Hanwha Vision

NETWORK CAMERA

User Manual

PNM-A13022RV

CE

Network Camera
User Manual

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※ **Design and specifications are subject to change without prior notice.**

※ **The initial administrator ID is "admin" and the password should be set when logging in for the first time.**
Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.
Please, take note that it's a user's responsibility for the security and any other problems caused by mismanaging a password.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth.
   (Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
7. Do not block any ventilation openings, Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/ accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lighting storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This Product is intended to be supplied by a UL Listed Power Supply Unit marked "Class 2" or "LPS" or PS2" and rated from 12 Vdc, 1.67 A or PoE(53 Vdc), 0.42 A.
16. This product is intended to be supplied by isolation power.
17. If you use excessive force when installing the product, the camera may be damaged and malfunction.
    If you forcibly install the product using non-compliant tools, the product may be damaged.
18. Do not install the product in a place where chemical substances or oil mist exists or may be generated. As edible oils such as soybean oil may damage or warp the product, do not install the product in the kitchen or near the kitchen table.
    This may cause damage to the product.
19. When installing the product, be careful not to allow the surface of the product to be stained with chemical substance.
    Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
20. If you install/disassemble the product in a manner that has not been recommended, the production functions/ performance may not be guaranteed.
    Install the product by referring to "Installation & connection" in the user manual.
21. Installing or using the product in water can cause serious damage to the product.
22. Screen distortion could occur outside of the subject distance.
23. While encoding, a real time fps fluctuation of ±1fps could occur.
24. This device has been verified using STP cable. The use of appropriate GND grounding and STP cable is recommended to effectively protect your product and property from transient voltage, thunderstroke, communication interruption.
25. Stitching performance is optimized for the 13 MP resolution when the product is released. Note that stitching performance may deteriorate if a lower resolution is used.
26. The operating temperature for the PNM-A13022RV product is -40°C to +55°C(-40°F to +131°F).

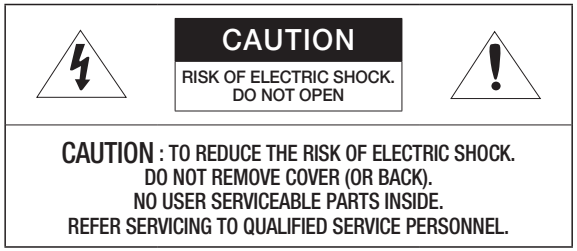
WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECT THROUGH THE VENTILATION GRILLS OR OTHER OPENNINGS ON THE EQUIPMENT.

Apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

To prevent injury, this apparatus must be securely attached to the Wall/ceiling in accordance with the installation instructions.

CAUTION



EXPLANATION OF GRAPHICAL SYMBOLS

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Class I construction

An apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

Battery

Batteries(battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.

The battery cannot be replaced.

Prohibition of battery abuse

- Do not install and use the wrong type of battery.
- Do not leave the battery in a mechanically crush or cut it because it can explode.
- Do not leave the battery in a high temperature environment.
- Do not leave the battery in a low-pressure environment.

Disconnection Device

Disconnect the main plug from the apparatus, if it's defected. And please call a repair man in your location.

When used outside of the U.S., it may be used HAR code with fittings of an approved agency is employed.

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

ATTENTION

IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.
METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Please use the input power with just one camera and other devices must not be connected.

Before connecting the Power Terminal Block, you need to unplug the power plug from the outlet first.

The USB-C port on the product is intended for initial setup only and should not be used for any other purpose.

When a new product box is opened (or during the initial use of the product), moisture might build up on the glass of the camera. The built-up moisture disappears naturally within a few hours after powered on.

Do not arbitrarily loosen or tighten the gore valve.

The ITE is to be connected only to PoE+ networks without routing to the outside plant.

The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802.3at shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1 or PS2 as defined in UL62368-1.

Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102. As such, associated Ethernet wiring shall be limited to inside the building.

Please read the following recommended safety precautions carefully.

- Do not place this apparatus on an uneven surface.
- Do not install on a surface where it is exposed to direct sunlight, near heating equipment or heavy cold area.
- Do not place this apparatus near conductive material.
- Do not attempt to service this apparatus yourself.
- Do not place a glass of water on the product.
- Do not install near any magnetic sources.
- Do not block any ventilation openings.
- Do not place heavy items on the product.
- Please wear protective gloves when installing/removing the camera.
  The high temperature of the product surface may cause a burn.

User's Manual is a guidance book for how to use the products.

The meaning of the symbols are shown below.

- Reference : In case of providing information for helping of product's usages
- Notice : If there's any possibility to occur any damages for the goods and human caused by not following the instruction

※ Please read this manual for the safety before using of goods and keep it in the safe place.

We do not guarantee the quality of third-party products (e.g. lenses, accessories) that you separately purchase.

In particular installation environments, there might be interference in radio communications. When interference of electromagnetic waves occurs between the product and radio communication device, it is recommended to keep a certain distance between the two or change the direction of the receiving antenna.

CONTENTS

OVERVIEW 3

3 Important Safety Instructions
6 Recommended PC Specifications
6 Recommended Micro SD/SDHC/SDXC Memory Card Specifications
6 NAS recommended specs
6 What's Included
7 Optional Accessories for Installation
9 At a Glance

INSTALLATION & CONNECTION 11

11 Installation
22 Connecting with other Device

NETWORK CONNECTION AND SETUP 26

26 Connecting the Camera Directly to Local Area Networking
26 Connecting the Camera Directly to a DHCP Based DSL/Cable Modem
27 Using Device Manager
27 Setting up projects
27 Automatically searching camera
27 Configuring IP address
29 Manually registering camera
29 Automatically configuring IP
29 Port Range Forward (Port Mapping) Setup
30 Connecting to the Camera from a Shared Local PC
30 Connecting to the Camera from a Remote PC via the Internet

WEB VIEWER 31

31 Connecting to the Camera
32 Password setting
32 Login
32 Camera Web Viewer Setup

APPENDIX 33

33 Troubleshooting

RECOMMENDED PC SPECIFICATIONS

- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
- RAM : 8G or higher
- Recommended browser: Chrome
- Supported browsers: Chrome, Safari, Firefox, MS Edge(chromium based)
- Supported OS : Windows, Mac, Linux, Android, iOS, Chrome
- Verification environment
  - Windows 10: chrome Latest version, Firefox Latest version, MS edge Latest version
  - Mac latest version and version being supported
    ref.) https://en.wikipedia.org/wiki/MacOS

※ The video play performance of the web viewer depends on the performance of the user's CPU and GPU.

RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS

- Hanwha Vision Memory Card : SPP-E128G, SPP-E256G, SPP-E512G, SPP-E10T
- Recommended capacity : 16 GB to 1 TB(MLC type recommended)
- Recommended Manufacturers / Product Type :
  - SanDisk / High Endurance, MAX ENDURANCE
  - Western Digital / Purple QD101
  - Transcend / High Endurance
- It is recommended to use a memory card of 16 GB or more that conforms to the UHS-3 class (MLC type) specification.

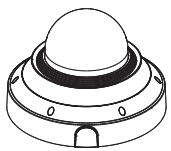
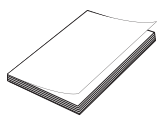
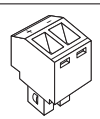
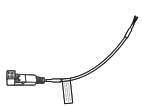
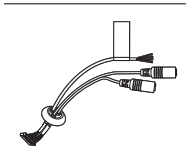
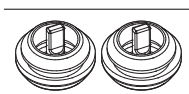
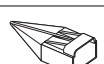
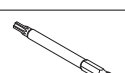
▪ Micro SD card can support up to 2 TB if two slots are used. Each slot supports up to 1 TB, and one slot cannot support 2 TB by itself.

NAS RECOMMENDED SPECS

- Recommended capacity : 200GB or higher is recommended.
- For this camera, you are recommended to use a NAS with the following manufacturer's specs.
  Recommended products : QNAP NAS, Synology NAS

WHAT'S INCLUDED

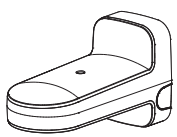
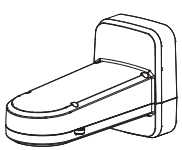
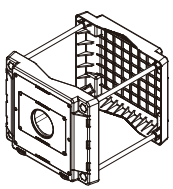
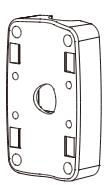
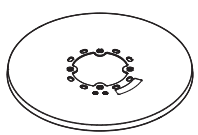
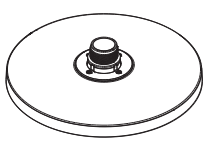
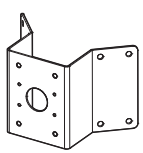
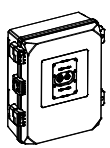
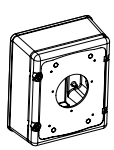
Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

Appearance	Item Name	Quantity	Description
	Camera	1	
	Quick Guide (Optional)	1	
	Power Terminal Block	1	Plugged in the Power port (DC 12V)
	Power Cable	1	Used to connect to power terminal block
	Audio/alarm cable	1	Used to connect with the audio and alarm port
	Cable bushing	2	Extra cable bushing for network cable installation.
	Cap Installer	1	Used to connect the RJ45 cable.
	Screw bit	1	Used for dome cover disassembly, assembly and camera installation.

▪ Use installation screws of at least M4, L30 for the installation of this product.

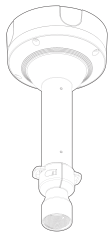
OPTIONAL ACCESSORIES FOR INSTALLATION

You can purchase appropriate optional accessories available.

Wall Mount and Pole Mount		Mounting Hole Cover	Hanging Mount	Corner Mount	Cabinet
 SBP-250WMW (Wall Mount)  SBP-400WMW (Wall Mount)	 SBP-150PMW (Pole Mount)  SBP-300PMW2 (Pole Mount)	 SBP-250C	 SBP-250HMW	 SBP-156KMW	 SBP-150NBW  SBP-300NBW

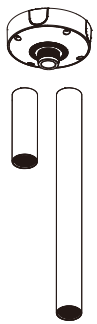
Ceiling Mount

Assembly



SBP-300CMTS
(Ball Head)

SBP-300CMTW



SBP-300CMW1
SBP-900CMW

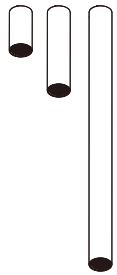
SBP-150CMI
SBP-300CMI

Individual Parts

SBP-180CMB

SBP-180CMS
(Ball Head)

SBP-140CMB



SBP-150CMP
SBP-300CMP
SBP-900CMP

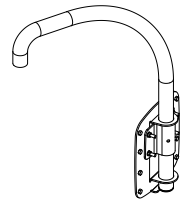
SBP-C15P

SBP-C15H

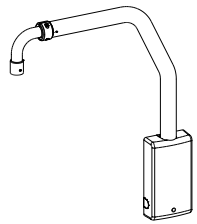
SBP-C15NP

SBP-C35H

Parapet Mount



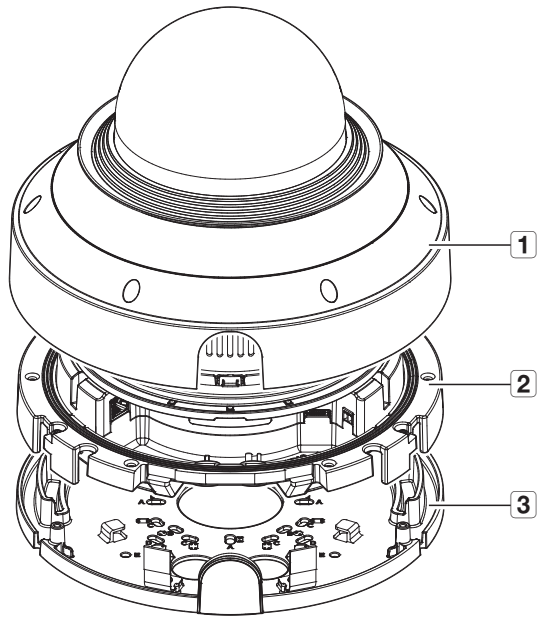
SBP-300LMW



SBP-156LMW1

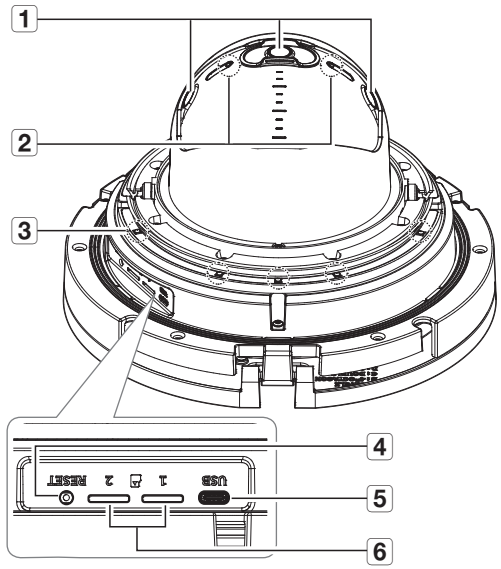
AT A GLANCE

Appearance



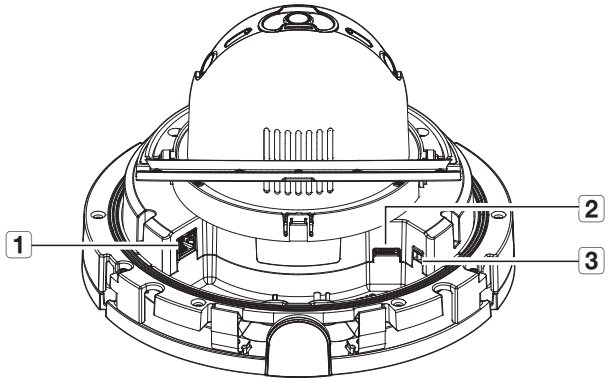
Item	Description
1 Dome cover	Case cover used to protect the lens and the main unit.
2 Camera body	Body part where the camera lens and connection terminals are included.
3 Mount plate	Plate that fixes the camera when mounting it to the ceiling or attaching it to a separately sold mount.

Components (Front Side)



Item	Description
1 Lens	3 camera lenses create a panoramic image.
2 Illumination Sensor	Detects incoming light to control the IR LED.
3 IR LED	These infrared LED's are controlled by the illumination sensor.
4 Reset Button	The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. ! If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.
5 USB type-C port	Port to connect the WiFi dongle. You can check the installation video through the applications installed in the smartphone. Refer to "**Connecting WiFi**" on page 23. ▪ Wifi dongle and OTG adapter are sold separately.
6 Micro SD card slot	Compartment for the Micro SD card.

Components (Rear Side)



Item	Description
1 PoE+ port	This port connects power and network via PoE+ injector.
2 Audio/Alarm cable port	Plug in the audio and alarm cable to this port to connect with external alarm device/ microphone/speaker.
3 Power port (DC 12 V)	Port for power terminal block.

INSTALLATION

- The camera jack connected to the external cable is not waterproof. You are recommended to install this product below the edge of eaves to prevent the cable from being externally exposed.

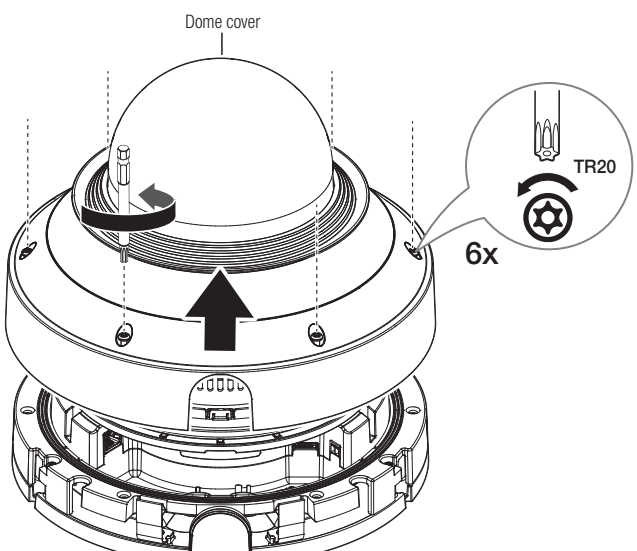
Precautions before installation

Ensure you read out the following instructions before installing the camera:

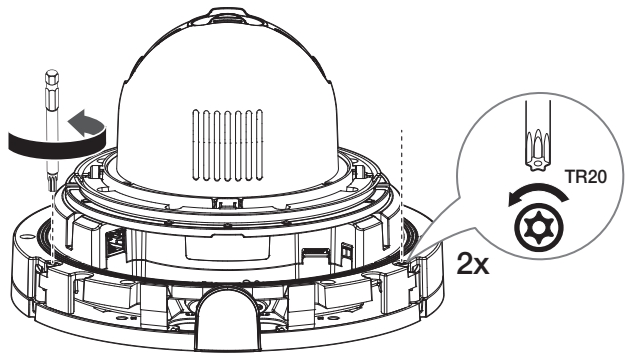
- It must be installed on the area (ceiling or wall) that can withstand 5 times the weight of the camera including the installation bracket.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside personal belongings from the site, just in case.
- If the product is installed with excessive force, it may cause damage to the camera due to malfunction. Forcing assembly using non-compliant tools may damage the product.

Disassembling

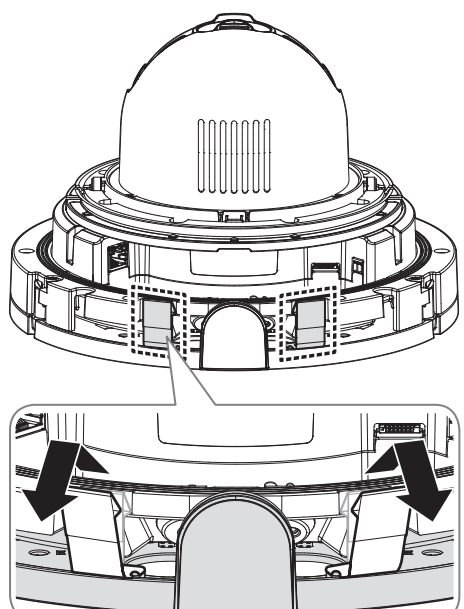
1. Remove the dome cover by loosening the fastening bolt of the dome cover. This can be done by turning it counterclockwise using the screw bit provided.
   - Note that it is not necessary to loosen the screws completely.



2. Loosen the fastening screw on the camera body.
   - You don't have to completely remove the screws.

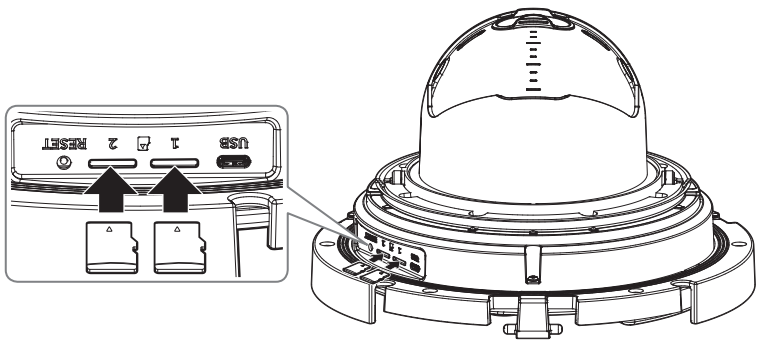


3. Remove the camera body and mounting plate by pulling the mounting clip, as shown in the figure.

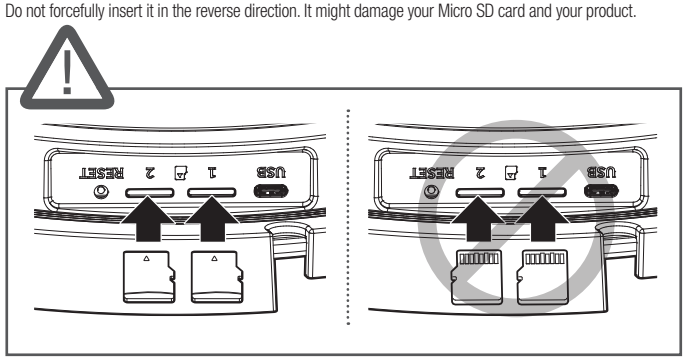


Inserting a Micro SD card

1. Remove the dome cover of the camera.
2. Insert a Micro SD card in the arrow direction shown in the figure.



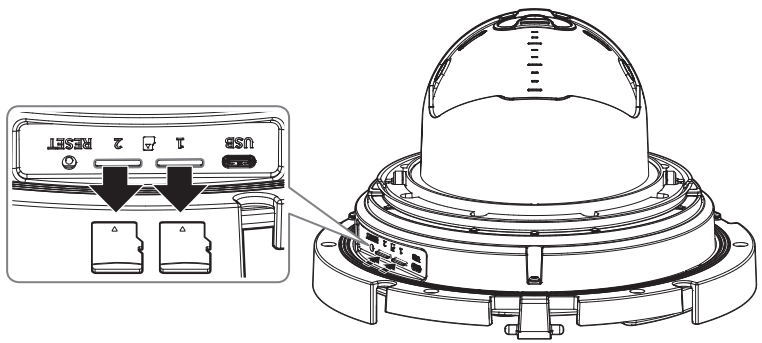
- Do not forcefully insert it in the reverse direction. It might damage your Micro SD card and your product.



- Before installing the camera, the Micro SD card should be inserted while the power source and the body are separated.
- When it rains or the humidity is high, insertion or ejection of a Micro SD card is not recommended.
- Disassembly of the product cover should be finished within 5 minutes, or there will be the risk of internal dew condensation.
- When installing/removing the Micro SD card, make sure you put the product body on a flat ground before working on it in order to prevent accidents due to loss or drop of any parts.

Removing a Micro SD card

Gently press down on the exposed end of the Micro SD card as shown in the diagram to eject the Micro SD card from the slot.

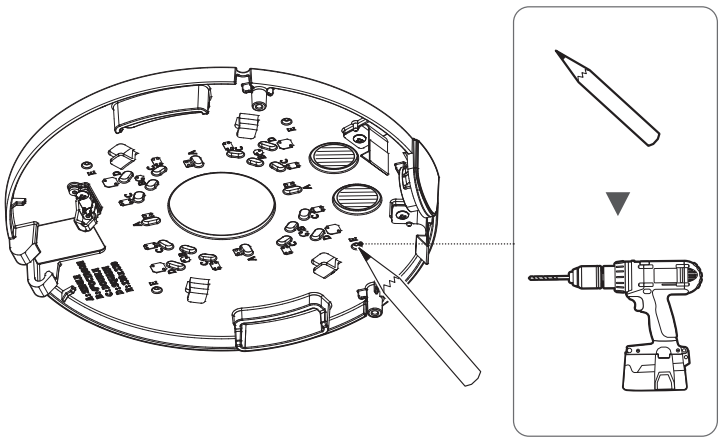


- Before removing the Micro SD card, in <**Setup ( )**>-<**Event**>-<**Storage**>, set the device to <**Off**> and press the [**Apply**] button and turn the camera off.
- If you turn off the camera or remove the Micro SD card that contains data from the product, the data may be lost or damaged.

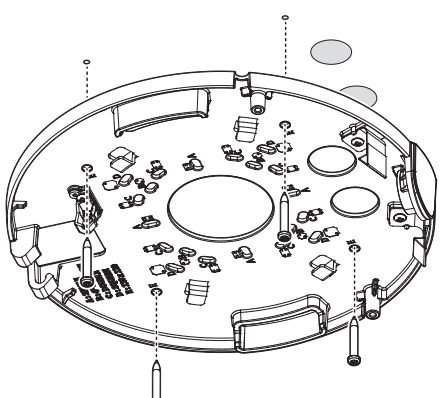
Installation (mount plate)

[Directly installing on wall/ceiling]

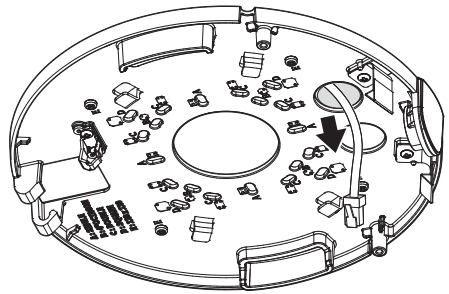
1-1. Place the mount plate on the desired location considering the direction to be monitored, mark the locations for the screw holes and cable holes, and then drill the holes.



1-2. Fix the mount plate using appropriate screws.

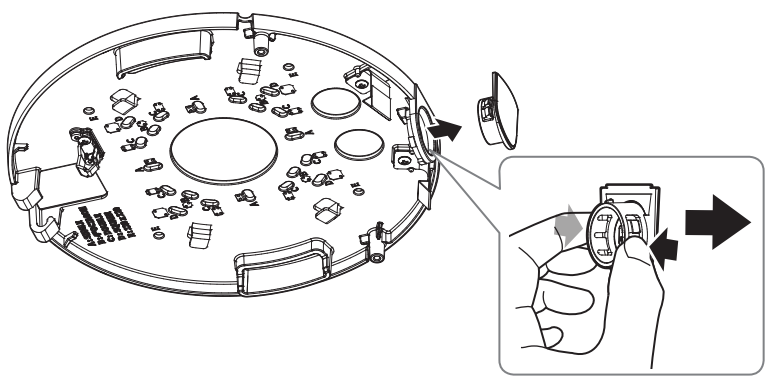


1-3. Pull out necessary cables among network/power/audio/alarm cables through the hole in the mount plate.



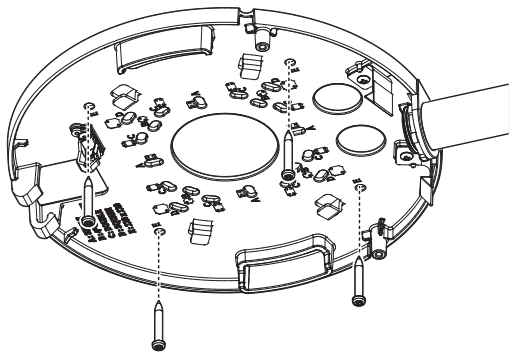
[Installing using pipe]

2-1. When installing by connecting pipes, you can use it by removing the pipe cover from the mount plate. Separate the pipe cover of the Mount plate by pressing its sides.



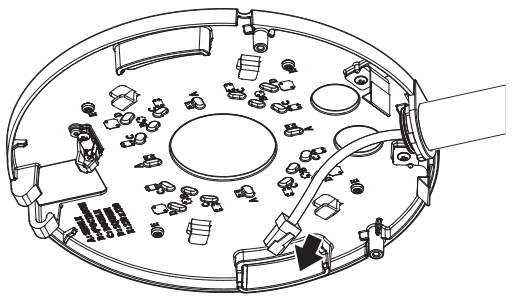
2-2. Place the pipe on the mount plate.

2-3. Fix the mount plate using appropriate screws.



- Use installation screws of at least M4, L30 for the installation of this product.

2-4. Pull out necessary cables among network/power/audio/alarm cables through the pipe.

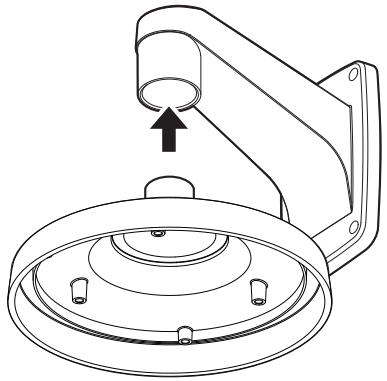


[Attaching to the unbundled adapter]

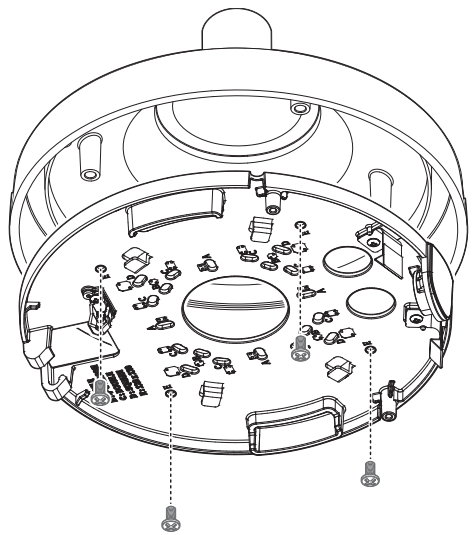
Choose and purchase a necessary one of the following options (unbundled) that is suitable to the installation site or for your convenience.

3-1. Install the hanging mount to the wall mount adapter.

- Wall mount adapters and hanging mounts are sold separately.

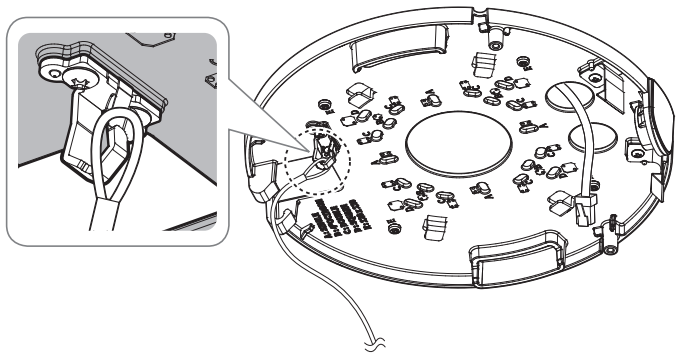


3-2. Connect the mounting plate and the hanging mount.

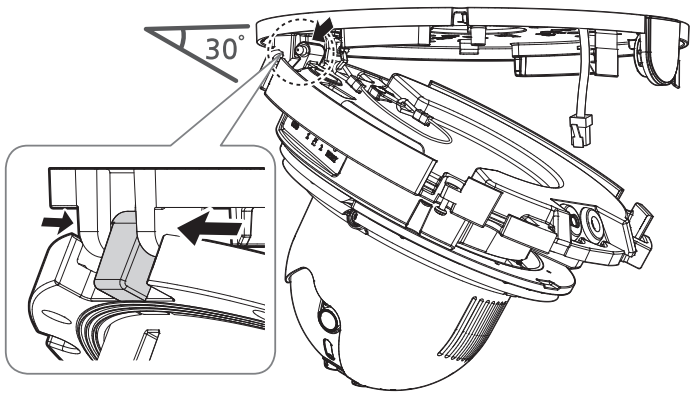


Installation (camera body and dome cover)

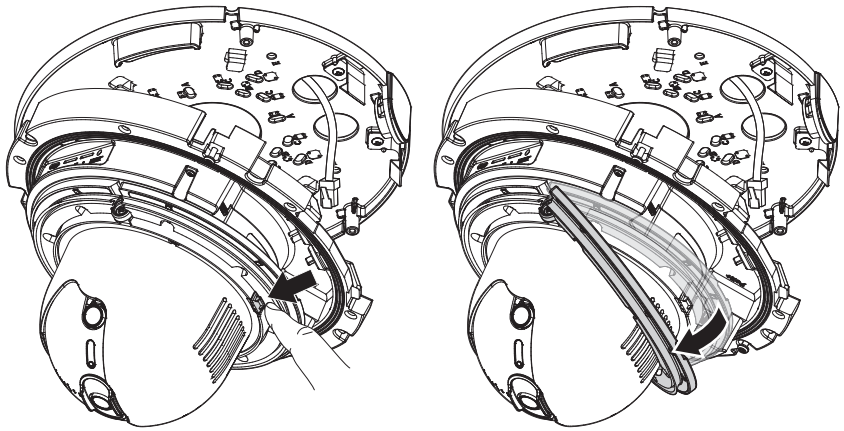
1. Connect the safety wire from the camera body to the safety wire hook on the mount plate.



2. Mount the camera body to the mount plate.
   - Mount it to fit the hinges as shown in the image.



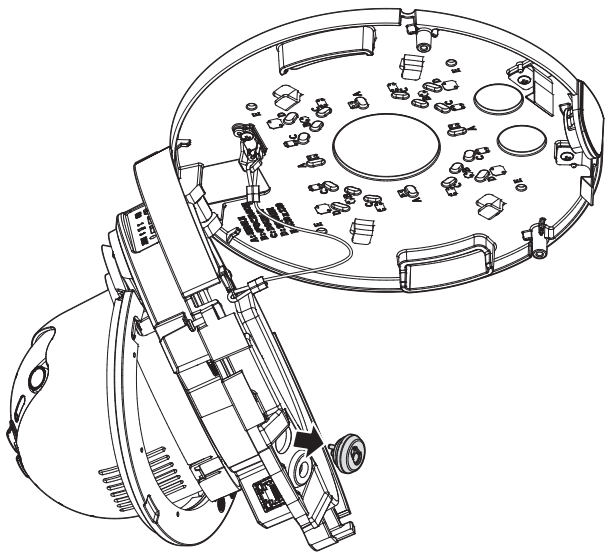
3. Pull the cable cover of the camera body to open it as shown in the figure below.



[Installing network/power cables]

- Use a cable bushing compliant with the network cable to be connected.
  - Camera main: use a cable with the diameter of Ø5 to 6.5
- You can only use a network cable with a diameter of Ø6.5 or less.

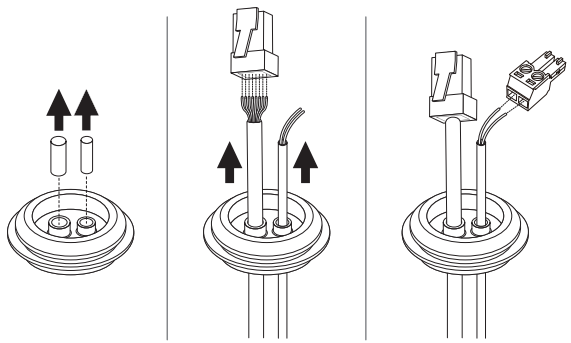
1-1. As shown in the figure below, remove the cable bushing from the camera body.



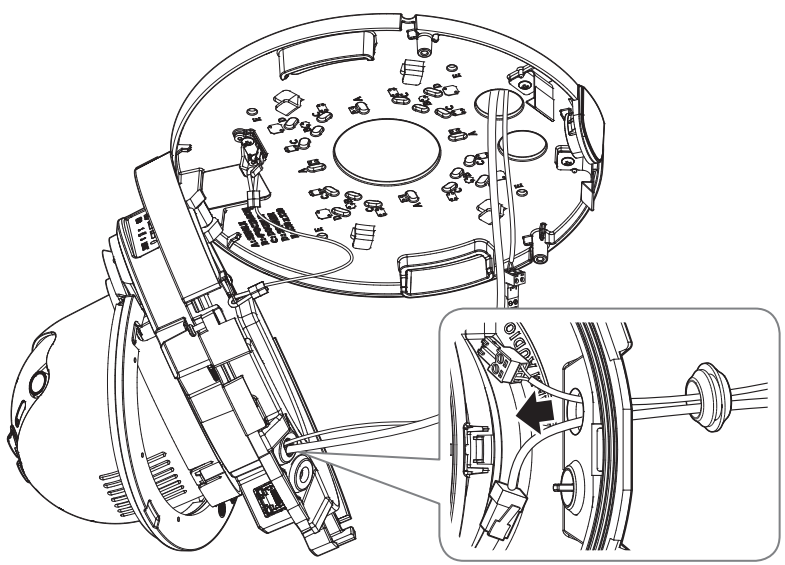
1-2. Remove the protruding part you wish to use from the removed cable bushing.

1-3. Route the network cable through the big hole of the cable bushing and connect to the network cable connector.

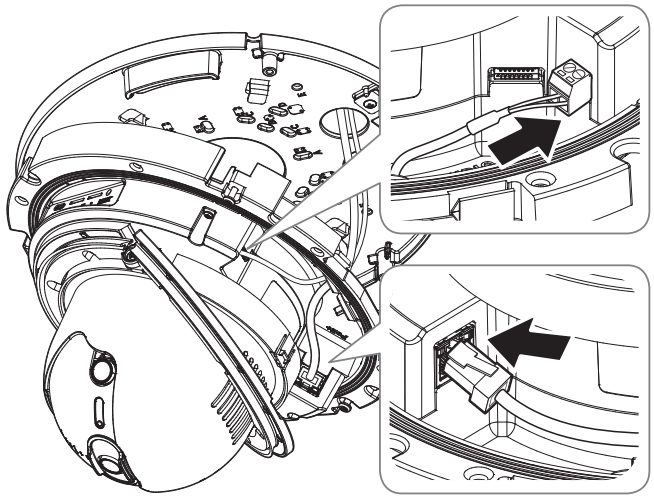
1-4. (When using the power) Route the power cable through the small hole of the cable bushing and connect it to the provided power terminal block.



1-5. Mount the cable bushing to the camera body.

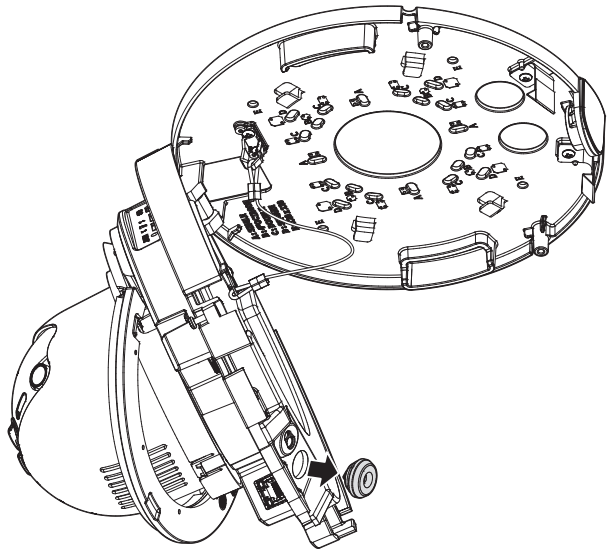


1-6. Connect the network cable connector to the PoE+ port, and connect the power terminal block to the power port.



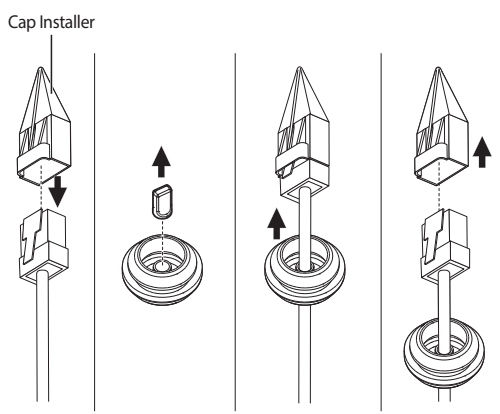
[Installing the network cable] (IP66)

2-1. As shown in the figure below, remove the cable bushing from the camera body.

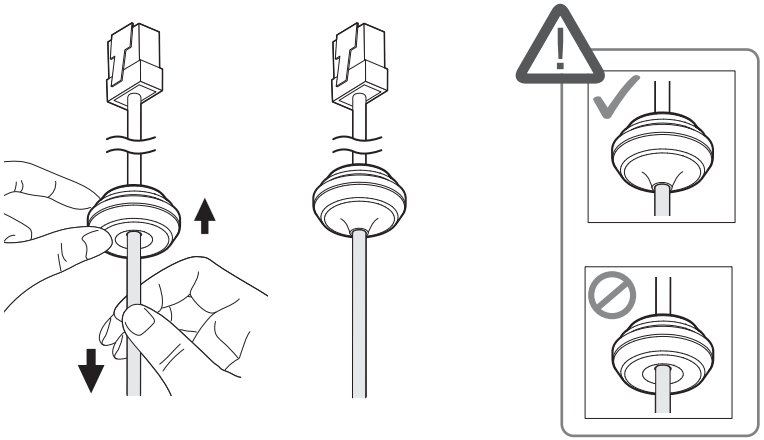


2-2. Pull off the extruded part of the 1-hole cable bushing provided.

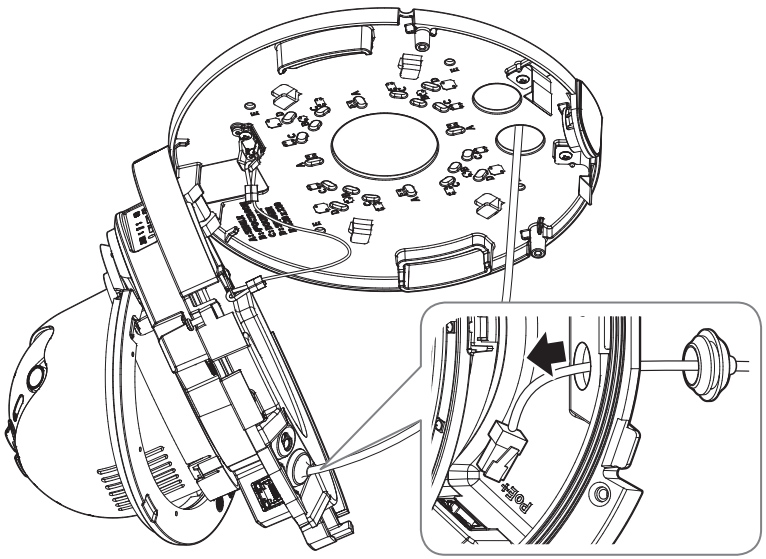
2-3. Use the cap installer to route the network cable through the cable bushing.



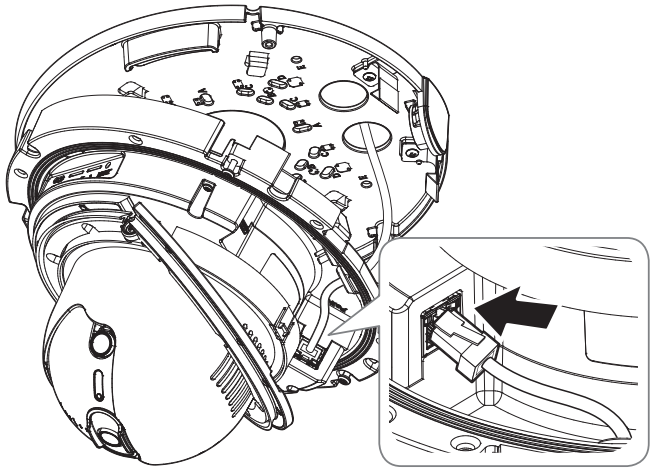
2-4. For waterproof protection, pull down the cable below the cable bushing as shown in the figure below.



2-5. Mount the cable bushing to the camera body.

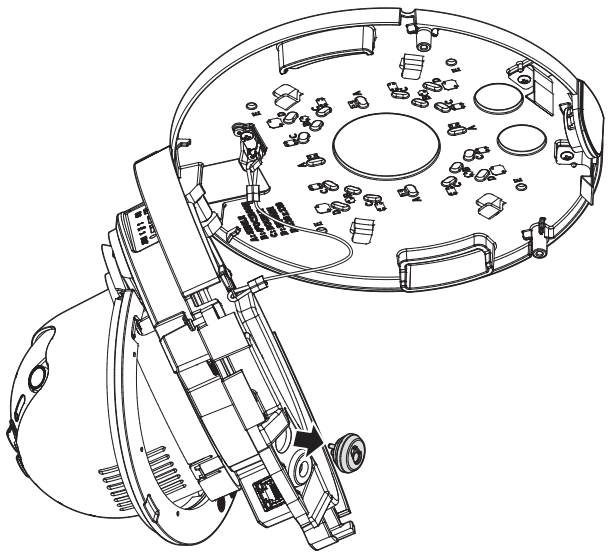


2-6. Connect the network cable jack to the PoE+ port of the camera.

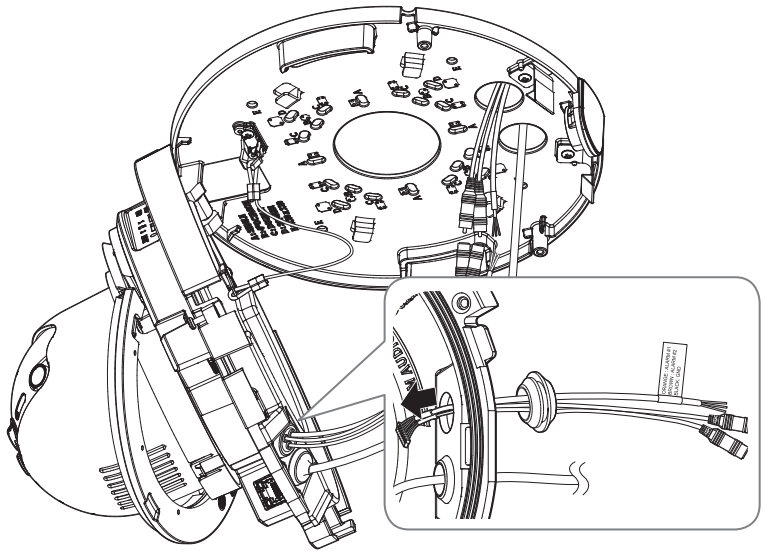


[Installing audio/alarm cables]

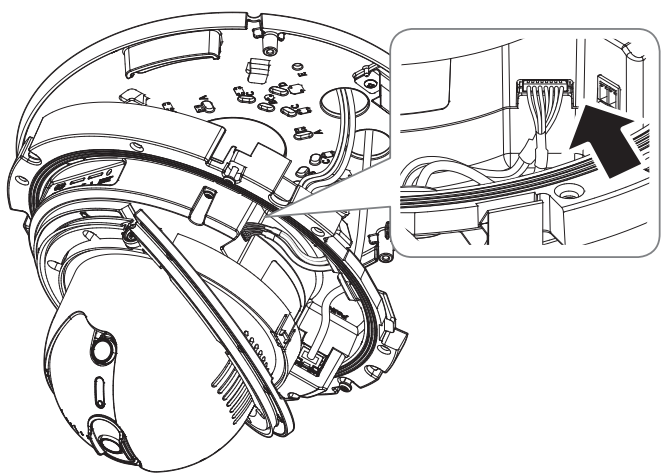
3. As shown in the figure below, remove the cable bushing from the camera body.



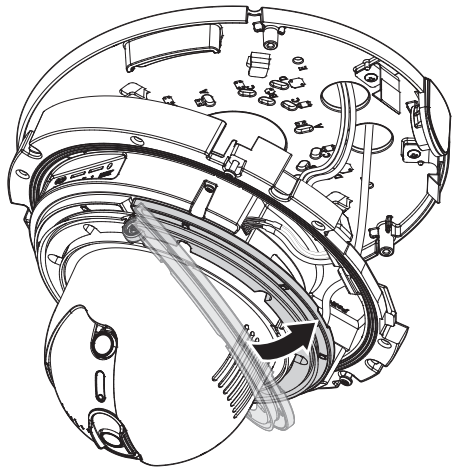
4. Plug the cable bushing of the provided audio/alarm cable into the camera body.



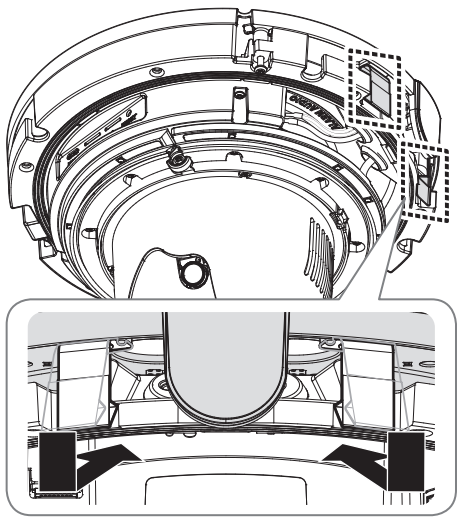
5. Connect the connector of the audio/alarm cable to its connection port.



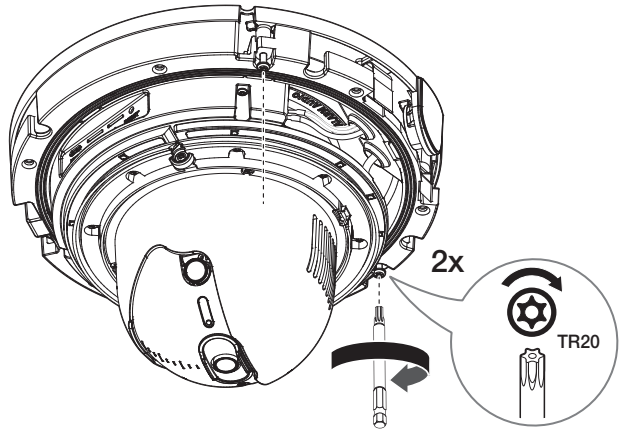
6. When all cable connections are complete, raise the cable cover and close it so that it gets stuck in the lock.



7. Lift up the camera body and push the mounting clips until they click into place.

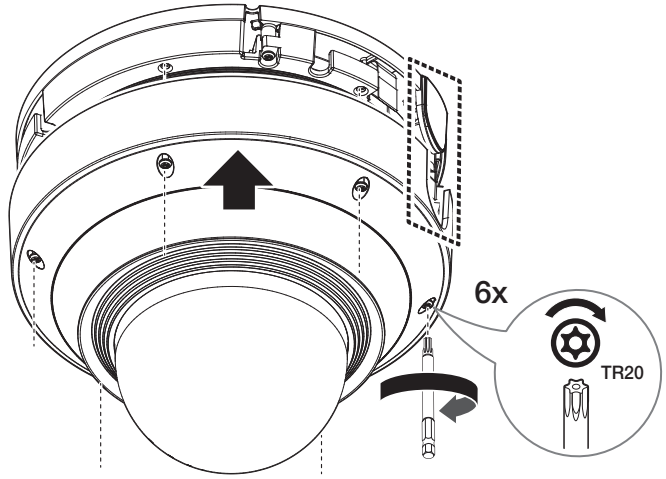


8. Using the fastening screws on the camera body, fix the camera body to the mount plate.



9. Adjust the lens to the desired direction by referring to "**Adjusting the monitoring direction for the camera**". (Page 22)
   - If you tilt the lens, you may need to adjust the lens as this may block the screen.

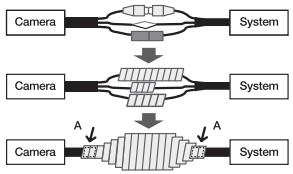
10. Assemble the dome cover.
    - When assembling the dome cover, align the pipe cover part to assemble it.
    - To ensure there are no issues with waterproofing, tighten the fastening bolts tightly using the screw bit.



Waterproofing of cable connections

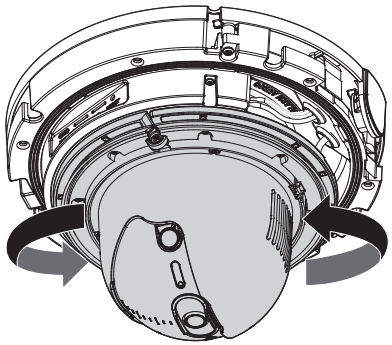
When installing the camera, please waterproof it with waterproof butyl rubber tape (can be purchased in stores) so that water does not leak from the gap of the cable connected to the outside.

1. Connect the power, I/O, and network cables.
2. Wrap the black cable jacket (Area A) and the cable connection area with waterproof (butyl rubber) tape so that more than half of the butyl rubber tape is overlapped.

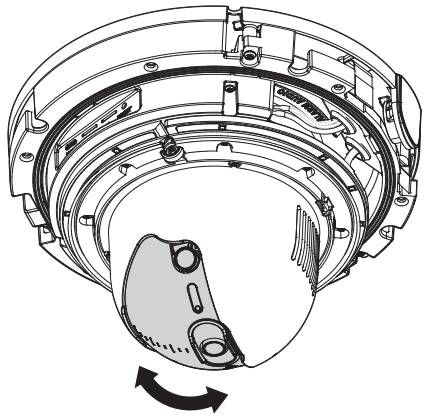


- If the cable jacket is not waterproofed properly, then it can directly cause leakage. Make sure to protect the cable with a dense layer of taping.
- Waterproof butyl tape is made of butyl rubber that can be stretched to twice its normal length.

Adjusting the monitoring direction for the camera



Pan



Tilt

▪ Adjusting the monitoring direction

You can adjust the camera direction only when the camera is fixed on the ceiling.
At this time, rotating the main body of the camera in the left and right direction is called PAN, and adjusting the angle of the camera is called TILT.

- The effective range of pan is a total of 360° degrees.
- The effective range of tilt is a total of 50° degrees.

- The image can be covered up by the camera case depending on the angle.
- When adjusting the camera tilt angle, be careful not to have fingerprints or foreign substances on the lens.

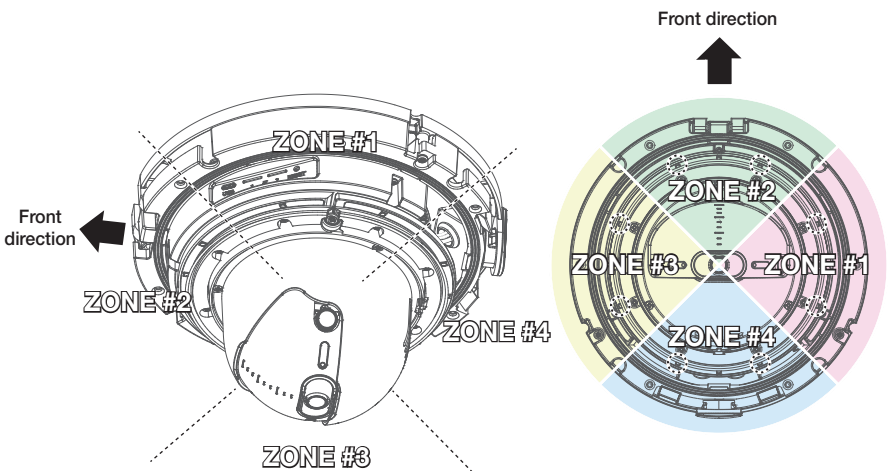
▪ Methods of adjustment

1. After installing the camera, adjust the panning angle in consideration of the monitoring direction.
2. Adjust the tilt angle so that the camera faces toward the monitoring object.

Installation precautions when using the IR mode

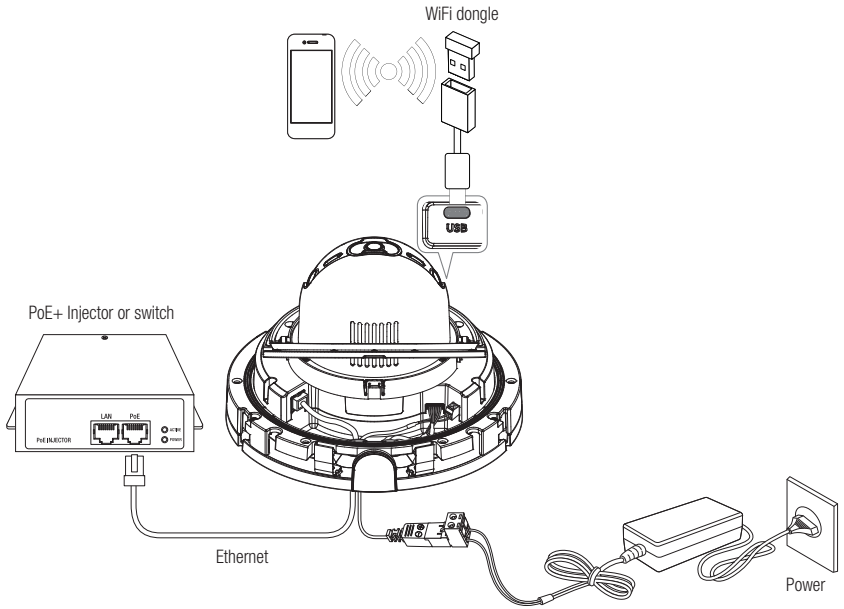
- <Auto1>: Optimized to evenly radiate IR light when generally mounting the camera on the wall.
- <Auto2>: Optimized to evenly radiate IR light when generally mounting the camera on the ceiling.
- <Manual>: You can manually adjust each zone to better capture the environment where the camera is installed.
- The IR LED will moved following the rotation of the camera lens.
- Make sure that the front factory default direction is correct when installing it.
- Even after the complete installation of the camera, you can customize it using the video rotation if necessary.

[Example of installing the ceiling mount]



<Factory default direction>

CONNECTING WITH OTHER DEVICE



- The product USB Type-C port is used to communicate with the application installed in the smartphone by connecting the WiFi dongle.
  The USB Type-C port is intended solely for installation purposes and should not be used during product operation.

Ethernet Connection

Connect the Ethernet cable to the local network or to the Internet.

Powering and networking

Connect the PoE+ device with the PoE+ port of the camera.

- Connect and use a PoE+ -enabled router.
- Use a PoE+ device that complies with the IEEE 802.3at standard.
- If you connect using an PoE+ -enabled router, you don't need a separate power supply cable to power it on.

Connecting WiFi

Camera Setup

1. Connect the OTG gender (Type C) and WiFi dongle to the USB Type-C port.

Smartphone Setup

1. Install the Wisenet Installation application.
2. Select the camera SSID after turning on the WiFi.
3. Run the Wisenet Installation application.
4. When you log in to the camera, the video will be connected.
5. You can adjust angle of view while watching the video through smartphone.

Recommended dongle manufacturer

Manufacturer	Model
NETIS	WF2123 n300
EDIMAX	EW-7811Un V2 (New ver.)
IP Time	N100mini
IP Time	N150L
TP-LINK	TL-WN823N V1
TP-LINK	TL-WN725N
ASUS	USB-N13
ASUS	USB-N10 NANO
NETGEAR	WNA3100M
IODATA	WN-G150UMW
IODATA	WN-S150UM
TOTOLINK	N300UM

Power Supply

Use a screwdriver to connect the + and - lines of the power adaptor to the provided power terminal block, and then insert them in the power port (DC12V).

- If the power sources for PoE+ and DC 12 V are simultaneously turned on, the device power will be supplied by both of PoE+ and DC 12 V.
  - It is advisable to use only one power source from PoE+ and DC 12V.
- Be careful not to reverse the polarity when you connect the power cable.
- If you want to connect an external device, you must turn off the external device before proceeding.
- Before plugging the power plug into a power socket, connect the power cable of the camera and adaptor first.

Power Cable Specification

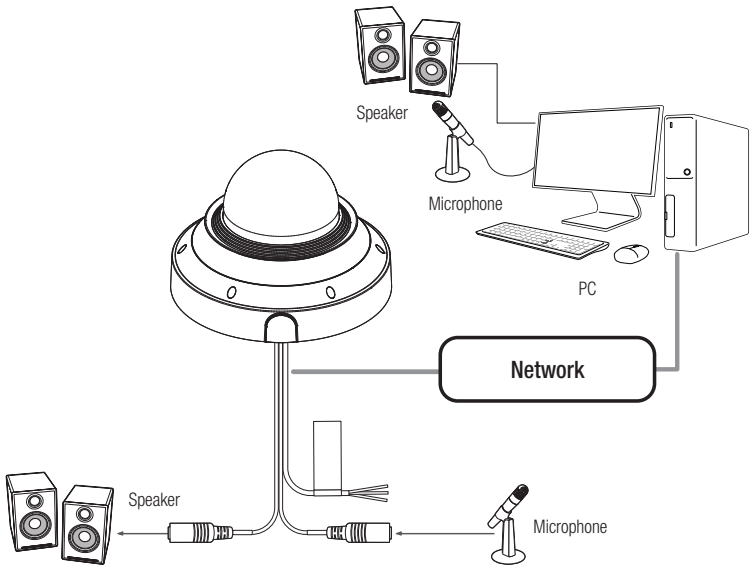
In case of DC 12 V Input:

Wire Type (AWG)	#16	#18	#20
Cable Length (Max.)	22 m	13 m	8 m

Network Cable Specification

Item	Contents	Remark
Connector	RJ45 (10/100/1000BASE-T)	
Ethernet	10/100/1000BASE-T	
Cable	Category 6	
Max Distance	100 m	DC Resistance ≤ 0.125 Ω/m
PoE+ Support	IEEE 802.3at	

Connecting to Audio Input/Output

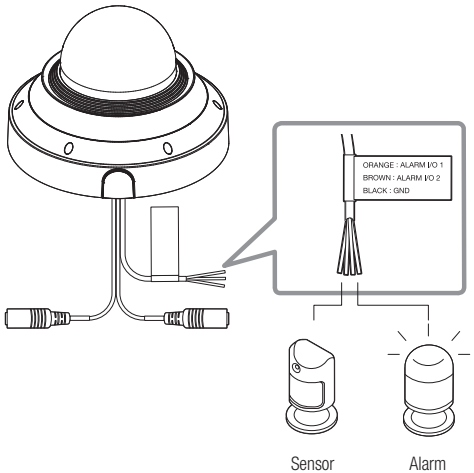


1. Connect the MIC port of the camera with the microphone or LINE OUT port of the amplifier that the microphone is connected to.
2. Connect the SPEAKER port of the camera with the speaker or LINE IN port of the amplifier that the speaker is connected to.
3. Check the specifications for audio input.

- **Audio Codec**
  - Audio In : G.711(PCM): 8kHz(64Kbps), G.726(ADPCM): 8kHz(16/24/32/40Kbps), AAC-LC: 16kHz(48Kbps), OPUS: 48kHz(64Kbps)
- **Full duplex Audio**
- **Audio in**
  - Supported voltage : 2.5 VDC
  - Input impedance : 20 kohm
- **Audio out**
  - Output voltage : < 2.74 Vpp
  - Load Resistance : > 10 kohm

Connecting to the I/O port box

Connect the Alarm I/O cable to the corresponding port of the port box.



Alarm-related Connector

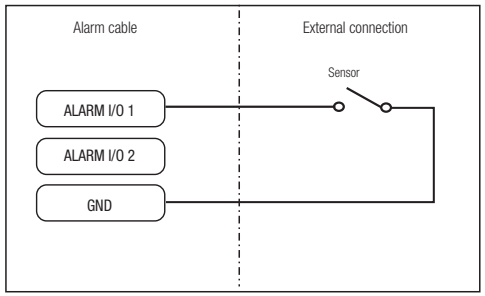
▪ Make sure to connect the provided audio/alarm cable before use.

Color	Function	Description
ORANGE : ALARM I/O 1 BROWN : ALARM I/O 2	ALARM I/O 1, ALARM I/O 2	These two ports are configurable from the web viewer, as they can be used as Alarm in or Alarm out ※ Alarm I/O changes can be made through the Webviewer setup.
BLACK	GND	It is a ground terminal.

To connect to an external sensor

To use as an Alarm IN: Connect one of the [ALARM I/O] port and the other terminal to the [GND] port.

Alarm In Wiring Diagram(example)



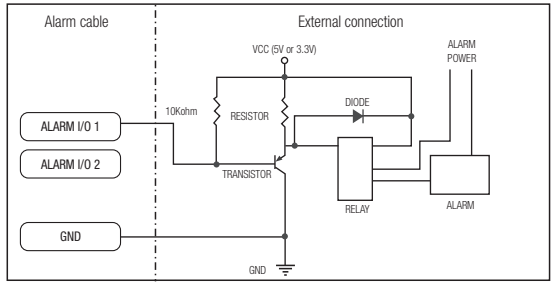
<If ALARM I/O 1 is set as an input terminal>

To connect to an alarm output

If devices (e.g., flashing light and siren) that exceed the voltage and current specifications are connected by using the open collector method, it may cause damage.

Refer to the alarm out connection diagram below case.

Alarm Out Wiring Diagram(example)



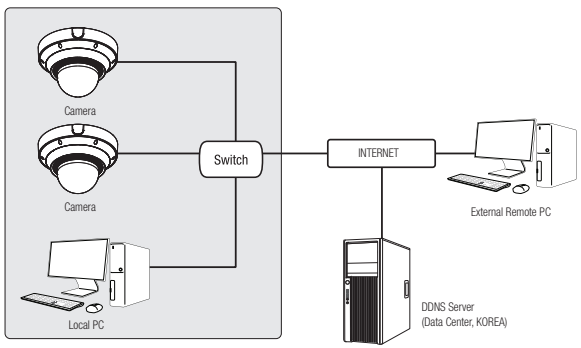
<If ALARM I/O 1 is set as an output terminal>

You can set up the network settings according to your network configurations.

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

Connecting to the camera from a local PC in the LAN

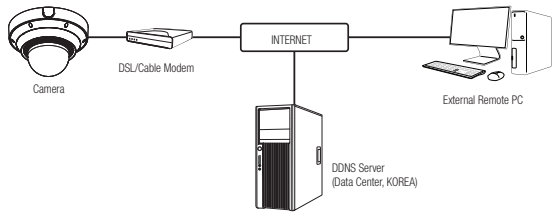
1. Launch an Internet browser on the local PC.
2. Enter the IP address of the camera in the address bar of the browser.



<Local Network>

- A remote PC in an external Internet out of the LAN network may not be able to connect to the camera installed in the intranet if the port-forwarding is not properly set or a firewall is set.
  In this case, to resolve the problem, contact your network administrator.
- By factory default, the IP address will be assigned from the DHCP server automatically.
  If there is no DHCP server available, the IP address will be set to 192.168.1.100.
  To change the IP address, use the Device Manager.
  For further details on Device Manager use, refer to "**Using Device Manager**". (Page 27)

CONNECTING THE CAMERA DIRECTLY TO A DHCP BASED DSL/CABLE MODEM



1. Connect the user PC directly with the network camera.
2. Run the Device Manager and change the IP address of the camera so that you can use the web browser on your desktop to connect to the camera.
3. Use the Internet browser to connect to the web viewer.
4. Move to [**Setup**] page.
5. Move to [**Network**] – [**DDNS**] and configure the DDNS settings.
6. Move to [**Basic**] – [**IP & Port**], and set the IP type to [**DHCP**].
7. Connect the camera, which was removed from your PC, directly to the modem.
8. Restart the camera.

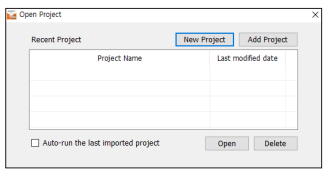
- For information on how to set DDNS, refer to the online help of Web Viewer.
- For information on how to set the IP format, refer to the online help of Web Viewer.

USING DEVICE MANAGER

- Device manager program can be downloaded from <**Support**>-<**Tool**> menu at Hanwha Vision website (https://www.HanwhaVision.com).
- More instructions of Device Manager can be found at <**Help**> menu of the main page.

SETTING UP PROJECTS

You can save and import cameras for each project.
To create a new project, set the project name and a password.
You need to enter a password to run the created project.



AUTOMATICALLY SEARCHING CAMERA

If a camera is connected to the same network of the PC where device manager is installed, you can find network camera by using search function.

1. Click <**Search**> at the main page of device manager.
2. Check the camera from the list.
   - Check MAC address at the sticker attached to the camera.

CONFIGURING IP ADDRESS

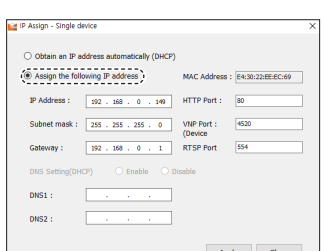
If you want to change camera network setting, <**Login OK**> sign must be displayed at <**Status**>.
Click <**Credential**> at the main page to log in.

Configuring Static IP

Manually insert and configure IP address & port information.

When setting one camera

1. Click the camera from the list that you want the change the IP setting.
2. Click <**IP Assign**> at the main page of device manager.
3. Select <**Assign the following IP address**>.
   - IP information of the camera will be displayed as previously set.
4. Fill in IP & Port related categories.



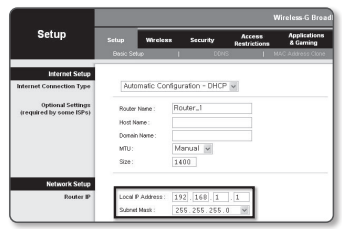
If not using a Broadband Router

For setting <**IP Address**>, <**Subnet Mask**>, and <**Gateway**>, contact your network administrator.

- HTTP Port : Used to access the camera using the Internet browser, defaulted to 80.
- RTSP Port: A port that controls real-time streaming. The initial value is 554.

If using a Broadband Router

- IP Address : Enter an address falling in the IP range provided by the Broadband Router.
  ex) 192.168.1.2~254, 192.168.0.2~254,
  192.168.XXX.2~254
- Subnet Mask : The <**Subnet Mask**> of the Broadband Router will be the <**Subnet Mask**> of the camera.
- Gateway : The <**Local IP Address**> of the Broadband Router will be the <**Gateway**> of the camera.



- The settings may differ depending on the connected Broadband Router model.
  For more information, refer to the user manual of the applicable router.
- For more information about port forwarding of the broadband router, refer to "**Port Range Forward (Port Mapping) Setup**". (Page 29)

If the Broadband Router has more than one camera connected

Configure the IP related settings and the Port related settings distinctly with each other.

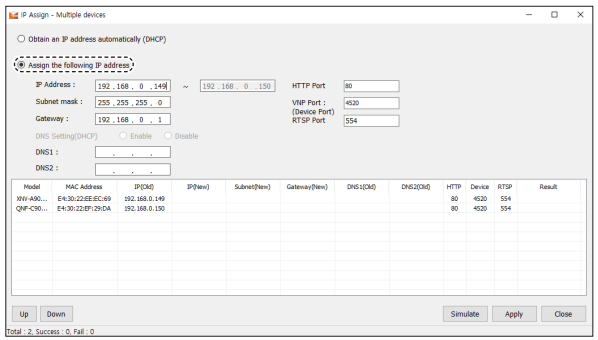
ex)

Category		Camera #1	Camera #2
IP related settings	IP Address Subnet Mask Gateway	192.168.1.100 255.255.255.0 192.168.1.1	192.168.1.101 255.255.255.0 192.168.1.1
Port related settings	HTTP Port RTSP Port	8080 554	8081 555

- If the <**HTTP Port**> is set other than 80, you must provide the <**Port**> number in the address bar of the Internet browser before you can access the camera.
  ex) http://IP address : HTTP Port
  http://192.168.1.100:8080

5. Click [**Apply**] Button.
6. If the success message is displayed, click [**OK**].

When setting multiple cameras



1. Click the camera from the list that you want the change the IP setting.
2. Click <**IP Assign**> at the main page of device manager.
3. Select <**Assign the following IP address**>.
4. Enter the initial address of the IP address range to be assigned.
5. Click the [**Simulate**] button to check the IP address to be assigned for each equipment.
   - You can edit each address by double-clicking the IP address item.
6. Click the [**Apply**] button to start IP assignment.
7. Check the <**Result**> item for the success of IP assignment.

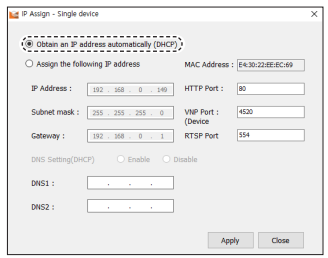
Configuring Dynamic IP

Receive IP address from DHCP

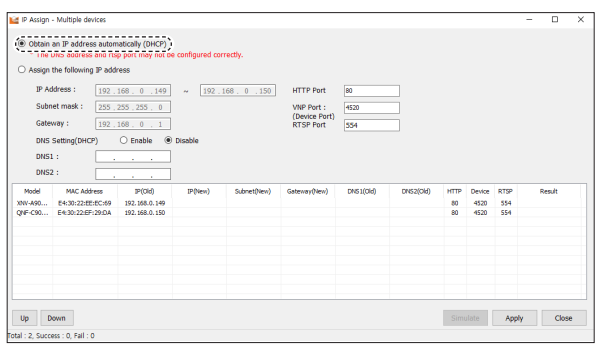
- Example of the Dynamic IP environment
  - If a Broadband Router, with cameras connected, is assigned an IP address by the DHCP server
  - If connecting the camera directly to modem using the DHCP protocols
  - If IPs are assigned by the internal DHCP server via the LAN

When setting one camera

1. Click the camera from the list that you want to change the IP setting.
2. Click <**IP Assign**> at the main page of device manager.
3. Select <**Obtain an IP address automatically (DHCP)**>.
4. Click [**Apply**] button.
5. If the success message is displayed, click [**OK**].



When setting multiple cameras

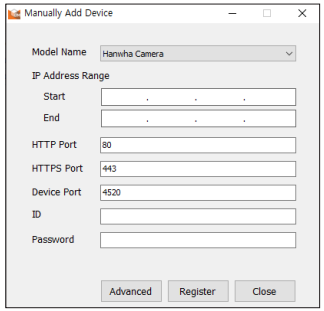


1. Click the camera from the list that you want to change the IP setting.
2. Click <**IP Assign**> at the main page of device manager.
3. Select <**Obtain an IP address automatically (DHCP)**>.
4. Click the [**Apply**] button to start IP assignment.
5. Check the <**Result**> item for the success of IP assignment.

MANUALLY REGISTERING CAMERA

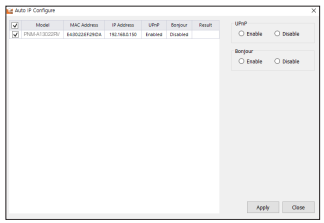
If the camera cannot be found using search function, the camera can be registered remotely by manually inserting IP information, if the camera is connected to external network.

1. Click <**Add Devices**> - <**Manually Add Device**> at the main page of device manager.
2. Insert the range of IP address that you search.
3. Select the <**Model Name**> of the camera that you register, and insert HTTP port, HTTPS port, ID, and password.
4. Click [**Register**] button.
5. Check if camera is registered.
   - Check MAC address at the sticker attached to the camera.



AUTOMATICALLY CONFIGURING IP

1. Click the camera from the list that you want to automatically configure the IP.
2. Click < **+** > at the main page of device manager.
   - Equipment Setting menu appears.
3. At the menu, click <**Auto IP Configure**>.
4. To use the <**UPnP**> or <**Bonjour**> protocol, select <**Enable**> and click the [**Apply**] button.

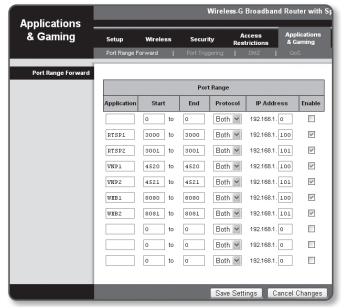


PORT RANGE FORWARD (PORT MAPPING) SETUP

If you have installed a Broadband Router with a camera connected, you must set the port range forwarding on the Broadband Router so that a remote PC can access the camera in it.

Manual Port Range Forwarding

1. From the Setup menu of the Broadband Router, select <**Applications & Gaming**> - <**Port Range Forward**>.
   For setting the port range forward for a third-party Broadband Router, refer to the user guide of that Broadband Router.
2. Select <**TCP**> and <**UDP Port**> for each connected camera to the Broadband Router.
   The number of each port to be configured to the IP router should be set according to the port number designated in <**Setup**> - <**Basic**> - <**IP & Port**> on the camera web viewer.
3. When done, click [**Save Settings**].
   Your settings will be saved.

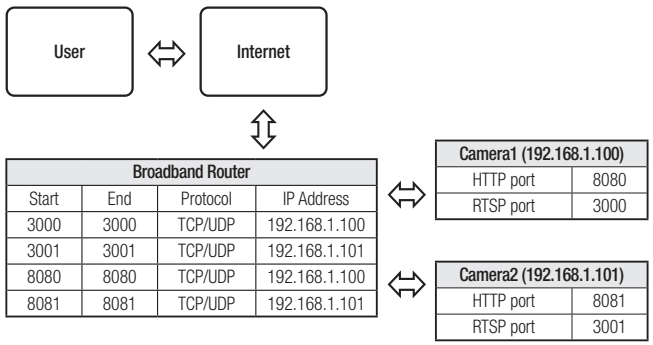


- Port forwarding setting is an example of setting CISCO IP router.
- The settings may differ depending on the connected Broadband Router model. For more information, refer to the user manual of the applicable router.

Setting up Port Range Forward for several network cameras

- You can set a rule of Port Forwarding on the Broadband Router device through its configuration web page.
- A user can change each port using the camera setting screen.

When Camera1 and Camera2 are connected to a router :



Broadband Router			
Start	End	Protocol	IP Address
3000	3000	TCP/UDP	192.168.1.100
3001	3001	TCP/UDP	192.168.1.101
8080	8080	TCP/UDP	192.168.1.100
8081	8081	TCP/UDP	192.168.1.101

Camera1 (192.168.1.100)	
HTTP port	8080
RTSP port	3000

Camera2 (192.168.1.101)	
HTTP port	8081
RTSP port	3001

▪ Port forwarding can be done without additional router setup if the router supports the UPnP (Universal Plug and Play) function. After connecting the network camera, select the checkbox from the menu <**Quick connect**> in <**DDNS**> in "**Settings** -> **Network** -> **DDNS**".

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

1. Run device manager.
   It will scan for connected cameras and display them as a list.
2. Select the desired project, then click the [**Open**] button.
3. Entering the password will display the list of cameras in the project.
4. Double-click a camera to access.
   The Internet browser starts and connects to the camera.

▪ Access to the camera can also be gained by typing the camera's IP address in the address bar of the Internet browser.

CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

On a remote computer that is not in the Broadband Router's network cluster is not allowed, users can access cameras within a Broadband Router's network by using the camera's DDNS URL.

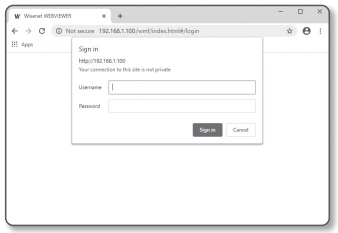
1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
   ex) http://ddns.hanwha-security.com/ID

▪ To use DDNS, sign up at the DDNS homepage (http://ddns.hanwha-security.com) and register the product at [**My DDNS**]>[**Register Product**].

CONNECTING TO THE CAMERA

Normally, you would

1. Launch the Internet browser.
2. Type the IP address of the camera in the address bar.
   ex) • IP address (IPv4) : 192.168.1.100 ➞ http://192.168.1.100
   - the Login dialog should appear.
   • IP address (IPv6) : 2001:230:abcd: ffff:0000:0000:ffff:1111 ➞ http://[2001:230:abcd:ffff:0000:0000:ffff:1111] - the Login dialog should appear.



If the HTTP port is other than 80

1. Launch the Internet browser.
2. Type the IP address and HTTP port number of the camera in the address bar.
   ex) IP address : 192.168.1.100:HTTP Port number(8080)
   ➞ http://192.168.1.100:8080 - the Login dialog should appear.

Using URL

1. Launch the Internet browser.
2. Type the DDNS URL of the camera in the address bar.
   ex) URL address : http://ddns.hanwha-security.com/ID
   - the Login dialog should appear.

▪ Network connection is disabled in the LAN only environment.

Connecting via UPnP

1. Run the client or operating system in support of the UPnP protocol.
2. Click the camera name for search.
   In the Windows operating system, click the camera name searched from the network menu.
   - The login window is displayed.

Connecting via Bonjour

1. Run the client or operating system in support of the Bonjour protocol.
2. Click the camera name for search.
   In the Mac operating system, click the camera name searched from the Bonjour tab of Safari.
   - The login window is displayed.

▪ To use the UPnP or Bonjour protocol, refer to "**Automatically configuring IP**".

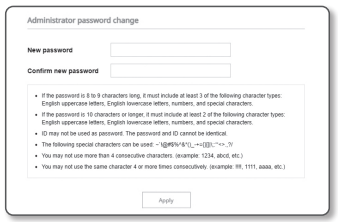
To check the DDNS address

If the camera is connected directly to a DHCP-based cable modem or DSL modem, the IP address will change each time it tries to connect to the ISP (the company you subscribed to).
If this is the case, you will not be informed of the IP address changed by DDNS.

Once you register a dynamic IP-based device with the DDNS server, you can easily check the changed IP when you try to access the device.
To register your device to the <**DDNS**> server, visit http://ddns.hanwha-security.com and register your device first, and then set the Web Viewer's <**Network**> - <**DDNS**> to <**DDNS**>, as well as providing <**Product ID**> that had been used for DDNS registration.

PASSWORD SETTING

When you access the product for the first time, you must register the login password.



- For a new password with 8 to 9 characters, you must use at least 3 of the following: uppercase/lowercase letters, numbers and special characters. For a password with 10 characters or longer , you must use at least 2 types of those mentioned. (support up to 64 characters)
  - Special characters that are allowed. : ~`!@#$%^&*( )_-+={ }[ ]\\;:'"<>.,?/
- Space is not allowed for password.
- The password and ID cannot be identical.
- You cannot use the same character repeatedly or sequential characters on a keyboard as passwords for enhanced security.
- Be sure to remember the password you set, as you will need to reset the product by pressing the [**RESET**] button if you lose your password.

LOGIN

Whenever you access the camera, the login window appears.
Enter the User ID and password to access the camera.

1. Enter "**admin**" in the <**User name**> input box.
   The administrator's ID, "**admin**," can be changed in the Web Viewer.
2. Enter the password in the <**Password**> input field.
3. Click [**Sign in**].
   If you have logged in successfully, you will the Live Viewer screen.

- When you access the camera web viewer, pay special attention to the security by checking whether the image data is encrypted.

- You will experience the best video quality if the screen size is 100%. Reducing the ratio may cut the image on the borders.

CAMERA WEB VIEWER SETUP

1. Click the [**Setup ( )**] icon.
2. The Settings window appears.
3. You can configure settings for the camera's basic information, video, audio, network, event, analysis, and system over the network.
4. Click <**Help ( )**> to view detailed descriptions of each function.

TROUBLESHOOTING

PROBLEM	SOLUTION
No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS.	• On the authentication popup window prompted when initially accessing https, click "View Authentication Certificate" and select the "Always trust when connecting to the designated webviewer IP" check box. • If the webviewer continues failing to display a video after you select "Next" on the message window below, press the command key + Q to exit the Safari browser, access again and follow the procedures stated above.
I can't access the camera from a web browser.	• Check to make sure that the camera's Network settings are appropriate. • Check to make sure that all network cables have been connected properly. • If connected using DHCP, verify that the camera is able to acquire dynamic IP addresses without any problem. • If the camera is connected to a Broadband Router, verify that port forwarding is properly configured.
Viewer got disconnected during monitoring.	• Connected Viewers become disconnected upon any change to camera or network configurations. • Check all network connections.
The camera connected to the network is not detected in the Device Manager program.	• Turn off the firewall settings on your PC and then search the camera again.
Images overlap.	• Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap.
No image appears.	• If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to.
Voice is not recorded even though audio input settings are configured.	• You must enable the <Audio In> check box in <Basic> - <Video Profile>.
<Motion detection> of <Analytics> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred.	• Verify the settings in the following sequence: A. Check <Data & Time> settings. B. The <Motion detection> should be set to <Enable>. C. Check if the <E-mail> option of <Event setup> menu is checked to use.

PROBLEM	SOLUTION
No signal is found at the Alarm Output port even when an intelligent video analysis event is generated.	• Check alarm output port settings.
Cannot record into the Micro SD card.	• Check if the Micro SD card is defective. • When replacing the Micro SD card, it must be done while the power is disconnected from the product.
Micro SD card is inserted but the camera does not operate properly.	• Check if the Micro SD card is inserted in the proper direction. Operation of Micro SD card that is formatted by other devices is not guaranteed with this camera unit. • Format the Micro SD card again in <Setup> ➞ <Event> ➞ <Storage> menu.
Cannot record in the NAS.	• Confirm that the information registered in the NAS is correct.
It reports that NAS setting has failed.	• Confirm that the IP address of the NAS is valid. • Confirm that the ID/password of the NAS is valid. • Confirm that you can access the folder designated as the default folder using the ID of the NAS. • Confirm that the NAS SMB/CIFS items are unchecked. • Confirm that the NAS IP address and the camera IP address are in the same format. ex) The NAS & camera subnet mask initial value is 255.255.255.0. If the IP address is 192.168.20.32 then the NAS IP address should be in the range of 192.168.20.1~192.168.20.255. • Check whether you tried to access as another user without formatting the default folder saved or used. • Confirm that you used recommended NAS equipment.
I performed a fine adjustment in which two screens meet at the "Image alignment" menu. The adjustment is then reflected differently in both live and recorded screen.	• This product has image alignment deviation by resolution, and there is also deviation between the preview screen and live screen. • The user can fine control the resolution using the control UI in the image alignment page while watching the content in the resolution to be optimized to. • When adjusting the image alignment for the first time after Factory default, initialize it by pressing the [**RESET**] button, then start adjusting it.

Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Hanwha Vision cares for the environment at all product manufacturing stages, and is taking measures to provide customers with more environmentally friendly products.
The Eco mark represents Hanwha Vision's devotion to creating environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.

Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.
Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.
Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.
To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

Hanwha
Vision