Hanwha Vision

NETWORK CAMERA

User Manual

TNO-A9084ER

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 PoE (48Vdc), 0.23A.
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. Although a rapid change in temperature could cause frost inside the dome, there will be no problem with the video.
23. 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.
24. The operating temperature of the product is -40°C~+60°C(-40°F to +140°F).

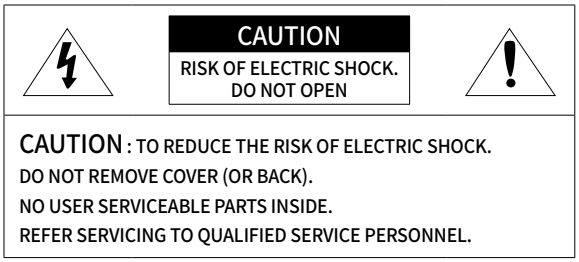
WARNING

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 OPENINGS 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.

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.

Camera for Use in Hazardous Locations

Class I Division 2 Groups A, B, C, D, T5
Class II Division 2 Groups F, G T85°C

c UL us
LISTED E551427

Ex ec IIC T5 Gc
Ex tc IIIC T66°C Dc

Ex II 3 G
II 3 D

IECEx UL 26.0021X
UL 26 ATEX 3528X

Tamb -40°C ≤ Ta ≤ +60°C
Rating : PoE(48V ⎓) 0.23A, 11.2W

SERVICE INFORMATION LINK

https://supportportal.hanwhavision.com/

IMPORTANT SAFETY INSTRUCTIONS (EXPLOSION-PROOF PRODUCTS)

Carefully follow the contents as they are for preventing danger or property damage through the correct use of the product.

Explosion hazard

- This product shall be installed and maintained by qualified technicians in accordance with national standards such as EN/IEC 60079-14 and EN/IEC 60079-17 (applicable standards).
- Never open the product with power supplied in an explosion-proof area.
- Install the product by using appropriate tools.
- The manufacturer recommends to use explosion-proof tools.
- It is recommended to perform connection testing and maintenance work in a non-explosion-proof area.
- Grounding is required to reduce the ignition risk of the product when installed in a potentially explosive area.
- Be sure to connect the device to the protective earth.
  At this time, it is recommended to use an approved grounding cable.
- Before turning on the product in a potentially explosive area, make sure all connections are closed properly.
- If the temperature of the device's surface increases due to direct sunlight, its surface temperature grade is determined using only the ambient air temperature without considering direct sunlight.
- Make sure that devices are all certified for the installed application and environment conditions.
- Any changes that are not approved by the manufacturer are not covered by warranty.
- The enclosure shall be protected from impact corresponding to the low risk of mechanical danger.
- The ambient temperature range is -40 °C to +60 °C.
- Do not open when an explosive atmosphere is present.
- To reduce the risk of ignition of hazardous atmospheres, disconnect the equipment from the supply circuit before opening.
- This equipment shall be installed in such way that the risk from propagating brush discharge is avoided.
- Do not loosen or twist the protective earthing conductor.
- For earthing, O-lug or U-lug shall be assembled and fixed by using bolt and washer in the groove of a rear cover.
- A readily accessible disconnect device shall be incorporated in the building installation wiring.
- Keep assembly tightly closed when operating.
- Use stainless steel hardware to fasten the mount to outdoor surfaces.
- Only use replacement parts recommended by the manufacturer.
- Do not change or repair the flamepaths of the product housings.
- Do not dismantle the glass nut.
- Instructions on avoiding ignition in potentially explosive environments due to electrostatic discharges must complied with IEC TS 60079-32-1.

Specific condition of use

- The flameproof joints are not intended to be repaired.
- The risk of electrostatic discharges shall be minimized, see the installation instruction.
- The equipment shall only be installed in locations where there is a low risk of mechanical damage.
- The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC/EN 60664-1.
- Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 140%.
- To prevent electrostatic discharge, only touch the device after wiping clean the front panel with a damp cloth or wearing anti-static gloves, to avoid the electrostatic charge.
- See installation instruction for cutout and mounting guidance.
- List of applied standards
  - ✓ IEC 60079-0, Edition 7, Issue Date 12/2017
  - ✓ IEC 60079-7, Edition 5.1, Issue Date 06/2015
  - ✓ IEC 60079-31, Edition 3, Issue Date 01/2022
  - ✓ CENELEC EN IEC 60079-0, Issue Date 07/2018
  - ✓ CENELEC EN IEC 60079-7, Issue Date 12/2015
  - ✓ CENELEC EN 60079-31, Issue Date 09/2014

Electric shock hazards

- When installation or maintenance is performed with the circuit breaker ON, make sure the product is turned off.
- A power cut-off device shall be included in electrical units to detect hazards, possibly turning off power if necessary.
- An earth leakage circuit breaker (maximum of 16 A) is recommended to use for the electrical unit that is connected to the device.
- The minimum gap between circuit breaker contacts must be 3 mm (0.1″).
- Do not use worn or corroded cables.
- All cables shall comply with IEC 60332-1-2, IEC 60332-1-3, and IEC/EN 60079-14.
- During installation, check whether the characteristics of the power supply from the facility match those required by the product.
- This equipment is not suitable for use in locations where children are likely to be present.
- WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTIONS.

Precautions for work

- Check that the installation method complies with explosion-proof regulations and specifications.
- After connection, it is recommended to test in a non-explosion-proof area and then install the product.
- Use appropriate cables that can withstand the operating temperatures.
- All unused cables should have been electrically insulated.
- Be sure to install the product only in a standard location.
- Proceed with installation after checking whether the product's power source is PoE or DC voltage and it is appropriate.
- The manufacturer assumes no responsibility for any damage caused by unauthorized modifications, use of non-genuine spare parts, and installation, maintenance, and repair by unqualified technicians.
- For technical services, contact with qualified technicians.
- This product shall be repaired by trained technicians or repaired under the supervision of the manufacturer.
- During repair, use only genuine parts of the manufacturer.
- Strictly follow the maintenance instructions in this manual.

Understanding the installation procedure

- Installers shall comply with general accident prevention guidelines while handling the product.
- Before installation, check the components to see if they match those in this manual.
- Installation in an explosion-proof area shall be performed by qualified technicians.
- The manufacturer assumes no responsibility for any damage caused by improper use of the device mentioned in this manual. The manufacturer also has the right to change parts without prior notice.
- Because user assumes responsibility to select a place on which the product is to be installed, any fixtures are not provided to attach the product. It is the installer's responsibility to select appropriate fixtures for the purpose.
  Use an installation method and materials that can support at least 4 times the weight of the product.
- For maintenance of the entire product, it is recommended to send the product to the manufacturer for repair.

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RECOMMENDED PC SPECIFICATIONS

- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
- RAM : 8G or higher
- Recommended browser: Chrome
- Supported browsers: C hrome, Safari, Firefox, MS Edge(chromium based)
- Supported OS : Windows, Mac, Linux, Android, iOS, Chrome
- Verification environment
  - ✓ Windows 10 or later: 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

- Recommended capacity : 16GB ~ 1TB(MLC type recommended)
- Recommended Products (Hanwha Vision Product Line): Industrial
  - ✓ SPP-E10T (1 TB)
  - ✓ SPP-E512G (512 GB)
  - ✓ SPP-E256G (256 GB)
  - ✓ SPP-E128G (128 GB)

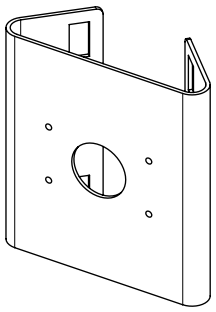
  * The Industrial model offers significantly higher reliability (in terms of read/write cycles and high/low temperatures) compared to the MLC type.
- Third-party recommended manufacturers / Product Type:
  - ✓ SanDisk / High Endurance, MAX ENDURANCE
  - ✓ Western Digital / Purple QD101
  - ✓ Transcend / High Endurance

NAS RECOMMENDED SPECS

- Recommended capacity : 200 GB 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

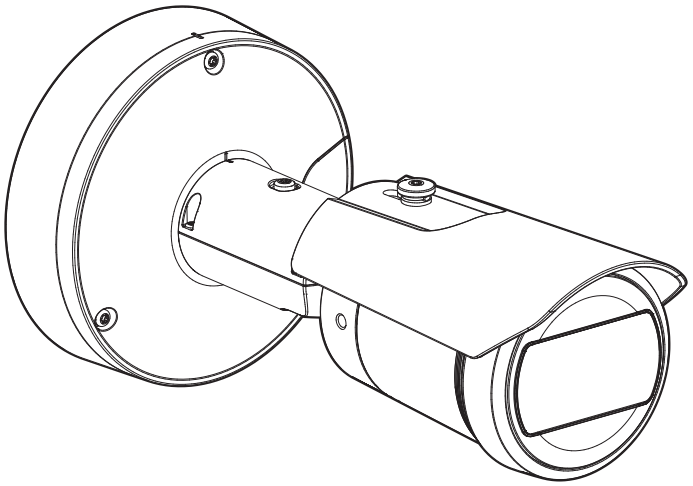
OPTIONAL ACCESSORIES FOR INSTALLATION

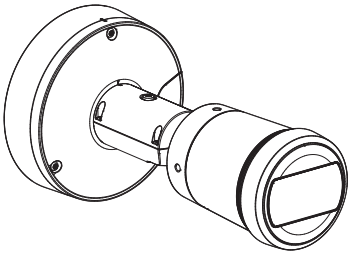
You can purchase appropriate optional accessories available.

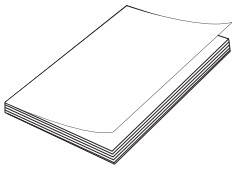
Model name	TNO-A9084ER
Pole Mount (Direct Assembly)	 SBP-302PM

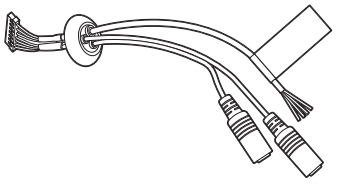
WHAT'S INCLUDED

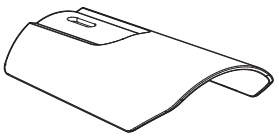
As for each sales country, accessories are not the same.



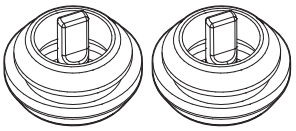


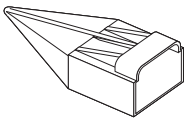




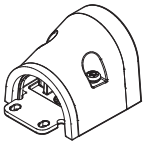






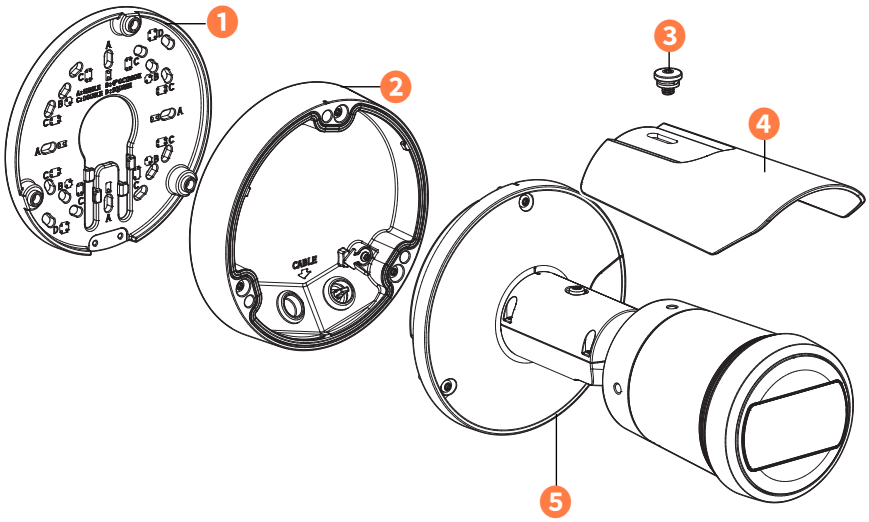




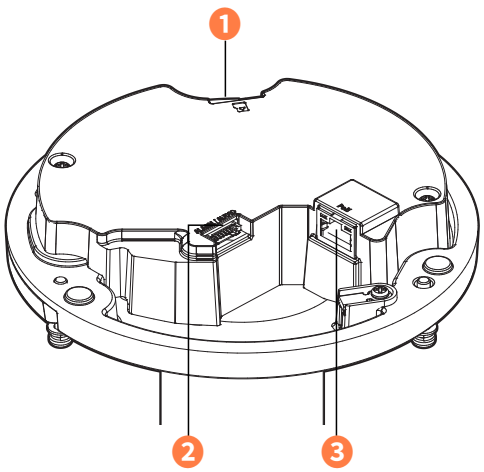


- The shape of the camera lens may differ depending on the model names.
- Use installation screws of at least M4, L30 for the installation of this product.

AT A GLANCE

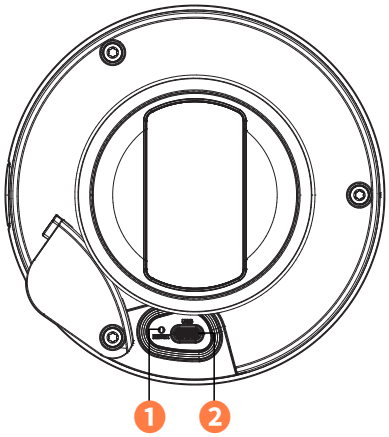


① Mount plate
② Bottom cover
③ Sunshield fixing screw
④ Sunshield
⑤ Camera body



① Micro SD card slot
② Audio/Alarm cable port
③ PoE port

installation & connection



① Reset button
② USB type-C port

- Wipe out a dirty surface of the lens softly with a lens tissue or cloth to which you have applied ethanol.

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.

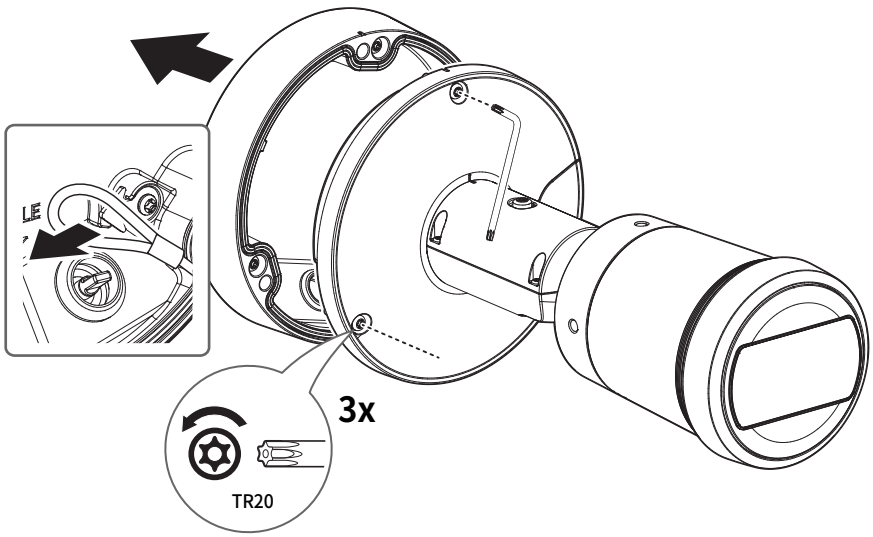
Precautions before installation

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

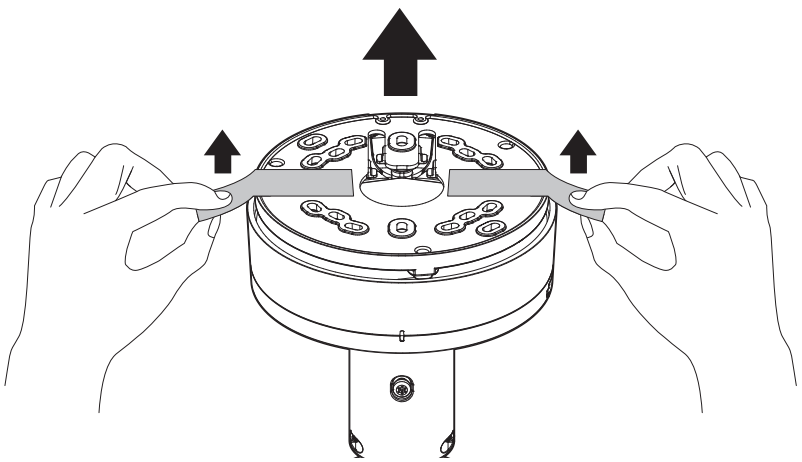
- Select an installation site that can hold at least 5 times the camera's weight.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site.
  And put aside personal belongings from the site, just in case.
- If the 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.
- Do not use the sunshield hole for any purpose other than for connecting the sunshield.

Disassembling

1. Remove the bottom cover by turning the bottom cover's fastening screws on the camera body counterclockwise.
   - Note that it is not necessary to loosen the screws completely.

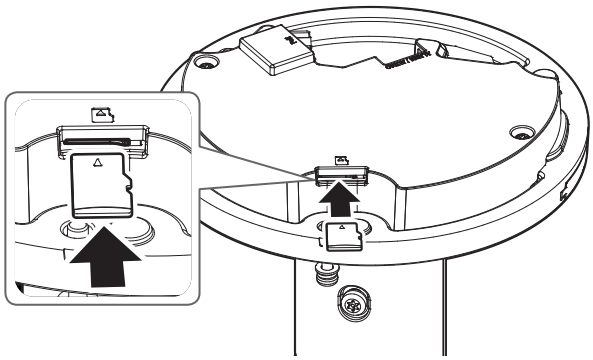


2. Remove the fixing tape from the bottom cover and mount plate, and then remove the mount plate.



Inserting a Micro SD card

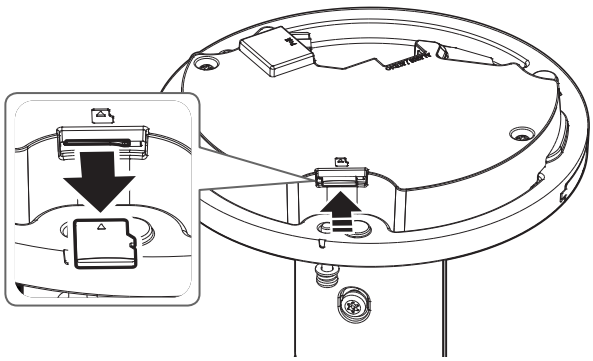
Slide the Micro SD card into the Micro SD card slot on the camera module in the direction of the arrow.



- Before installing the camera, the Micro SD card should be inserted while the power source and the body are separated.
- Do not forcefully insert it in the reverse direction. It might damage your Micro SD card and your product.
- When it rains or the humidity is high, insertion or ejection of a Micro SD card is not recommended.
- 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.

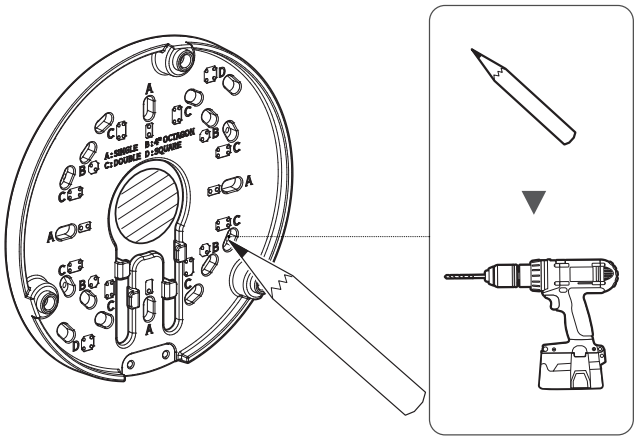


- Before removing the Micro SD card, in <**Setup** (⚙)>-<**Event**>-<**Storage**>, set the device to <**Off**> and press the [**Apply**] button and turn the camera off.
- If you turn off the camera or remove the Micro SD card that contains data from the product, the data may be lost or damaged.

Installation (Mount plate)

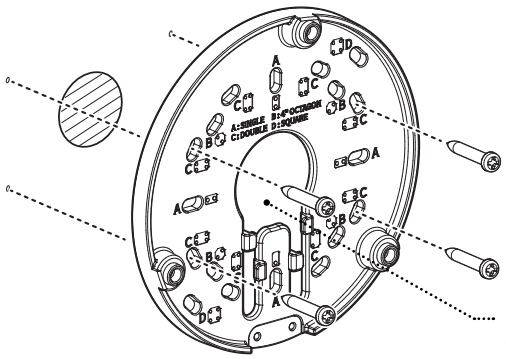
[Directly installing on wall/ceiling]

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. Take out the necessary cables from among the network and audio/alarm cables through the hole of the mount plate.

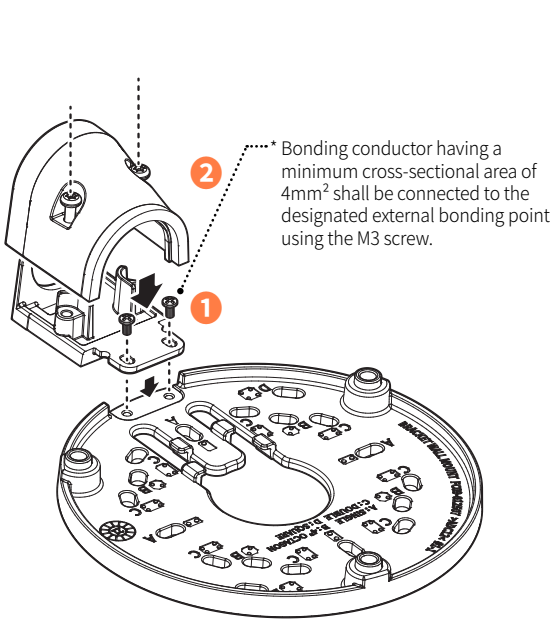


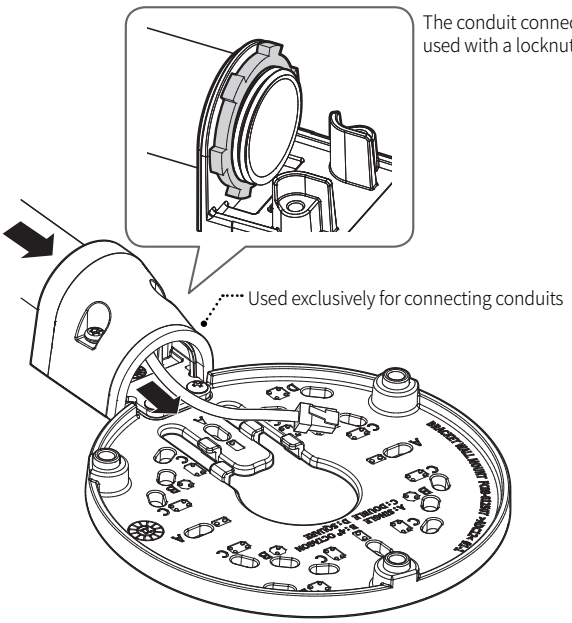
[Installing using pipe]

2-1. Join the provided conduit adaptor to the mount plate.

2-2. Mount the pipe to the conduit adaptor.

* Cable/conduit entries must be fitted with ATEX/IECEx certified cable gland with same protection techniques and IP ratings.





① Tighten two screws

② Put on the cover (Tighten two screws)

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

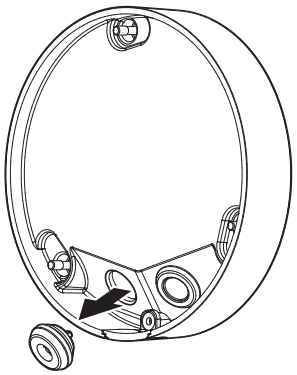
2-4. Take out the necessary cables from among the network and audio/alarm cables through the pipe.

Installation (Bottom cover)

- 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.

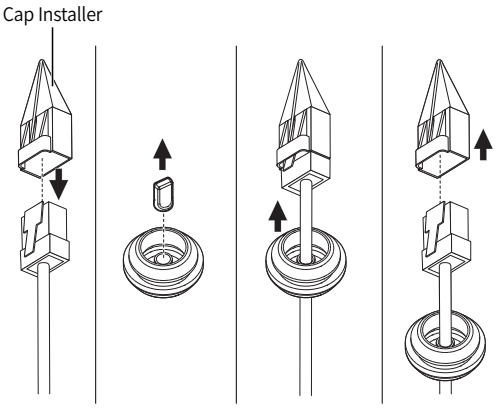
[Installing the network cable](IP66/IP67)

1. As shown in the figure below, remove the cable bushing from the bottom cover.

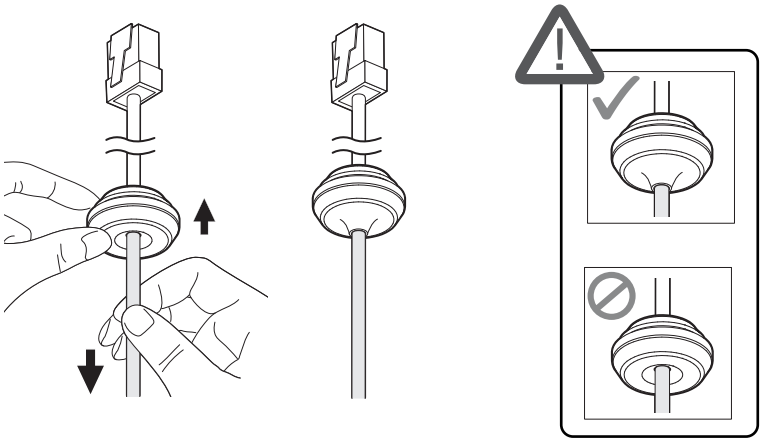


2. Remove the protruding part of the 1-hole cable bushing that was removed from the Bottom cover.

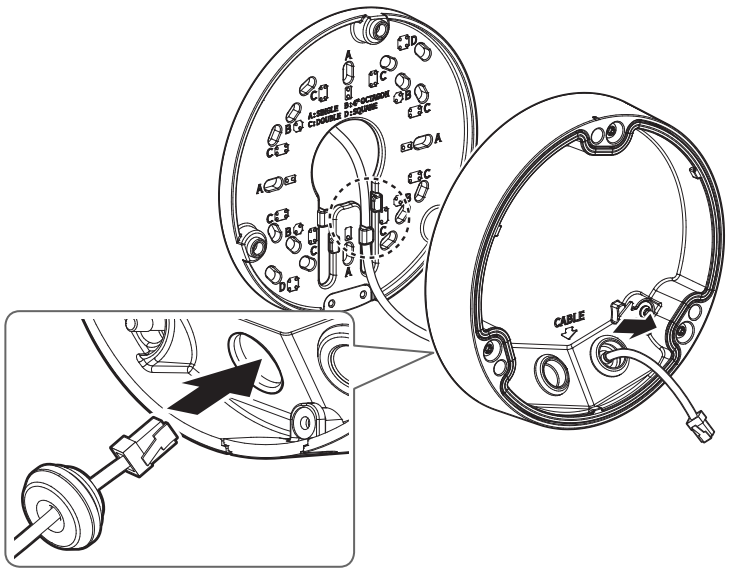
3. Use the cap installer to pass through the RJ45 cable.



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

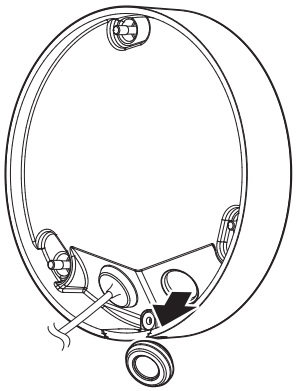


5. Insert the cable bushing of the network cable into the bottom cover.

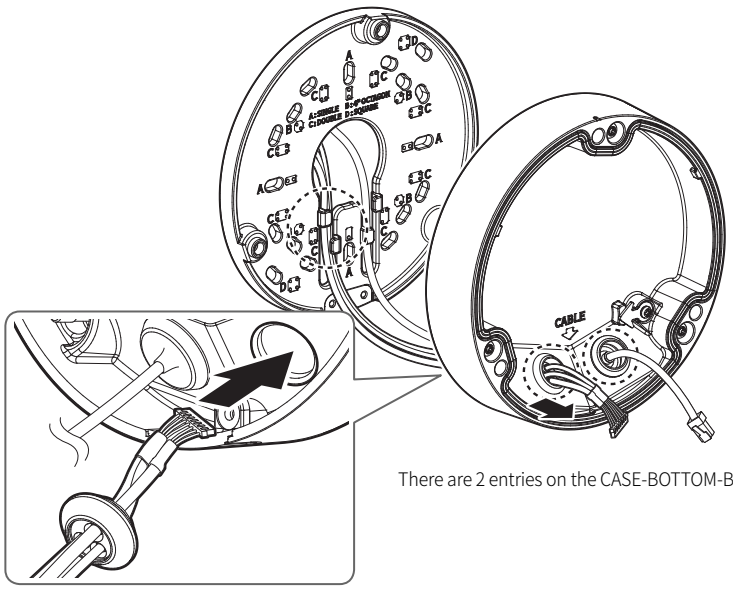


[Installing audio/alarm cables]

1. As shown in the figure below, remove the cable bushing from the bottom cover.



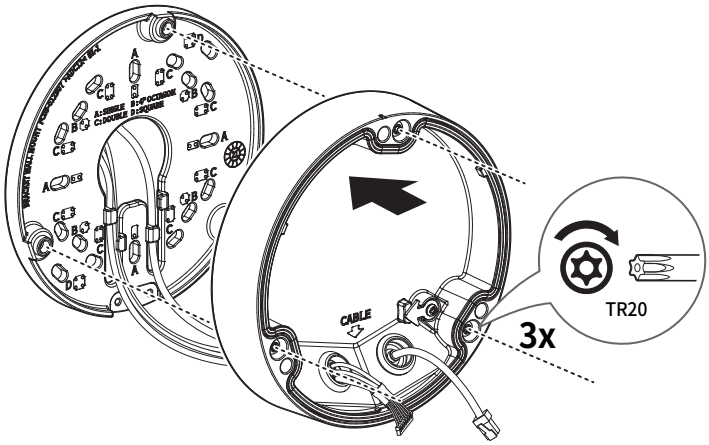
2. Mount the cable bushing of the provided audio/alarm cables to the Bottom cover.



There are 2 entries on the CASE-BOTTOM-BACK-BOX

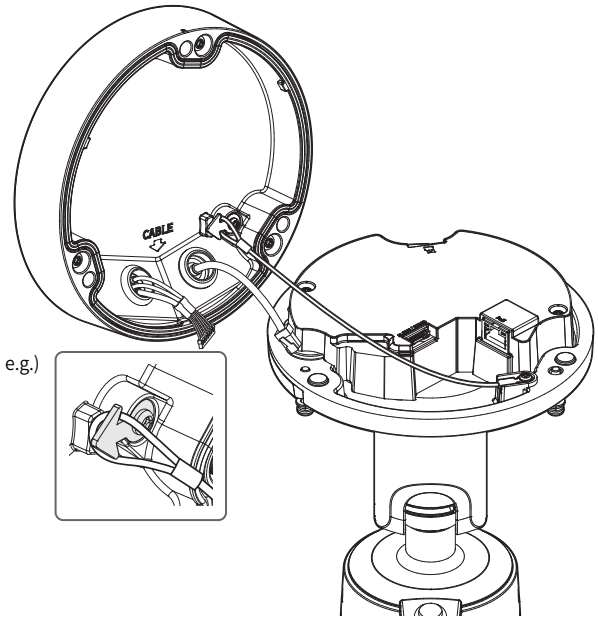
3. Join the Mount plate with the Bottom cover.

- When attaching the bottom cover, make sure that the cables pass through the cable fixing hooks of the plate.

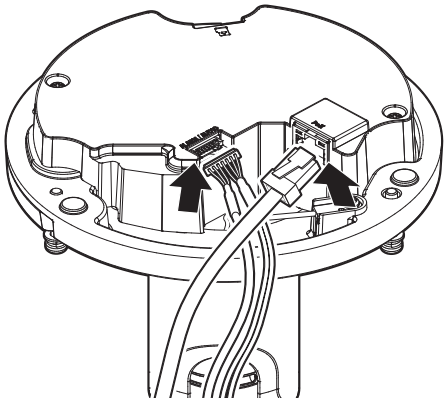


Installing the camera body

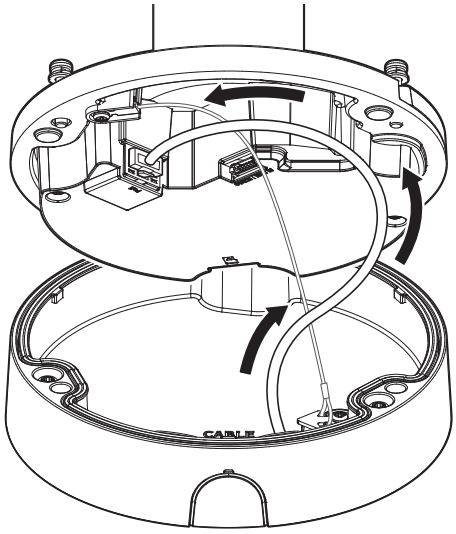
1. Hang the safety cable up on a hook that looks like an arrow in the Bottom cover.



2. Connect the network cable and audio/alarm cable connector to each port of the camera body.

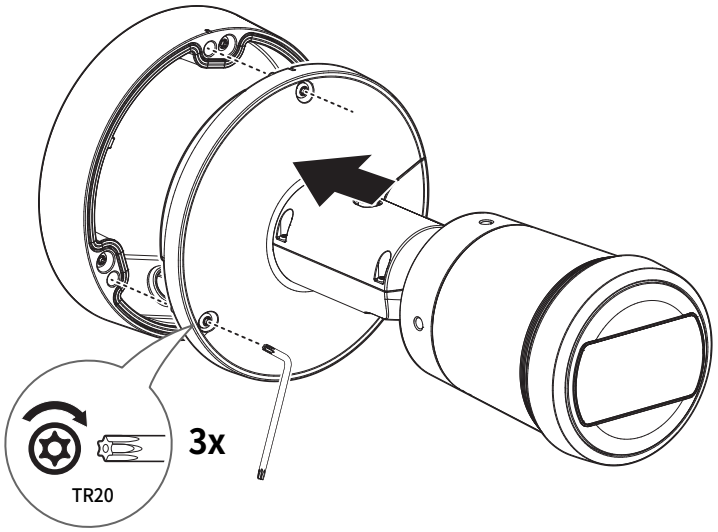


- Place the network cable in a circular form as shown in the figure below.



3. Join the camera body with the Bottom cover.

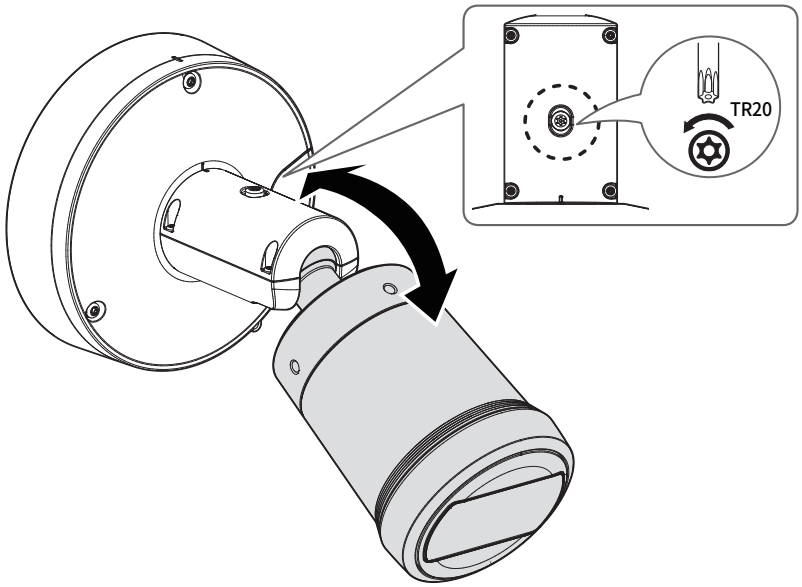
- Make sure to firmly tighten the fastening screws so that there is no water damage issue.



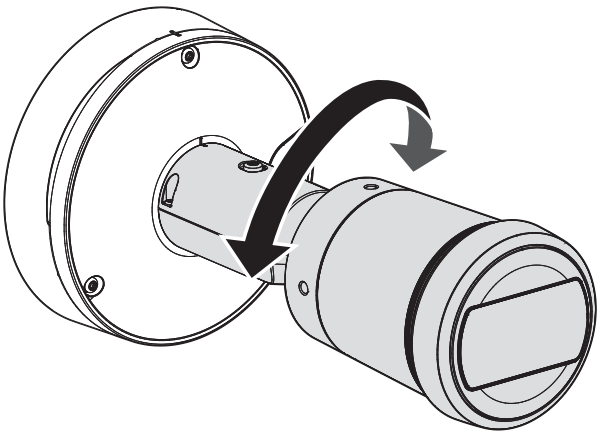
4. Adjust the camera direction using the Torx. wrench.

- Note that it is not necessary to loosen the screws completely.
- Connect a monitoring device to the USB type-C port and then monitor and adjust it.

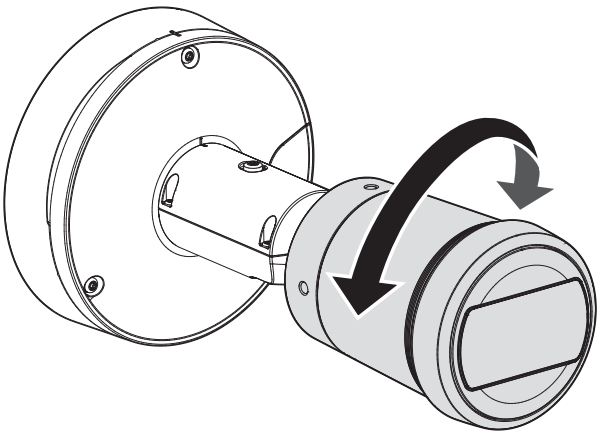
- When you adjust the camera position using a bracket, please loosen the bracket screw, adjust the camera, and tighten it. If you attempt to adjust it forcibly while the screw is tight, it may result in a scratch or other problems.



<Tilt>

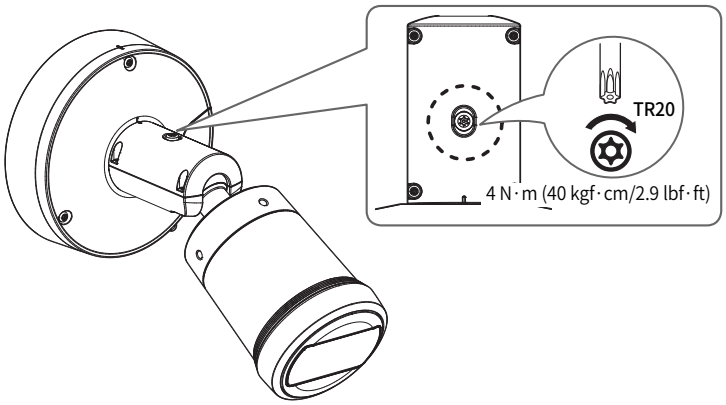


<Pan>

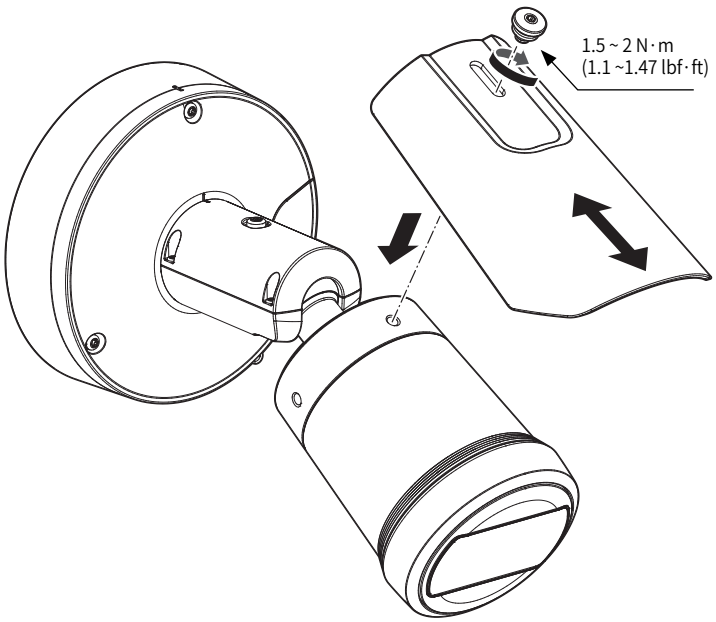


<Lens rotation>

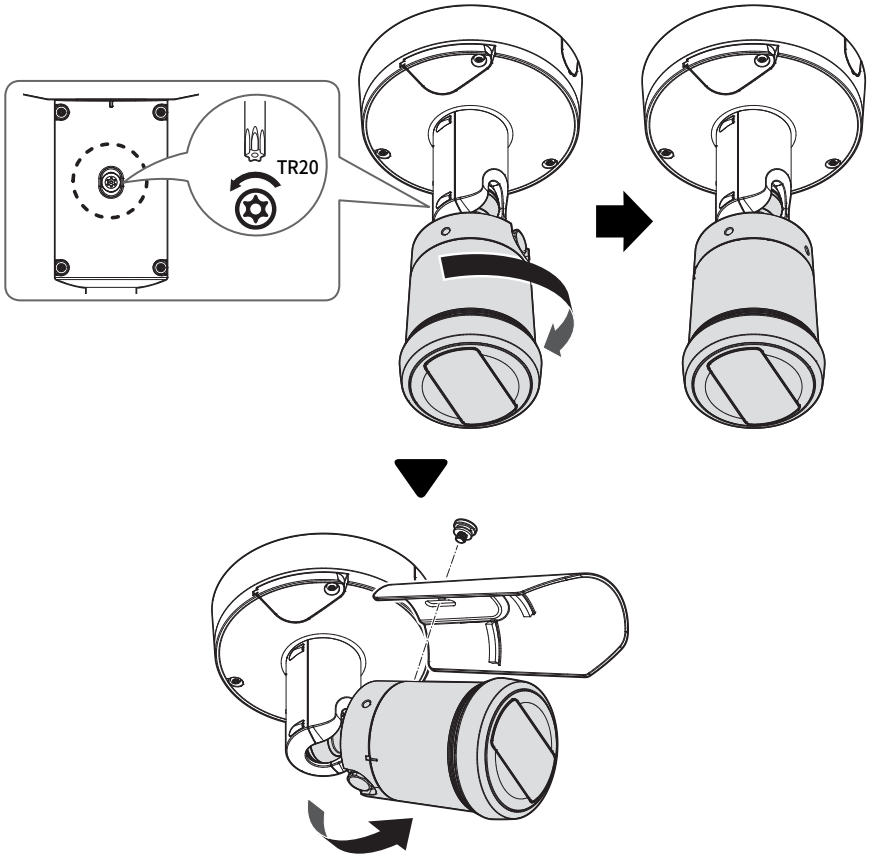
5. When adjusting the lens rotation is complete, re-fasten the lens rotation adjustment screws to secure the angle.



6. Use the sunshield mounting screws and tooth washers to join the sunshield to the camera body.



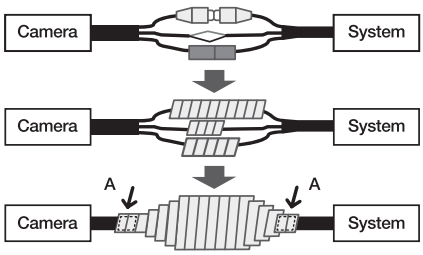
- When installing the camera on the ceiling, rotate the lens rotation 180° before use.



Waterproofing of cable connections

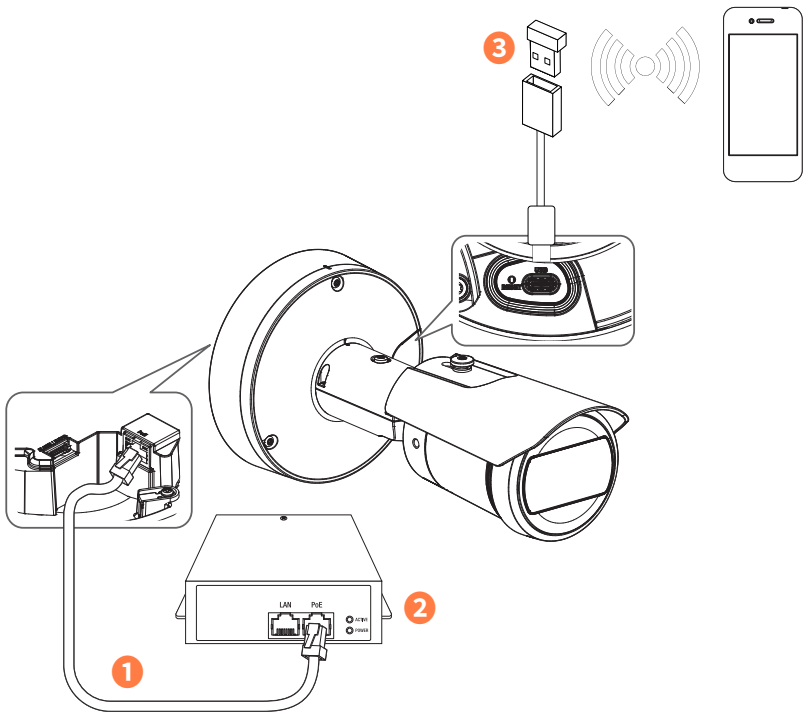
When installing the camera, please waterproof it with waterproof butyl rubber tape (can be purchased in stores) so that water does not leak from the gap of the cable connected to the outside.

1. Connect network and alarm/audio cables, etc.
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.

CONNECTING WITH OTHER DEVICE



① Ethernet
② PoE Injector or switch
③ WiFi dongle

- 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.

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 802.3af standard.

Network Cable Specification

Item	Contents	Remark
Connector	RJ-45(10/100BASE-T)	
Ethernet	10/100BASE-T	10/100 Mbps
Cable	Category 5e or higher	
Max Distance	100 m	DC Resistance ≤ 0.125 Ω/m
PoE Support	IEEE 802.3af	

Connecting WiFi

Camera Setup

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

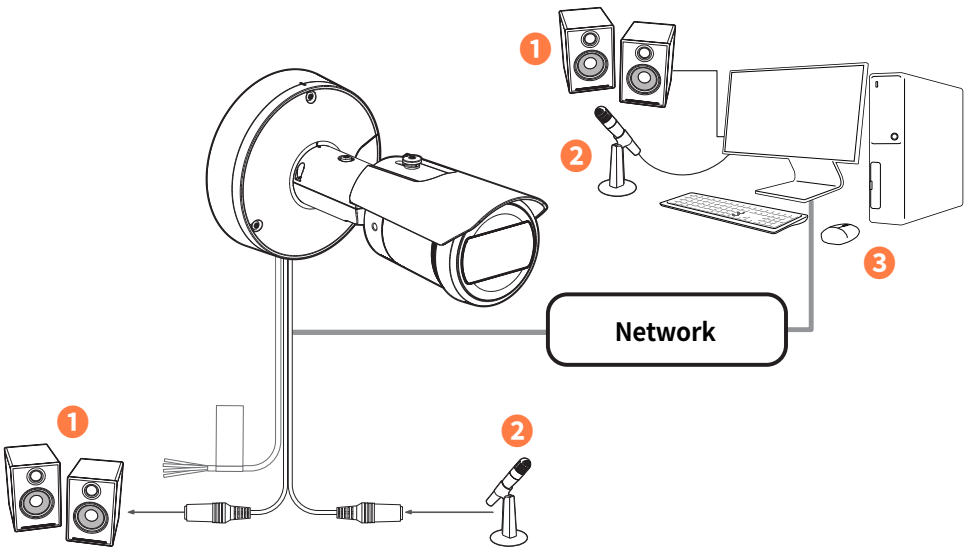
Smartphone Setup

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

Connecting to Audio Input/Output



① Speaker
② Microphone
③ PC

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)

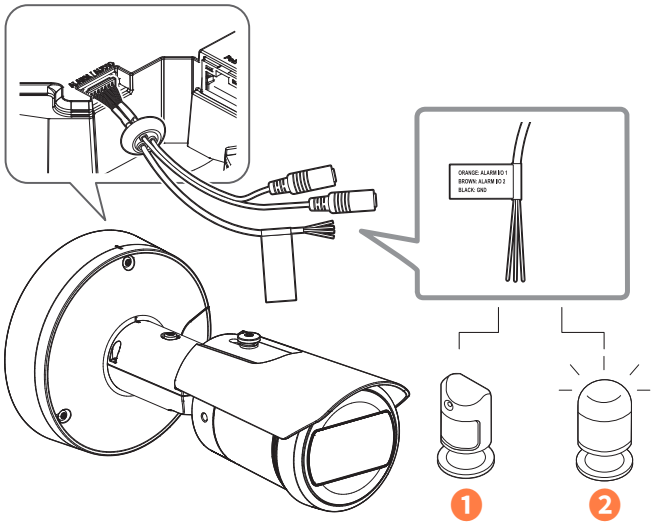
- **Full duplex Audio**
- **Audio in** : Selectable (microphone/Line-in), Supported voltage: 2.5VDC (4mA), Input impedance: 25kΩ, 3.5mm TRS jack
- **Audio out** : Line-out (3.5mm TRS jack (balanced mono is not supported)), Maximum output: 0.5Vrms, Line out impedance : 600Ω

◆ In the case you access the web viewer and select an external microphone as the audio input sources in <**Video & Audio**> - <**Audio setup**>, the following specifications are recommended:
  - Frequency range: 40-16,000 Hz
  - Impedance: 1,500 Ω
  - Sensitivity: -40±3 dB (7.1-14.1 mV)

◆ In any of the following cases, sound classification performance may be degraded or malfunction:
  - If gunshot sounds are heard continuously in a short interval (e.g. machine gun sound) rather than a one-time gunshot sound
  - If the noise is too loud for the noise and the target sound to be distinguished
  - If two or more of different sounds are registered simultaneously
  - If the sound classification is applied while using the noise removal function in a quiet place
  - If the source of clapping sounds or screams is close to the camera (within 1 meter)
  - If a sound that does not belong to any of the sound classification categories (airplanes sound, siren sound, etc.) is loudly heard all of sudden
  - If external microphone does not meet the recommended specifications

Connecting to the I/O port box

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



① Sensor
② Alarm

Alarm-related Connector

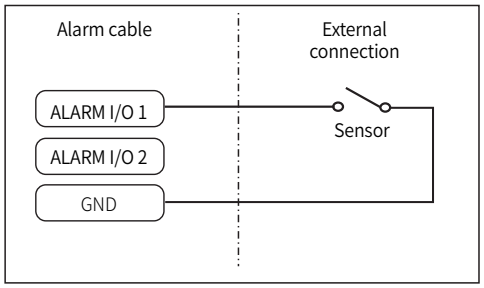
◆ Make sure to connect the provided audio/alarm cable before use.

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)



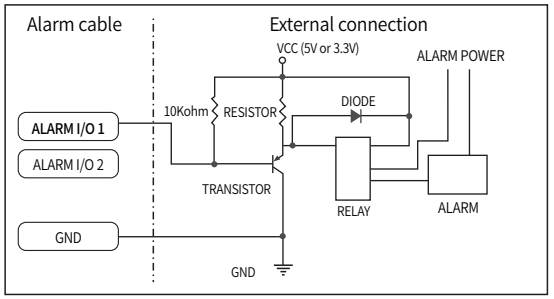
<If ALARM I/O 1 is set as an input terminal>

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>

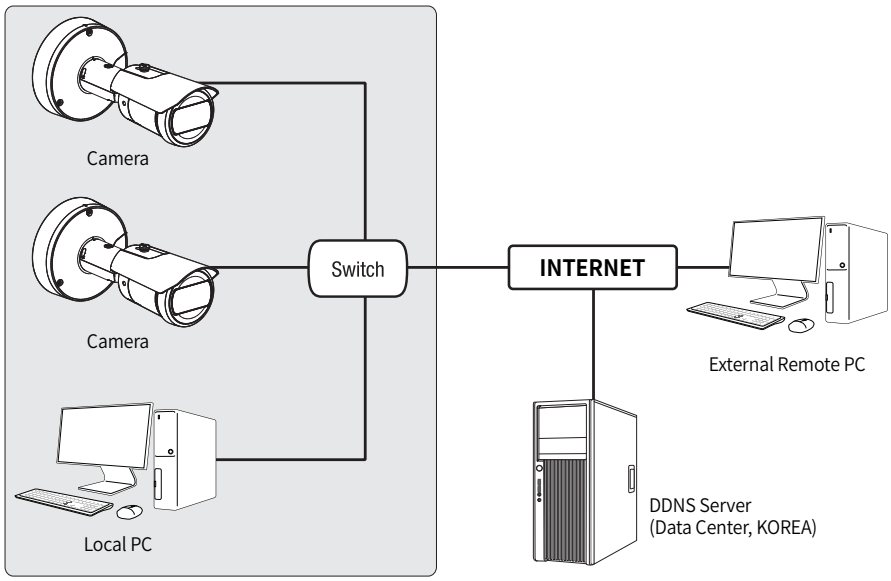
network connection and setup

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

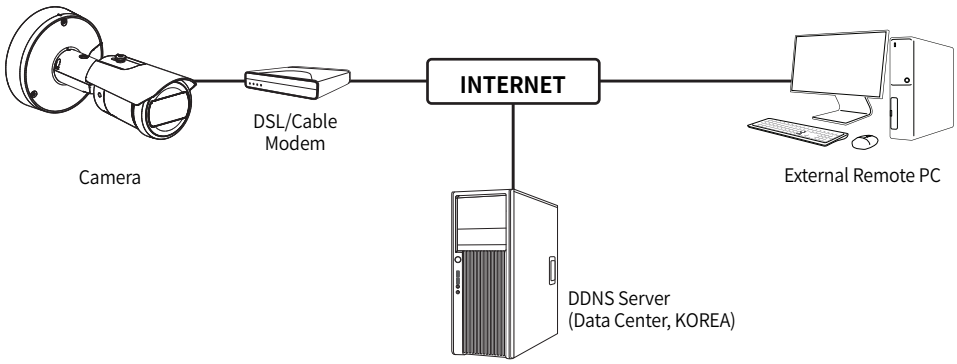
1. Launch an Internet browser on the local PC.
2. Enter the IP address of the camera in the address bar of the browser.



<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 ConfigPro.
  For further details on Device Manager use, refer to "**Using ConfigPro**".

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



1. Connect the user PC directly with the network camera.
2. Run the ConfigPro 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.

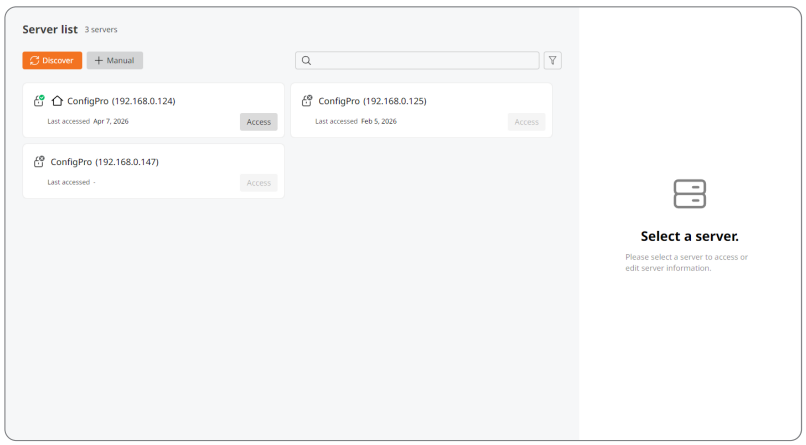
- For information on how to set DDNS, refer to the online help of Web Viewer.
- For information on how to set the IP format, refer to the online help of Web Viewer.

Using ConfigPro

- The ConfigPro software can be downloaded from the model page under <**Products**> - <**Software**> - <**Management**> on the Hanwha Vision website (https://www.HanwhaVision.com).
- For detailed instructions on using ConfigPro, refer to the <**Manuals**> menu on the page.

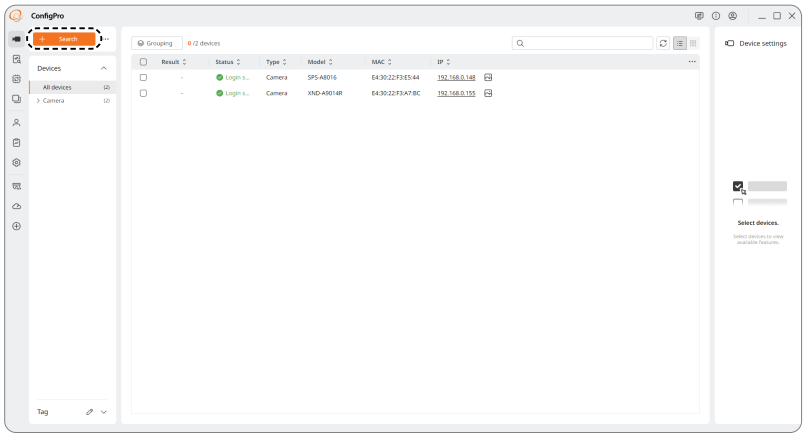
STARTING A SERVER

From the network server list, you can select a server where the cameras are installed and log in.



AUTOMATICALLY SEARCHING CAMERA

If the camera is connected to the same network as the server registered in ConfigPro, you can find the network camera using the search function.



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

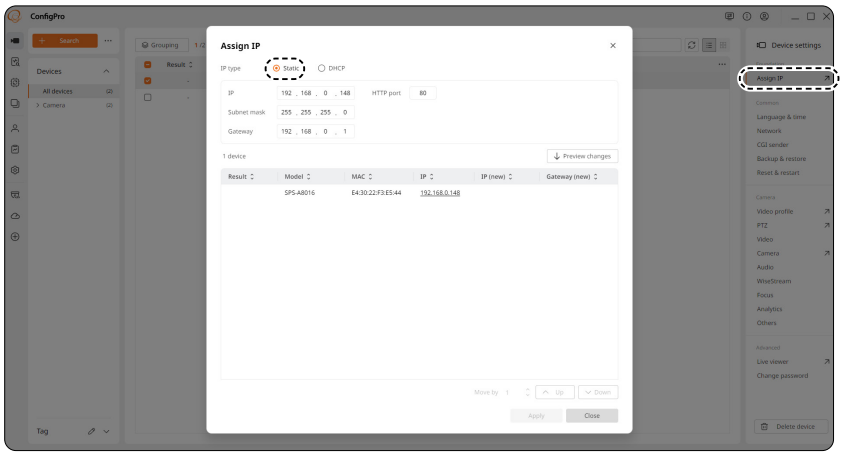
CONFIGURING IP ADDRESS

If you want to change camera network setting, <Login success> sign must be displayed at <**Status**>.

Configuring Static IP

Manually insert and configure IP address & port information.

When setting one camera



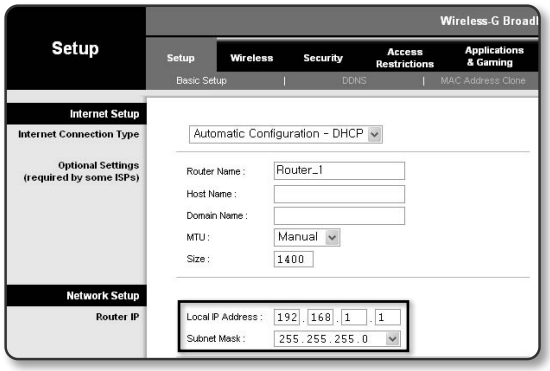
1. From the search list, select a camera to change its IP settings.
2. On the right side of the ConfigPro screen, click <**Assign IP**>.
3. Select <**Static**>.
   - IP information of the camera will be displayed as previously set.
4. Fill in IP & Port related categories.
5. Click the [**Preview changes**] button to check the IP address that will be assigned.

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**".

If the Broadband Router has more than one camera connected

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

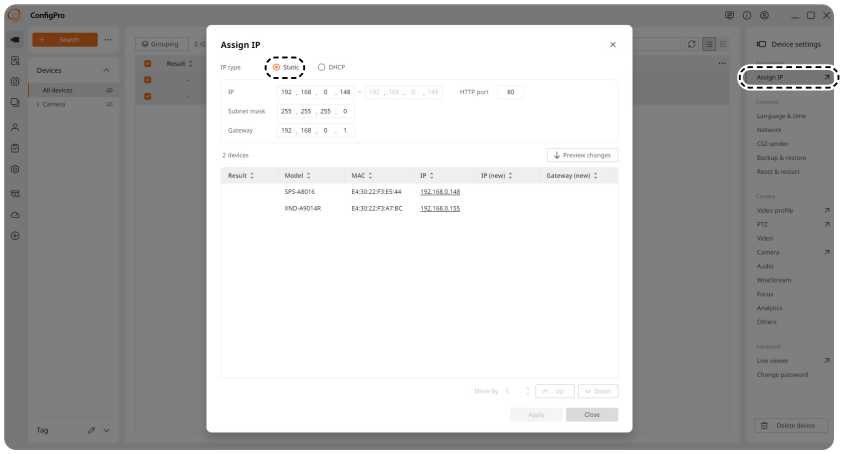
ex)

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

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

When setting multiple cameras

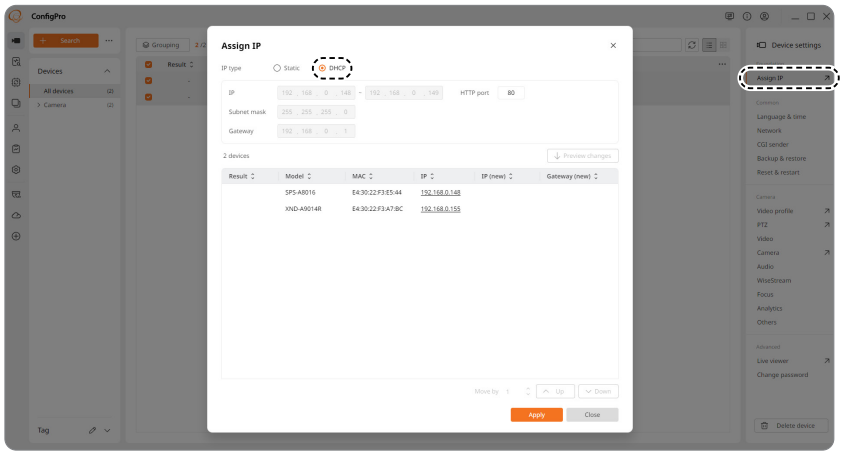


1. Click the camera from the list that you want the change the IP setting.
2. On the right side of the ConfigPro screen, click <**Assign IP**>.
3. Select <**Static**>.
4. Enter the initial address of the IP address range to be assigned.
5. Click the [**Preview changes**] button to check the IP address that will be assigned.
6. Click the [**Apply**] button to start IP assignment.
7. If the success message is displayed, click [**OK**].

Configuring Dynamic IP

Receive IP address from DHCP

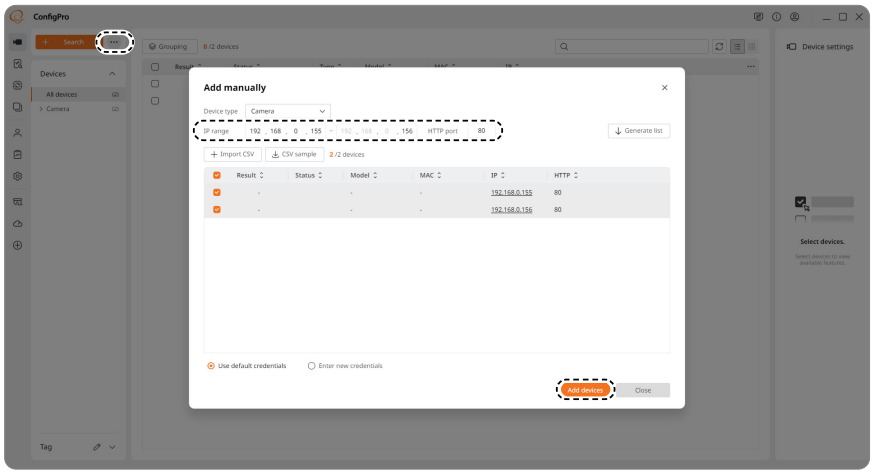
- Example of the Dynamic IP environment
  - ✓ If a Broadband Router, with cameras connected, is assigned an IP address by the DHCP server
  - ✓ If connecting the camera directly to modem using the DHCP protocols
  - ✓ If IPs are assigned by the internal DHCP server via the LAN



1. From the search list, select a camera to change its IP settings.
   - You can configure multiple cameras at the same time by selecting them together.
2. On the right side of the ConfigPro screen, click <**Assign IP**>.
3. Select <**DHCP**>.
4. Click the [**Apply**] button to start IP assignment.
5. Check the <**Result**> item for the success of IP assignment.

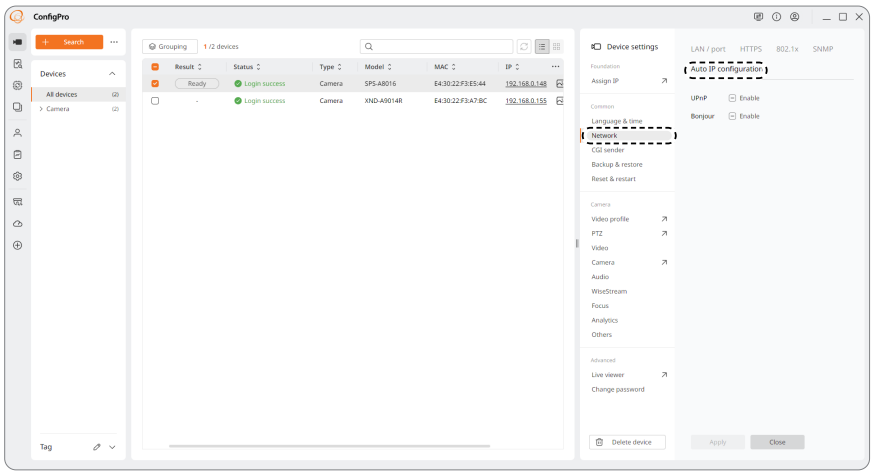
MANUALLY REGISTERING CAMERA

If the camera is not found through the search function, you can manually enter the IP information to find and register it remotely.



1. On the ConfigPro main screen, click the <**...**> button to the right of <**Search**>.
2. Enter the range of IP addresses to search, then click the [**Generate list**] button.
3. Select the devices to register, then click the [**Add devices**] button.
4. Check if camera is registered.
   - Check MAC address at the sticker attached to the camera.

AUTOMATICALLY CONFIGURING IP

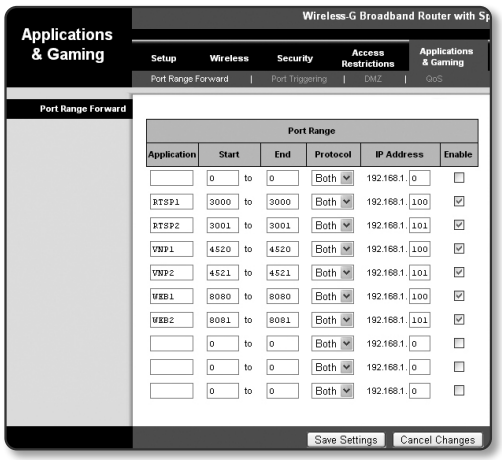


1. Click the camera from the list that you want to automatically configure the IP.
2. On the right side of the ConfigPro screen, click <**Network**>.
3. Click <**Auto IP configuration**> in the right tab.
4. To use the <**UPnP**> or <**Bonjour**> protocol, select <**Enable**> and click the [**Apply**] 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



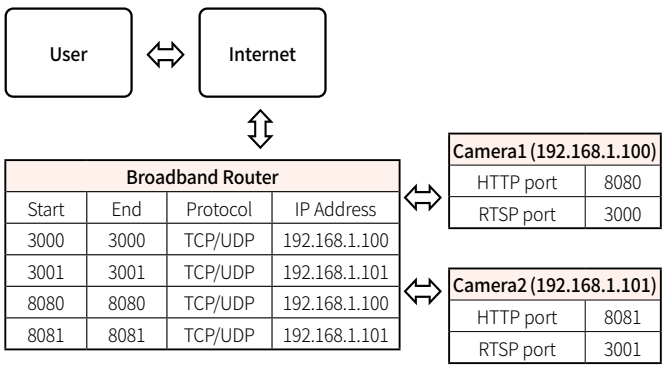
1. From the Setup menu of the Broadband Router, select <**Applications & Gaming**> - <**Port Range Forward**>.
   For setting the port range forward for a third-party Broadband Router, refer to the user guide of that Broadband Router.
2. Select <**TCP**> and <**UDP Port**> for each connected camera to 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 :



- 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 ConfigPro.
2. Select a network server where the cameras are installed and log in.
3. Once logged in, the list of cameras connected to the server will be displayed.
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

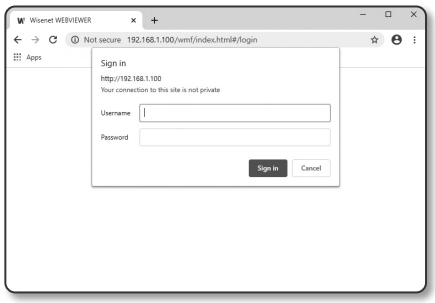
On a remote computer that is not in the Broadband Router's network cluster is not allowed, users can access cameras within a Broadband Router's network by using the camera's DDNS URL.

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 window is displayed.
   ♢ IP address (IPv6) : 2001:230:abcd: ffff:0000:0000:ffff:1111 ➡ http://[2001:230:abcd:ffff:0000:0000:ffff:1111]
   – The login window is displayed.

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 window is displayed.

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 window is displayed.

◆ 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**".

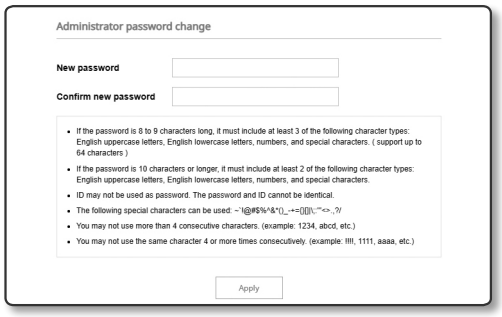
To check the DDNS address

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
When an Windows 10 user accesses the web viewer through Chrome or Firefox, the sound volume of microphone changes periodically.	• This is what happens when microphone driver has been set to Realtek driver. Install the High Definition Audio device (Windows Default Driver) or the third party driver as the microphone driver.
What are the specifications for WAVE files necessary to play audio at the time of an event?	• Sampling rate of 48,000 KHz or less is recommended. • For bits per sample (bps), up to 8/16 bit is recommended. • Only PCM encoding format is supported.
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 ConfigPro program.	• If another software (process) is occupying port 7711 in the Windows Task Manager or Resource Monitor, terminate it and try searching again. • 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.
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 memory 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.

PROBLEM	SOLUTION
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.

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.