the genuine accessories such as cart, stand, tripod, bracket, or table specified by manufacturer or sold with the apparatus.
   This apparatus may topple over when being carried in a handcart. Be careful not to be injured.
12) Unplug this apparatus during thunderstorms or when it is unused for long periods of time.
13) Contact the qualified service engineer if this apparatus needs to be repaired. Repair service is required when the apparatus has been damaged in any way or does not operate normally after damage to its power-supply cord or plug, liquid has been spilled on it, objects have fallen into the apparatus, or the apparatus has been exposed to rain or moisture.
Overview

Caution

<table>
<thead>
<tr>
<th>Risk Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING IR emitted from this product. Do not stare at operating lamp</td>
</tr>
</tbody>
</table>

Product tested against IEC62471

Warning

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. To prevent any injury, this apparatus must be securely attached to the wall/ceiling in accordance with the installation instructions.

1) Only use the standard PoE (Power over Ethernet) specified in the Specifications. If not using recommended PoE, the apparatus may be damaged by fire, electric shock, or other cause.

2) Install the camera stably and securely. Otherwise, the camera may fall down and cause human injury.

3) Do not put any electric conductor (such as screw driver, coin, metallic objects, etc.) or vessels containing water on the camera to prevent any human injury due to fire, electric shock or product falling over.

4) Install the apparatus in a clean, dry place without moisture, dust, soot, etc. Otherwise, it may cause fire or electric shock.

5) If any unusual smell or smoke comes out of the product, stop it. In this case, unplug the power cord immediately and contact your local service center to get appropriate technical support. If you go on using the apparatus without taking any action, fire or electric shock may arise.

6) If the apparatus malfunctions, contact your local service center. Do not disassemble or interfere with the apparatus.

7) Do not spray water directly onto the apparatus when cleaning. Otherwise, it may cause fire or electric shock.

8) Do not install where it is directly exposed to the cool air from an air-conditioner louver. Otherwise, condensation may form on the inside of the camera due to the temperature difference between the inside and the outside of the dome camera.
When installing the apparatus in a place with low temperature such as frozen storage, seal up the plumbing pipes with silicon to prevent cold air from penetrating the housing. Otherwise, humid air infiltrates into the inner housing and condensation may form due to the temperature difference between the inside and the outside of the apparatus.

1) Do not drop any object on the apparatus or apply force to it. Do not install where it is subject to vibration or influence by electromagnetic interference.

2) Do not install in a place with high temperature (above 50°C), low temperature (below 0°C), or humid air. Otherwise, it may cause fire or electric shock.

3) When moving the installed apparatus, unplug the apparatus before moving or reinstalling it.

4) Unplug the power (PoE) cable from the camera during thunderstorms. Otherwise, it may cause fire or damage to the apparatus.

5) Do not install it near a heat source such as a radiator, or in direct sunlight. It may cause fire.

6) Install this apparatus where it is well ventilated.

7) Do not install this apparatus in a place where it faces extremely strong light such as direct sunlight. It may damage the image sensor.

8) Do not install this apparatus in a place where water leaks or splashes. Do not put any object containing water such as a pot on this apparatus.

9) Avoid damage to the main power plug.

10) When operating the apparatus outside, condensation may form due to the temperature difference between the inside and the outside of the apparatus. Check if the internal fan works normally before operating it outside.

11) Make sure that the LAN Ethernet cable does not extend to the outside of the building.

### Before Installing

- The apparatus must be installed by a qualified engineer in accordance with relevant regulations.
- Appropriate protective devices must be fitted to prevent the network camera being damaged by a sudden voltage fluctuation when lightning flashes.
- Comply with every instruction for the safety of the network camera.
- Before cleaning, stop the network camera and unplug its power cable. Use only a soft and dry cloth. Do not use an abrasive.
- You must not repair the apparatus personally. Electric shock may be caused by high voltage electricity when opening/closing the cover. Contact the qualified service engineer if the apparatus needs to be repaired.
Overview

Product Features

This product is a network camera with the latest multi codec compression algorithm that is suitable for high performance video security system.
Adopted IR LED and changeable Day&Night filter for use under a low illumination condition (0 Lux), and provides clearer and sharper monitoring image quality at all times, day and night.

- H.264 / MJPEG dual codec
- H.264 / H.265 / MJPEG triple codec (*True WDR 3M Model only)
- Fixed lens adopted
- True Day&Night (filter change method)
- Easy installation (analog video output)
- Operating in 30 fps
What's Included

Camera

BNC CABLE (1EA)

ANCHOR (2EA)

SCREW (2EA)
(T/H / M4 x 30)

SCREW (1EA)
(Pan Washer PH / M4 X 3)

DWDR 2.8mm/True WDR
2M/3M Model only

TEMPLATE PAPER

CD MANUAL

Quick Guide
Overview

At a Glance

<table>
<thead>
<tr>
<th>Item</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1    | Control Button                            | Used to change format and reset to factory default depending on its operating method.  
|      |                                            | - To change analog format : Press and hold for less than 5 seconds.           |
|      |                                            | - To reset to factory default : Press and hold for more than 10 seconds.      |
| 2    | Status Indicator                          | Used to display the system operation status of your camera.                   |
| 3    | Reset Button                              | Press and hold for more than 5 seconds.                                     |
| 4    | Micro SD Card Slot                        | Allows a Micro SD card to be inserted.                                      |
| 5    | Video Output for Service Monitor          | Analog video out terminal which is used in installing.                      |
| 6    | Rotate Lock Screw (DWDR 2.8mm/True WDR 2M/3M Model only) | Fix the lens not to move.                                                  |
| 7    | DC 12 V Support                           | Used to connect to a power cable.                                           |
| 8    | Network                                   | Used to connect the PoE cable between power supply and network.              |
Installing

To remove the cover

Before installing the camera, the cover should be removed.

1. Hold the bottom of the camera and turn the dome cover counterclockwise.
2. Put the dome cover in a safe place, to reassemble it once you finished camera installation.

Installing on the ceiling

You can install the camera on the ceiling, and then adjust and fix its angle.

1. Find a suitable location on the ceiling to install the camera.
   - It must be installed in a place where it can bear the camera's weight.
   - It is recommended to inject silicon into the gap between the camera and the ceiling for secure waterproofing.
2. Fix the camera main body onto the ceiling using the screws provided.
To mount on a ground surface

Install the camera on a surface and adjust the tilt angle to focus on a desired location.

1. Choose the location on the surface to install the camera.
   - ✔️ It must be installed in a place where it can bear the camera’s weight.

2. Fix the camera body to the surface with the screw provided.
   - ✔️ For waterproof operation, silicon treatment between camera and surface is recommended.
Adjustment

After installing your camera on a ceiling or wall, you can adjust the camera angle to allow the camera lens to capture the target site.

1. Install the camera on a ceiling or wall wherever you want.
2. Adjust the camera angle by moving left, right, up or down to focus on your target site.

(DWDR 2.8mm/True WDR 2M/3M Model only) After adjusting the lens position, tighten the screw to fix the lens.

3. Reassemble the Dome Cover and fasten the screws.
## Connecting to External Device

### Installation monitor

Connect the video output cable of the network camera with the installation monitor. You can watch the video input from the installed camera in the monitor.

- You should not use the installation monitor continuously as it is only designed to check the video output during the camera installation process.

- To change the video output settings, refer to the "Analog Output Setup". (page 27)

### Connecting with power supply

Connect the PoE (Power Over Ethernet) cable between the power supply and the network port.

- If your network camera is installed as standalone setup, the power should be supplied by PoE Hub.

- You must not connect to multiple power sources.
**Connecting to the network**

**To connect with a PC in local network**

If you connect the network camera with a PC in the same network, you can perform monitoring and setting process by using the PC’s Web Viewer.

1. Connect the network port on the back panel with a router or hub.

2. Connect a local PC with a router or hub.

3. Enter the address in "http://IP address:web service port" format in address window of the web browser or dedicated software program at local PC. (page 15)

   ✔ Ex: http://192.168.0.23:80 web service port is set as 80 by factory default. You can modify the port number in Network Setup screen.

4. Enter your ID and password to log in. You can watch the monitoring screen after login.

   🔄 You must register your login password when accessing for the first time.
   To change your password, refer to “How to connect to the camera”. (page 15)
To connect with a PC in remote network

You can access the network camera from your PC through the internet.

1. Connect router’s network port directly with static IP LAN cable or with the ADSL modem.
2. If using a router, you should configure the port forwarding settings.
   - You can get relevant support from your router manufacturer or qualified installation company for how to configure the port forwarding of your router.
   - When you access the network camera from your PC via internet, make sure to access the following site.
What is Web Viewer?

Before connecting

When using internet access, set the port number as 554 and 80 in your router port forwarding settings. For more information about port forwarding settings, refer to the user manual of your router.

Minimum PC Specifications for Web Viewer

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>P4 3.0 or higher</td>
</tr>
<tr>
<td>RAM</td>
<td>512MB or higher</td>
</tr>
<tr>
<td>VGA</td>
<td>Geforce MX 400, Radeon 7500 or higher</td>
</tr>
<tr>
<td>VGA memory</td>
<td>64MB</td>
</tr>
<tr>
<td>Monitor</td>
<td>1280X1024</td>
</tr>
<tr>
<td>Browser</td>
<td>Internet Explorer, Firefox, Chrome, Smart Phone(iOS, Android)</td>
</tr>
<tr>
<td>IE version</td>
<td>IE8.0 or higher</td>
</tr>
<tr>
<td>Network</td>
<td>100Mbps</td>
</tr>
<tr>
<td>DIRECT X</td>
<td>V 7.0 or higher</td>
</tr>
</tbody>
</table>

How to connect to the camera

Since the network settings of your network camera are not configured by factory default, you cannot access to WebRA. To configure your network, run the “MDload” in CD to check the IP and access to your camera.

1. Press <Search> button to search for the network camera linked to your network.
2. The search results are displayed if finished. You can distinguish your network camera(s) by checking its model information. Click your desired apparatus whose network settings you want to configure in the list.

3. Select “DHCP” or “STATIC” for <Network Type> in bottom left. If selecting “STATIC”, enter the values for IP Address, Subnet Mask, Gateway, and DNS information, and then press <Apply>.

   ✔ To use DHCP (Dynamic Host Configuration Protocol), your network camera must be connected to the corresponding device such as DHCP server (router). When connecting your PC with a network camera directly on a one-to-one basis, you cannot use DHCP and watch the video from the network camera which has been remotely connected via internet.

4. The list is automatically updated in a moment. Check if all the values look correct and finish the network environment settings.
5. Security page (Internet Explorer) is displayed.

6. Click <Continue to this website (not recommended)>. 

7. Enter your ID and password in the ID input window.
   ✔ Default user name : ADMIN
   Password : 1234

8. You should run the activities after installing corresponding Active-X.

9. If Active-X failed to install, check the ActiveX option in IE Security menu.
   If the Active-X installation window does not appear in the top right area for a long time (longer than 1 minute), change the “Internet Options” settings. (page 18)

11. Select all the ActiveX-related options as available.
   - Ex: Download signed ActiveX controls, Download unsigned ActiveX controls...

12. Finish the Security settings, and then press [OK] button.
   - Check “Do not include local path when uploading files to the server”.
13. Click [OK] button to restart the IE.
Learning the Live screen

<table>
<thead>
<tr>
<th>Item</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Stream Change</td>
<td>If selecting Dual Stream, the streams are shifted in the order of the 1st (the first stream) ↔ 2nd (the second stream).</td>
</tr>
<tr>
<td>②</td>
<td>Full Screen</td>
<td>Displays the image in full screen.</td>
</tr>
<tr>
<td>③</td>
<td>Multi Window</td>
<td>Plays the video in two screens.</td>
</tr>
<tr>
<td>④</td>
<td>OSD</td>
<td>Display or hide the OSD menu on the screen.</td>
</tr>
<tr>
<td>⑤</td>
<td>Freeze</td>
<td>Stops transmitting the image manually.</td>
</tr>
<tr>
<td>⑥</td>
<td>Snapshot</td>
<td>Saves current image as .jpg image file.</td>
</tr>
<tr>
<td>⑦</td>
<td>Print</td>
<td>Prints current screen.</td>
</tr>
<tr>
<td>⑧</td>
<td>Panic Record</td>
<td>Start the panic recording.</td>
</tr>
<tr>
<td>Item</td>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Event Status</td>
<td>Turns on if an event occurs. It does not turn on if no reaction to the event is yet defined. Click this to check the information of the event that occurred.</td>
</tr>
<tr>
<td>2</td>
<td>Stream Status</td>
<td>Click to display the network information.</td>
</tr>
<tr>
<td>3</td>
<td>Storage Information</td>
<td>Displays the storage information of the Micro SD Card.</td>
</tr>
<tr>
<td>4</td>
<td>Timeline Date</td>
<td>Display the current time and date.</td>
</tr>
<tr>
<td>5</td>
<td>Event Status/Information</td>
<td>Click to see the event status, network information, streaming session, storage status, and system status.</td>
</tr>
</tbody>
</table>

A motion is detected by the connected camera.

**Stream Change**

Since this camera supports the 'dual streaming' transmission, you can shift between the 1st stream and the 2nd stream by clicking the < >.

✓ You can shift between the streams only if the 2nd stream is set in "Setup > Video > Codec". (page 23)

**Full Screen**

1. Click < >.

2. Locate your mouse pointer over an image and then double-click to display in full screen.

3. If you want to go back, double-click your mouse button over the image.
   You can go back by pressing the [Esc] key on your keyboard or right-clicking.
| Multi Window |
Click the < < > > to display video in a small popup window instead of the default screen.
✔️ In the small popup window, menu selection is not available.

| Snapshot |
Click < < > > to save current image as .jpg file.

| Event Status/Information |
You can set Motion, etc. in Event Status. The Information displays general information about your camera such as Network Information, Streaming Session, System Status, etc.
CAMERA

Codec Setup

You can set various video functions for the camera depending on the field situation. When finishing the setup process, click <APPLY> to apply.

- **Capture Mode** : Capture mode defines how the image data will be taken with a priority given to either resolution or frame rate.

- **Codec** : This network camera can transmit videos in different resolutions and qualities simultaneously using different CODECs.
  - H264 : Video compression standard to transmit high quality video stream efficiently. H.264 is available in various networks and systems and allows the bit rate to be controlled according to adjusted bandwidth usage.
  - (True WDR 3M Model only) H265 : It can alternatively be used to provide substantially improved video quality at the same bit rate of H.264.
  - MJPEG : You can edit each frame freely even if it is already compressed and get high quality images when restoring. Though Motion JPEG uses a considerable amount of bandwidth, it provides excellent quality for each image.

- **Size** : You can change each network transmission resolution for your camera.

- **Frame Rate (FPS)** : You can set the frame (rate) for camera video.
  - If network speed is fast enough, you can set Frame Rate as 30 fps to have more natural video.

- **GOP Size** : The faster the subject in video moves, the smaller the GOP Size should be. However, the slower the subject in video moves, the bigger the GOP Size should be.

- **Bit-rate Control** : You can select <CBR> or <VBR>.
  - CBR (Constant Bit Rate) : Only limited bandwidth of H.264 is available. Select this option only if H.264 is more important than image quality.
  - VBR (Variable Bit Rate) : Select if image quality must remain high.

- **Average Bit-rate** : You can set average bit rate.
  - Enter a value within a range of 512 Kbps ~ 8000 kbps.

- **Boost Quality** : Works if Motion (Motion Detection) area has been set in network camera event and <ON> has been selected. When an event is triggered, camera’s instant FPS value is changed into the specified Boost FPS value.

- **Analog Format** : Select <NTSC> and press <APPLY> button.

- **Output Bandwidth Limit** : You can select whether to limit bandwidth or not.

- **MAX Bandwidth** : Specifies the peak bandwidth. You can enter your desired value if selecting <ON> for Bandwidth Limit.
  - Enter a value within a range of 1000 kbps-30 Mbps.
Image Setup

1. Image Setup

You can set the following items to make the installed camera have the best image optimized for its environment. When finishing the setup process, click <APPLY> to apply.

- **White Balance Control**
  - WB Mode: Automatically correct the color balance of your camera to make a natural-looking screen.
    - Auto: Camera adjusts 'White Balance' automatically.
    - Auto Wide: Camera adjusts 'Wide White Balance' automatically.
  - Except for some special cases, <Auto> is generally recommended.

- **Day / Night**
  - Day / Night Mode: Measures the illumination of camera to shift into color or black/white video and change its day/night filter depending on illumination condition.
    - Day: Displays video in color mode regardless of illumination and fixes its filter to day.
    - Night: Displays video in black/white mode regardless of illumination and fixes its filter to night.
    - Auto: Your camera measures the illumination and changes its settings automatically.
  - <Auto>, <0 sec> is recommended in usual environment.

- **Day / Night Sensitivity**
  - Day to Night: Sets the Sensitivity for Day to Night switching within the range of 0 through 7.
  - Night to Day: Sets the Sensitivity for Night to Day switching within the range of 3 through 10.
  - The value of Day to Night switching must be smaller than that of Night to Day by 3 or more steps.

- **Image Property Control**
  - You can set the Sharpness, Brightness, Contrast, and Color for image.
  - The bigger the number is, the bigger the camera setting value is. Except for some special cases, default values are recommended.
2. EXPOSURE

• Exposure

  ➤ Exposure Mode : Selects your desired exposure mode.
      To compensate for small amount of light, adjust the "AGC Gain, e-Shutter Speed" to the values entered by user.
    - Auto : The camera controls every exposure. If selecting <Auto>, you cannot use some secondary menus (AGC Gain, e-Shutter Speed).

  ✔️ For your convenience, <Auto> is recommended for Exposure Mode.

  ✔️ Compared with Auto, the Auto (Motion Priority) has less motion blur under usual levels of brightness.

  ➤ MAX AGC : AGC is the abbreviation for Automatic Gain Control. When too strong level of signal is input, the AGC adjusts the Gain (film sensitivity) to prevent the signal from being saturated. When too weak level of signal is input, the AGC adjusts the Gain to keep a certain level of signal.
    - Maximum AGC sets the peak Gain which is applied to low light level environment. It is classified into Low/Mid/High/Max. Higher the value the screen looks brighter, but may increase noise.

  ✔️ (True WDR 3M Model only) It is classified into Low/LowMid/HighMid/High/Max.

  ➤ Base Shutter Speed : Sets the default shutter speed to be applied when the Exposure mode is set to <Auto (Motion Priority)>.
    Setting the Base Shutter Speed to a faster value allows moving objects to be captured without blur effect. Set the Base Shutter Speed to 1/120, 1/180, 1/240, 1/300, 1/360, 1/500, 1/800, 1/1000, 1/1500, 1/2000, 1/2500, 1/3000, 1/4000, 1/5000 for NTSC or 1/100, 1/150, 1/200, 1/250, 1/300, 1/500, 1/800, 1/1000, 1/1500, 1/2000, 1/2500, 1/3000, 1/4000, 1/5000 for PAL.

  ➤ MAX Shutter Speed : Set the maximum shutter speed to 1/30, 1/60, 1/120, 1/180, 1/240, 1/300, 1/500, 1/800, 1/1000, 1/1500, 1/2000, 1/2500, 1/3000, 1/5000 for NTSC or 1/25, 1/50, 1/100, 1/150, 1/200, 1/250, 1/300, 1/500, 1/800, 1/1000, 1/1500, 1/2000, 1/2500, 1/3000, 1/4000, 1/5000 for PAL.

  ✔️ (True WDR 2M Model only) If WDR is set to <On>, the Max Shutter Speed can be set to 1/30, 1/60, 1/120, 1/180 and 1/262.

  ➤ Slow Shutter : Specifies whether to use digital sense-up mode or not.
    - Off : Disables DSS (Slow Shutter). You can use DSS in X2, X4, or X8 mode.
    - If you use the sense-up mode in a dark place with very low light level, you can watch a much brighter video since the brightness still remains at the specified level. However, the video FPS becomes slower in this case.

  ➤ Anti-Flicker Mode : Adjusts the exposure settings when using the camera in a place where fluorescent light is turned on.
    You can use this mode when screen flickers. ‘60 Hz’ is generally specified as its value in Korea.

• Image Enhancement

  ➤ BLC Control : Use this function to compensate scenes which are too bright under a backlight condition such as framing a bright window or open door from the inside. In such a case, using the function allows the camera to produce better images of the dark objects displayed on a monitor. BLC (Backlight Compensation) is classified into Off/Adaptive/Zone.
    - Off : Disables the BLC (Backlight Compensation) function.
    - Adaptive : Applies BLC without considering the location of bright area.
    - Zone : If you specify a bright area as Zone, the BLC is applied to the Zone. If you don’t specify properly, the screen may look darker.
BLC function is useful in most cases when framing a window or door with backlight. For outdoor camera installation, it is recommended to set BLC (Backlight Compensation) function to <Off>.

WDR Control : Wide Dynamic Range (WDR) is a feature that allows for different objects to be viewed in the same scene (ex: one object in a bright area and one in a dark area).

DNR Control : use temporal and spatial noise reduction to improve image quality and reduce video noise. This can be set to Off, Auto, or to Manual levels.

(True WDR 3M Model only) Defog Control : Adjusts the image of foggy or very cloudy weather. Set this if the image is foggy. This can be set to Off, Auto, Mid or High.

Note that resulting image can look dark if applied to an image taken in light mist while the manual fog level is set too high.

Motion Sensor

When motion is detected in specified area, you can get E-mail notification or the image transferred via FTP or e-mail.

When completed, click <APPLY> to apply.

Select Area : You can select up to 4 different motion areas.

Sensitivity(Day) : You can set the daytime sensitivity for the selected area within the range of 1 through 30.

Sensitivity(Night) : You can set the nighttime sensitivity for the selected area within the range of 1 through 30.

Select All : Selects all the areas.

Deselect All : Deselects all the areas.

If you specified multiple "Motion" areas, some of camera functions may be slow down.

Privacy Mask

You can directly specify a certain area of the camera video to be blocked to protect privacy.

When completed, click <APPLY> to apply.

Select Area : Allows to select up to 4 different areas to be blocked to protect privacy.

Color : Allows to specify blocking color for each area.

Clear : Allows to deselect specified blocking area(s).

Clear All : Deselects all the areas.
Embedded OSD

You can select whether to display the resolution and date/time on live screen. When completed, click <APPLY> to apply.

- Resolution: Specifies whether to display camera resolution on screen or not.
- Date / Time: Specifies whether to display date/time on screen or not.

Analog Output Setup

If you use the analog video output when installing your camera, you can adjust the camera angle by checking how it is displayed on screen in the installation field. When completed, click <APPLY> to apply.

- The analog video output is a dedicated function only for camera installation process. If finishing your camera installation, select <OFF> and press the <APPLY> button.

DISPLAY

OSD

You can set the language of the system display. The interface will be displayed in selected language by default, and individual user can specify his/her preferred language. If changed this language setting, the setting of Session Configuration → Language is also changed accordingly.

- LANGUAGE: select a menu display language.
USER

Management
You can add or delete a user account and change password.
When completed, click <APPLY> to apply.

- Add/Edit/Delete: Add, edit, or delete a user account.
- You can register up to 8 accounts including ‘ADMIN’.
- User ID: You can log in to network camera with ‘User ID’.
- Group: Select the permission of user account.
  - Admin: Allowed to change all the camera settings.
  - User: Permission to the Live function is allowed to a user by default (you can modify the default permission settings).
  - manager: Permission to the Live function and other selected settings are allowed to a user by default (you can modify the default permission settings).

⚠️ The permission of Manager or User may be different depending on the Group Authority settings.

- E-mail: Enter the target e-mail address which will receive the event notification.
- Notification: Select whether to use the E-mail Notification function or not.

⚠️ You cannot delete or change ‘ADMIN’ which is main administrator account ID. (allowed to change password)
You cannot add new account with the same <User ID> and <Password>.

Group Authority
You can grant different user groups different permissions to a specific menu.
When completed, click <APPLY> to apply.

- Event Action Control: Set the permissions to output the alarm or control the buzzer if an event such as alarm occurs.
- Shutdown: Set the permission to turn off the camera.
- User Setup: Set the permission for User Setup.
- Factory Default: Set the permission to perform the Factory Default.
- System Setup: Set the permissions for the System Setup menu.
### NETWORK

#### IP Setup

You can modify and check the camera network settings. Set each item. When completed, click `<APPLY>` to apply.

- **IP Address**
  - DHCP: If router or internet sharer in (local) network where your camera is installed, you can use "DHCP" function to apply the network settings including camera IP address automatically.
  - IP Address: Enter the camera IP address.
  - Subnet Mask: Enter the subnet mask value of your camera.
  - Default Gateway: Enter the gateway value of your camera.
  - 1st DNS: Enter the 1st domain name of your camera.
  - 2nd DNS: Enter the 2nd domain name of your camera.

- **Service Port**
  - HTTP Port: Allows to change the port number of web service.
  - RTSP Port: Supports AV streaming server to set port number.
  - RTSP: A protocol to send/receive sound or movie in real time

If you change the settings without basic knowledge on network, you may not be able to access the camera.
If you are forced to change the settings, contact the implementation service provider or network engineer.
DDNS

You can configure the DDNS settings. When completed, click <APPLY> to apply.

- DDNS : Select whether to use DDNS service or not.
- User Set URL : Available if entering the domain address which would be used as a DDNS domain.
- DDNS Test : Allows you to test the DDNS service for provided domain address.

E-mail

When an event occurs at camera, you can send a message to specified e-mail address by using SMTP. To send message, enter mail server or user account information. When completed, click <APPLY> to apply.

- Server : Enter the sending mail server (smtp).
- Port : Enter the port of sending mail server.
- Security : Select whether to use the security function of mail server or not.
- User : Enter the user name of sending mail server.
- Password : Enter the password of sending mail server.
- Test E-Mail Address : Enter the recipient's e-mail address and use the <Test E-Mail> button to test e-mail.

✓ E-mail (SMTP) setup process is different depending on user's e-mail address (portal company). For more information, search for “SMTP setup” in the internet or contact your network administrator.

UPnP

You can set whether to use the UPnP function or not. When completed, click <APPLY> to apply.

- UPnP : Select whether to use UPnP function or not.

✓ A router or internet sharer with UPnP function should be connected with the network where the camera has been installed.

✓ To use the UPnP function of camera, the internet sharer should support the UPnP function. Though the UPnP function is generally supported by internet sharer, some internet sharers may not support.
RTP

- RTP Port Range
  - Start Port: Set the range of start port.
  - End Port: Set the range of Last port.

- RTP (Real-time Transport Protocol) is a protocol designed to transport real-time data such as sound, video, etc. under unicast or multicast condition.

- Multicast Setup
  - 1st Stream IP / Video Port / Audio Port / TTL: Specifies the IP address of main stream, video port, audio port and TTL.
  - 2nd Stream IP / Video Port / Audio Port / TTL: Specifies the IP address of secondary stream, video port, audio port and TTL.

  - Multicast is a method to send the same data to multiple specific receivers simultaneously in a network. This method cuts down on network waste, gets rid of unnecessary burden, and is generally used in unrestricted network (intranet).

FTP

You can configure the FTP settings so that you can transfer the images saved in camera's storage media to your PC if an event or alarm occurs. When completed, click <APPLY> to apply.

- Server Configuration
  - FTP Server: <OFF> is selected by default.
  - This function is available only if SD card is mounted.
**SYSTEM**

**Date / Time**

You can set configurable date for system. When completed, click <APPLY> to apply.

- **Date Time Setup**
  - Date Time : Displays the date and time of current network camera.
  - Date format : Select your desired date format.
  - Time format : Select your desired time format.

- **Network Time Server Setup**
  - Time Server : Enter server IP or host name.
  - Auto Time Sync : Synchronizes the time automatically. Click the <Sync.> to synchronize system server time to an NTP server.
  - Sync Time : If the Auto Time Sync is set to On, the system time is synchronized to the NTP server time in specified due time.

- **Timezone / DST**
  - Timezone / DST : Select your desired time zone (divided into 24 time zones in the world)
  - D.S.T : Select whether to use Daylight Saving Time or not.

**System Management**

You can rename the network camera, restart the system, initialize to factory defaults, and update the firmware. When completed, click <APPLY> to apply.

- **F/W Upgrade** : Updates camera firmware.
  - If network transfer rate is slow, error may occur during firmware update process.
  - It is recommended to update your firmware during your camera and PC are connected with local network.
  - Do not shut down devices during firmware update process. Camera will restart if update is finished. (It takes about 2-5 minutes)

- **Factory Default** : Restores your camera settings to factory defaults. (It takes about 1 minute)
  - If you perform the <Factory Default>, all the settings including camera network settings will be initialized.

- **System Data** : Save the system settings or get the system information from other device.
- **SAVE** : Save the settings of your camera in connected PC.
- **LOAD** : Copy the settings saved in the connected PC to the camera.
- **System Reboot** : Restarts your network camera. (It takes about 1 minute)
- **System ID** : Renames your camera.
- **Expired Term Of Password** : You will be prompted to change the current password after a certain period of time.
**System Information**

You can confirm the firmware version, model name, MAC address, IP address, etc. of your camera.

- **Model** : Displays camera ‘Model Name’.
- **F/W Version** : Displays camera ‘F/W Version’.
- **MAC Address** : Displays camera ‘MAC Address’.
- **Others** : Displays network setup information for the camera.

**Security**

- **Auto Logout** : If there is no user input for a certain period of time, you can set to log out automatically.
- **Auto Logout Duration** : Specify the waiting time for Auto Logout.

**Schedule Preset**

This function configures the Preset actions which will be activated during a live Event. Use the Schedule Preset function to arrange a schedule for a set of specific actions at specified time and then associate it with a specific event.

- **Name** : Enter the name of preset.
- **Type** : You can select one between <Daily> and <Weekly>, and decide your desired weekday(s) by clicking the < >.
- **Start/End Time** : Set the start time and end time for schedule preset.
- **Add/Delete** : Add or delete your desired schedule preset.
STORAGE

SD Card
You can set the inserted SD card directly. When completed, click <APPLY> to apply.

- SD Card
  - Total Size: Displays the total capacity of SD card.
  - Used: Displays the occupied capacity of SD card.
  - Available: Displays the remaining capacity of SD card.
  - Status: Displays the information about SD card status.

- Configuration
  - Storage Name: You can rename the storage device.
  - Storage Type: Displays the type of the storage device.
  - Storage Status: Displays the information about SD card status. Click the <UNMOUNT> to safely dismount the SD card.
  - SD Card Format: Formats the SD card.
  - Check Disk: Checks the status of your storage device.

✔️ If the front cover is not completely fastened after mounting your SD card, the inside of camera may get damp.
# EVENT

## Action

1. Send Image
   - Receiver: Enter the recipient’s e-mail address to send the image.
   - Type: Send the image in your preferred type between <SD card> and <FTP>.
   - Host: If selecting <FTP> type, you can specify the host.
   - Min. Frequency: Specify the event transfer interval (Immediately or within 5~300 seconds).
   - Log: Specify whether to include the log or not when transferring the event.
   - Configure: You can set the <Receiver Type>, <Receiver>, <Min.Frequency>, <Log> and your preferred <Schedule>.

## Event Notification

1. E-Mail
   - E-Mail List
     When an event occurs, you can send an e-mail to preset address.
   - Options
     - Minimum E-Mail Frequency: Specify the minimum e-mail frequency for notification.
     - Include Snapshot: Select whether to include snapshot(s) or not.
   - Schedule
     You can select your preferred event notification schedule.
     ✔️ To set your preferred schedule, make a new preset in "SYSTEM > Schedule preset" (page 33).

2. LED
   - Duration: Specify the LED blinking duration for event notification between Transparent or within 5~300 seconds.
Motion Event

- Event Parameter
  - Ignoring Interval: Select the ignoring duration for detected motion event in the range of 5 through 30 seconds.

System Event

- Event Parameter
  - Booting Event: Specify to activate an event when the system boots up.
  - Temperature Failure Event: Specify to activate an event when a system temperature failure is detected.
Session Configuration

The Session Configuration influences only the browser in use. It has no effect on any other user.

- This is not the data saved in your camera. The configuration may have a different action depending on the internet browser.

- Player Selection
  Select <Active X>, <VLC Player>, or <No PlugIn (JPEG only)> for the player.

- Viewer Setup
  - LiveView Protocol: You can select one among RTP Unicast (UDP) / RTP Multicast (UDP) / RTP over RTSP (TCP).
  - Buffering Time: Displayed in (0~90) x 1/30 sec. (0~3 sec.)
  - If buffering time is slow, the video transmission is delayed.

- Toolbar Configuration
  - Snapshot: For capturing a snapshot, specify whether to save it in PC or not.
  - Panic Recording: Specify whether to save the emergency video in the PC or not.

- Download Location
  - Default Video Download Location: Change default video download path.
  - Default Snapshot Download Location: Change default snapshot download path.

- Display Option
  - Aspect Ratio
    Select <Adjust the aspect ratio to window size> or <Keep the aspect ratio of the original video> for aspect ratio.

- Language
  You can specify the <System Language> and <Session Language>.
- Protocols and Communication Methods

Protocol: Specifies the protocol to be used by web remote viewer (PC) to access to the network camera.

- **RTP Unicast(UDP):** UDP (User Datagram Protocol) is a communications protocol that doesn’t check if the transferred data have been received or not.
  - Cons: The video may look broken (mosaic) due to data loss.
  - Pros: The video (FPS) can be played in multiple clients without being disconnected.

- **RTP Multicast(UDP):** Multicast is a method of sending the same data to multiple specific receivers simultaneously in a network.
  This method cuts down on network waste, gets rid of unnecessary burden, and is generally used in unrestricted network (intranet).

- **RTP over RTSP (TCP):** TCP (Transmission Control Protocol) is a protocol that controls the data transmission in a network.
  It guarantees that the data will be delivered in the same order in which they were sent.
  - Pros: When network is unstable, you can minimize the scale of broken video (mosaic).
  - Cons: Produces more network communication from the camera and may cause video stuttering if many clients are connected to a camera (poor FPS)
# Troubleshooting (FAQ)

<table>
<thead>
<tr>
<th>Problem and Symptom</th>
<th>Solution</th>
</tr>
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<tbody>
<tr>
<td>I can't turn on camera.</td>
<td>• Check the UTP cable connection.</td>
</tr>
<tr>
<td></td>
<td>• If you use PoE power supply, check if enough power is supplied to PoE switch.</td>
</tr>
<tr>
<td>PC is not connected with network camera.</td>
<td>• Check the status of LAN cable connected to network camera and the status of hub.</td>
</tr>
<tr>
<td></td>
<td>• If the network camera’s network setting was set to DHCP, check the IP address history of the DHCP server (router).</td>
</tr>
<tr>
<td></td>
<td>• Check if camera network settings are changed or not by using ADMIN TOOL.</td>
</tr>
<tr>
<td>I cannot access via web or mobile application.</td>
<td>• Check if the network cable for internet access is correctly connected with the LAN port in main body.</td>
</tr>
<tr>
<td></td>
<td>• If you use sharer, check if port forwarding is correctly configured.</td>
</tr>
<tr>
<td>I cannot watch any video even though I can access to web or mobile application.</td>
<td>• If you use sharer, check if port forwarding is correctly configured.</td>
</tr>
<tr>
<td></td>
<td>• It may happen since communication company or network administrator has blocked the service port of network camera.</td>
</tr>
<tr>
<td></td>
<td>• Change the RTSP port and HTTP port of your network camera and configure the port forwarding of sharer again.</td>
</tr>
<tr>
<td></td>
<td>• Retry to access to web or mobile application by using new port.</td>
</tr>
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c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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