

WISeNeT

NETWORK CAMERA

User Manual

PNM-9030V



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 Listed Power Supply Unit marked "Class 2" or "LPS" and rated from 12 Vdc, 1.57 A or PoE, 0.5 A.
16. 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.
17. 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.
18. 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.
19. 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.
20. Installing or using the product in water can cause serious damage to the product.



21. Screen distortion could occur outside of the subject distance.
22. When accessing multi-channels (CH1 - 5), 1 or 2fps could drop from the set fps at 15fps.
23. While encoding, a real time fps fluctuation of ± 1 fps could occur.

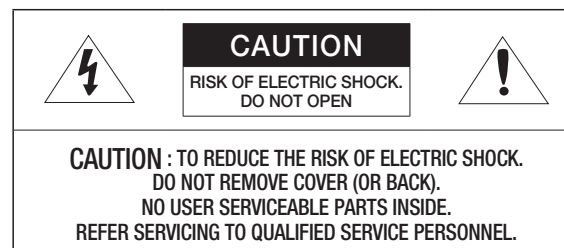
WARNING

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.

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 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.

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.

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.

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RECOMMENDED PC SPECIFICATIONS

- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
- Supported OS : MS Windows, Mac OS X
- Supported web browsers : Google Chrome, MS Edge, Mozilla Firefox (Windows 64bit only), Apple Safari (Mac OS X only)

Please see the appendix for detailed information on verified OS and browsers.
Some functions may be restricted even in supported browsers.

RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS

- Recommended capacity : 16GB to 256GB (MLC type)
- The following types of memory cards from the following manufacturers are recommended for this camera.
 - Manufacturer : SanDisk, Transcend
 - Product family : High endurance

NAS RECOMMENDED SPECS

- Recommended capacity : 200GB-2TB is recommended
- Simultaneous access : One unit of NAS can accept a maximum of sixteen camera accesses.
- For this camera, you are recommended to use a NAS with the following manufacturer's specs.

Recommended products	Available sizes
QNAP/SYNOLOGY	A maximum of 16 cameras can access simultaneously.

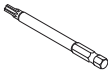


▪ If you use NAS equipment for purposes other than video saving, the number of accessible cameras may be reduced.

WHAT'S INCLUDED

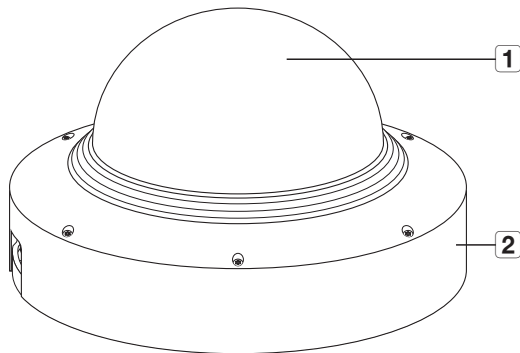
Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

Appearance	Item Name	Quantity	Description
	Camera	1	
	Instruction book, Installer S/W CD	1	
	Quick Guide (Optional)	1	
	Warranty card (Optional)	1	
	Power Terminal Block	1	Plugged in the power plug
	Template	1	Product installation guide
	Power Cable	1	Used to plug into the power port
	Audio/alarm cable	1	Used to connect with the audio and alarm port
	Cable bush	1	Used to connect the LAN cable with a diameter of Ø7~8.5.
		1	Used to connect the LAN cable with a diameter of Ø5~6.5.

Appearance	Item Name	Quantity	Description
	L Wrench	1	Used to remove and replace the dome cover
	Tapping Screw	4	Used for installation on the wall or ceiling
	Plastic Anchor	4	For fixing a screw, Inserted in a hole (reinforced anchoring force)
	Machine Screws	4	Used for assembling the dome case when installing the product on the pipe, wall mount, etc. or blocking a hole.
	Cap Installer	1	Used to connect the RJ45 cable.
	Card-type moisture absorbent	1	Attached when installed.
	Drill bit	1	Used for dome cover disassembly, assembly and camera installation.

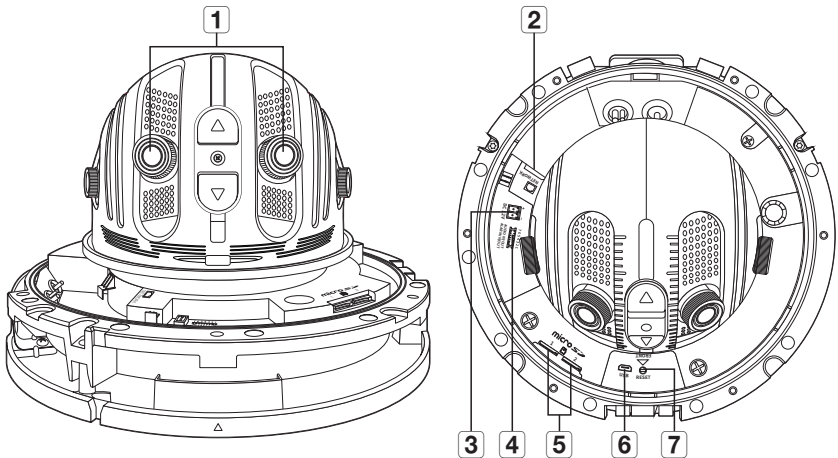
AT A GLANCE

Appearance



Item	Description
1 Dome cover	Case cover used to protect the lens and the main unit.
2 Camera Case	Housing part that covers the camera body.

Components



Item	Description
1 Lens	4 camera lenses create a panoramic image.
2 Network Port	A terminal that connects to PoE+ or LAN through the RJ-45 cable.
3 Power Port	Port for power terminal block.
4 Audio and alarm cable port	Plug in the audio and alarm cable to this port to connect with external alarm device/microphone/speaker.
5 Micro SD Memory Card Compartment	Compartment for the Micro SD memory card.
6 MICRO USB port	Port to connect the WiFi dongle. You can check the installation video through the applications installed in the smartphone. Refer to "Connect to WiFi dongle" on page 16. ■ WiFi dongle and OTG adapter are sold separately.
7 Reset Button	The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. i 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 IP Installer program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.

INSTALLATION



- This camera is waterproof and in compliance with the IP66 spec, but the jack connected to the external cable is not. You are recommended to install this product below the edge of eaves to prevent the cable from being externally exposed.

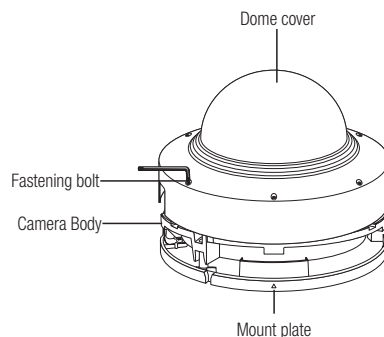
Precautions before installation

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

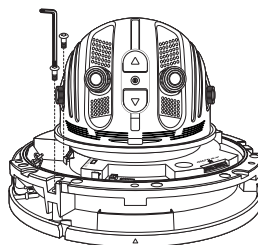
- Select an installation site that can hold at least 5 times the camera's weight.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside personal belongings from the site, just in case.
- If the 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.

Disassembling

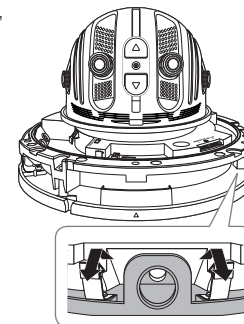
1. Remove the dome cover by loosening the fastening bolt of the dome cover. This can be done by turning it counterclockwise using the Allen key or drill bit provided.



2. Loosen the fastening screw on the camera body.

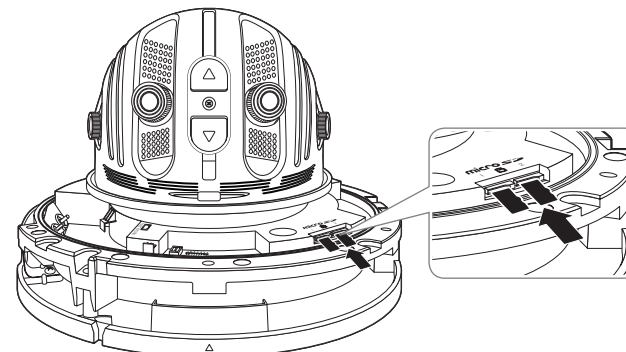


3. Remove the camera body and mounting plate by pulling the plate spring, as shown in the figure.



Inserting a Micro SD Memory Card

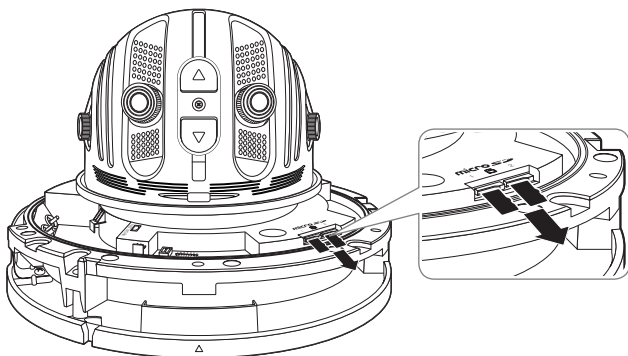
1. Remove the dome cover of the camera.
2. Insert a Micro SD card in the arrow direction shown in the figure.



- Disconnect the power cable from the camera before inserting the Micro SD memory card.
- Do not forcefully insert it in the reverse direction. It might damage your Micro SD memory card and your product.
- 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 memory 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 Memory Card

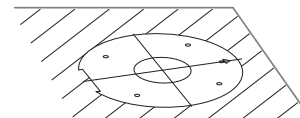
Gently press down on the exposed end of the memory card as shown in the diagram to eject the memory card from the slot.



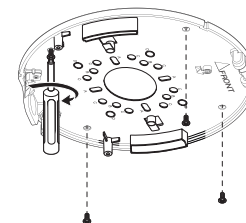
- You should save an SD card for each channel.
- Please note that if you firmly push and release the Micro SD memory card when it is ejected, it may pop out.
- Before removing the Micro SD memory card, in **<Storage>**, set the device to **<Off>** and press the **[Apply]** button and turn the camera off.
- If you turn off the camera or remove the Micro SD memory card that contains data from the product, the data may be lost or damaged.

Installation on a ceiling or wall

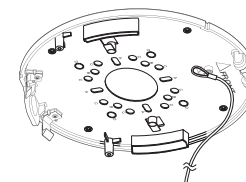
1. Use the provided template to drill holes for installation (diameter 6 mm and minimum depth 45mm) and insert the supplied plastic anchors to the end.



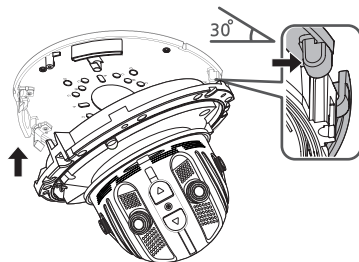
2. Align the holes of the mount plate for installation with the holes inserted with plastic anchors, and fasten the tapping screws.



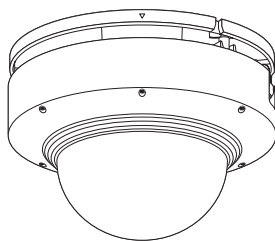
3. Connect the safety cable.



4. Mount the camera body to the mount plate.
 - Mount it to fit the hinges as shown in the image.
5. Connect the terminal inside camera with the required cable.
6. Push in the pin spring.
7. Adjust the lens to the desired direction by referring to **“Adjusting the monitoring direction for the camera”**. (Page 15)
 - If you tilt the lens, you may need to adjust the lens as this may block the screen.



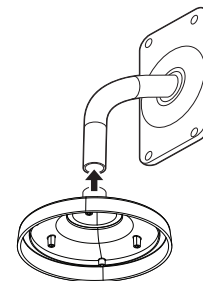
8. Assemble the dome cover.
 - Align the arrows when assembling the dome cover.
 - To ensure there are no issues with waterproofing, tighten the fastening bolts tightly using the Allen key or drill bit.
 - Peel off the protection vinyl attached to the inside/outside of the dome cover.



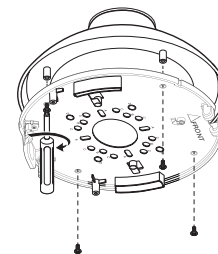
Attaching to the unbundled adapter

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

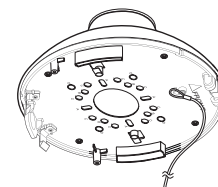
1. Install the hanging mount to the wall mount adapter.
 - Wall mount adapters and hanging mounts are sold separately.



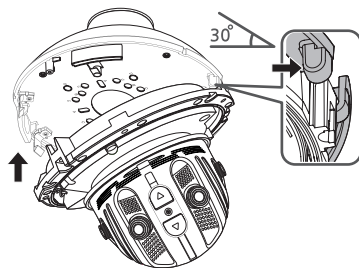
2. Connect the mounting plate and the hanging mount.



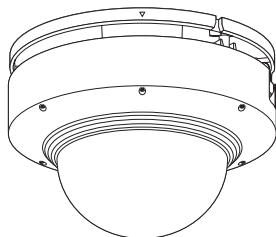
3. Connect the safety cable.



4. Mount the camera body to the mount plate.
 - Mount it to fit the hinges as shown in the image.
5. Connect the terminal inside camera with the required cable.
6. Push in the pin spring.
7. Adjust the lens to the desired direction by referring to **“Adjusting the monitoring direction for the camera”**. (Page 15)
 - If you tilt the lens, you may need to adjust the lens as this may block the screen.



8. Assemble the dome cover.
 - Align the arrows when assembling the dome cover.
 - To ensure there are no issues with waterproofing, tighten the fastening bolts tightly using the Allen key or drill bit.
 - Peel off the protection vinyl attached to the inside/outside of the dome cover.

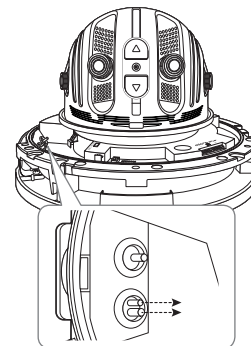


Method 1. Connecting the waterproof power cable and LAN cable

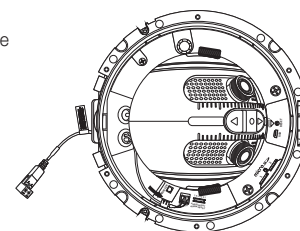
1. Remove the dome cover and the case.
2. Pull out the long projected part of the rubber plug on the bottom and remove it as shown in the figure.



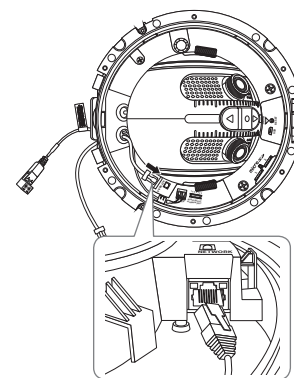
- Use an appropriate cable bush for the LAN cable to be connected.
 - Basic camera : Use the cable with a diameter of Ø5~6.5.
 - Components provided : Use the cable with a diameter of Ø7~8.5.



3. Insert the power cable into the small hole made by removing the projected part of the rubber plug in step 2 above, and lay the cable along the long groove.
4. Connect the power cable with the power terminal block.

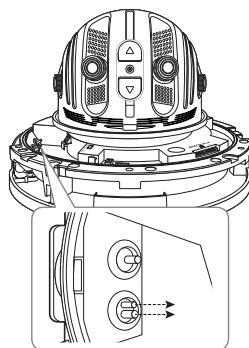


5. Insert the LAN cable into the large hole made by removing the projected part of the rubber plug in step 2 above.
6. Remove the sheath with a cable cutter, and align the cables.
7. Connect the LAN cable with a LAN connector, and insert it into the LAN tool.
8. Connect the finished cable to the Ethernet port.

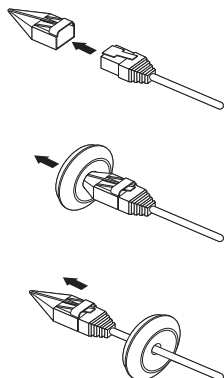


Method 2. Connecting the waterproof power cable and LAN cable

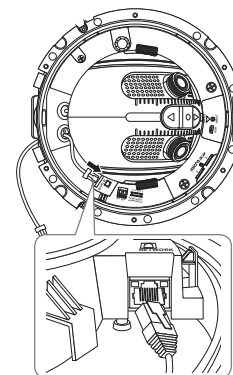
1. Remove the dome cover and the case.
2. Pull out the long projected part of the rubber plug on the bottom and remove it as shown in the figure.
3. Pull the rubber cover over the hole to remove it.



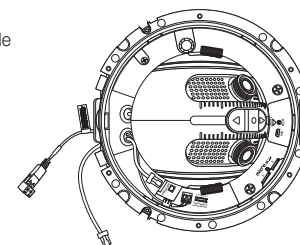
4. Use the Cap Installer to allow the RJ45 cable to pass through.



5. Insert the rubber stopper again and connect the LAN cable to the Ethernet terminal.

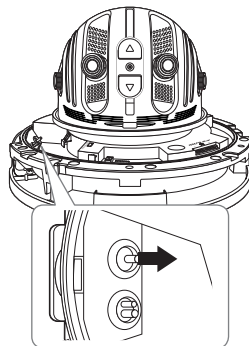


6. Insert the power cable into the small hole made by removing the projected part of the rubber plug in step 2 above, and lay the cable along the long groove.
7. Connect the power cable with the power terminal block.

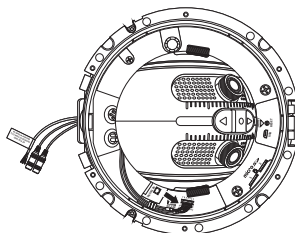


Connecting audio/alarm cable

1. Remove the dome cover and the case.
2. Pull out the rubber plug on the bottom as shown in the figure.



3. Insert the audio/alarm cable into the hole made by removing the rubber plug in step 2, and connect the cable with the PCB alarm terminal.
4. Align the cable so that it should not be damaged or jammed when installing the camera.
5. Put the rubber plug of the audio/alarm cable into the hole.
6. Adjust the lens in a desired direction by referring to the **"Adjusting the monitoring direction for the camera"** section. (page 15)
7. Attach the dome cover.



Installing optional mount adapter

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

1. Remove the dome cover from the case by referring to the **"Disassembling"** section. (page 9)
2. Fix the camera case to the optional mount adapter using machine screws provided with the camera.
3. Connect and arrange the necessary cables lest that they should be damaged or twisted while installing the camera.
4. Install the camera body in the reverse order of **"Disassembling"**.
5. Adjust the lens in a desired direction by referring to the **"Adjusting the monitoring direction for the camera"** section. (page 15)
6. Close the dome cover.
 - To ensure there are no issues with waterproofing, tighten the fastening bolts tightly using the Allen key or drill bit.

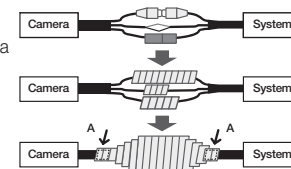
Outdoor installation

When you install it outside of the building, 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 LAN 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.

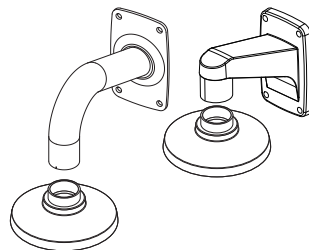


Optional Accessories for Installation

For your easier installation, you can purchase appropriate optional accessories available.

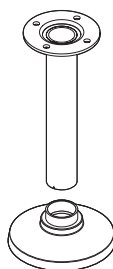
1. WALL MOUNT ADAPTOR(SBP-300WM or SBP-300WM1)/ HANGING MOUNT(SBP-276HM)

It is a mount adapter that is used for installing the dome camera on the wall.



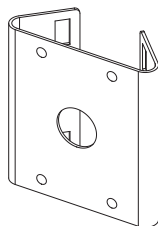
2. CEILING MOUNT ADAPTOR(SBP-300CM)/HANGING MOUNT (SBP-276HM)

It is a mount adapter used for installing the dome camera on a concrete ceiling.



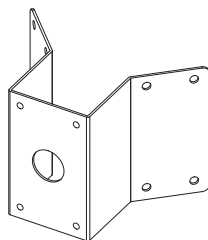
3. POLE MOUNT ADAPTOR(SBP-300PM)

It is a mount adapter used for installing a wall mount adapter (SBP-300WM or SBP-300WM1) on a column with a diameter of 80mm or higher.

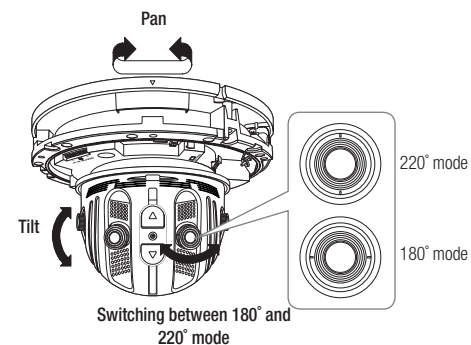


4. CORNER MOUNT ADAPTOR (SBP-300KM)

It is a mount adapter used for installing a wall mount adapter (SBP-300WM or SBP-300WM1) at the corner of a wall.



Adjusting the monitoring direction for the camera



■ 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 355 degrees.
- The effective range of tilt is a total of 60 degrees.

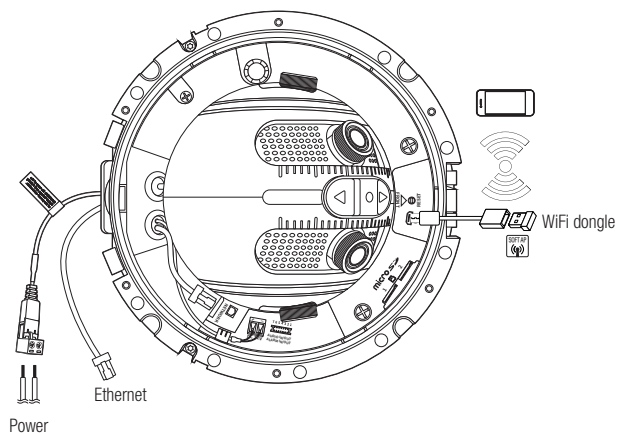


- The image can be covered up by the camera case depending on the angle.

■ Methods of adjustment

1. After installing the camera in consideration of the direction to monitor, adjust the Pan angle.
2. Adjust the tilt angle so that the camera faces toward the monitoring object.
3. Rotate the lens to change the 180° mode/220° mode.

CONNECTING WITH OTHER DEVICE



- 
- The Micro USB out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.

Ethernet Connection

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

Connecting WiFi

Camera Setup

1. Connect OTG adapter (5-pin) and WiFi dongle to the micro USB terminal.

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.

■ The video will be played without being logged in during the initial connection.
5. You can adjust angle of view while watching the video through smartphone.

Recommended dongle manufacturer

Manufacturer	Model
NETIS	WF2123 n300
EDIMAX	EW-7811Un
IP Time	N100mini
TP-LINK	TL-WN823N V1
ASUS	USB-N13
NETGEAR	WNA3100M

Power Supply

Use the screwdriver to connect each line (+, -) of the power cable to the corresponding power port of the camera.

- 
- If both PoE+ and DC12V are applied simultaneously, the product will be supplied with power from DC 12V .

- You can also use a router featuring PoE+ to supply power to the camera.

- Use PoE+ that is compliant with the IEEE802.3at protocols.

- 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.

Power Cable Specification

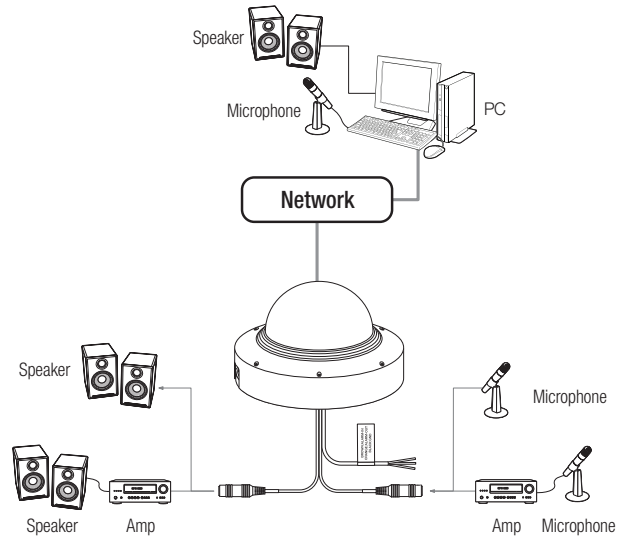
In case of DC 12V Input:

Wire Type (AWG)	#22	#20	#18
Cable Length (Max.)	24m	38m	60m

Network Cable Specification

Item	Contents	Remark
Connector	RJ45 (10/100/1000BASE-T)	
Ethernet	10/100/1000BASE-T	To operate with 1000BASE-T, a cable of UTP-6 or higher should be used for the Giga hub.
Cable	UTP Category 6	
Max Distance	100M	DC Resistance ≤ 0.188 Ω/m
PoE+ Support	IEEE 802.3at	

Connecting to Audio Input/Output



1. Connect the AUDIO IN port of the camera with the microphone or LINE OUT port of the amplifier that the microphone is connected to.
2. Connect the AUDIO OUT 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

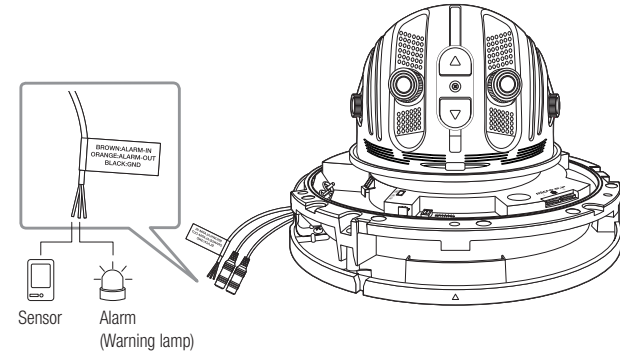
- Audio In : G.711 PCM (Bit Rate: 64Kbps / Sampling Frequency: 8kHz), G.726 ADPCM (Bit Rate: 16Kbps, 24Kbps, 32Kbps, 40Kbps / Sampling Frequency: 8kHz), AAC (Bit Rate: 48Kbps / Sampling Frequency: 16kHz)

• Full duplex Audio

- **Audio in** : Selectable (microphone/Line-in), Supported voltage: 2.5VDC (4mA), Input impedance: 2K Ohm
- **Audio out** : Line-out (3.5mm mono jack), Maximum output: 1Vrms
- **Line out impedance** : 600Ω

Connecting to the I/O port box

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



- **ALARM-IN** : Used to connect the alarm input sensor.
- **ALARM-OUT** : Used to connect the alarm output signal.
- **GND** : Common port for alarm in/output signal.

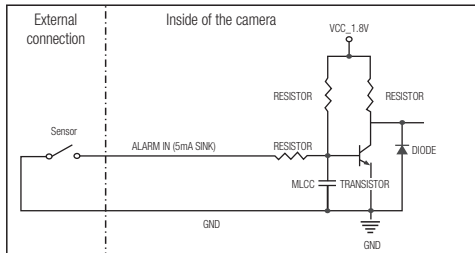


- If devices (e.g., flashing light and siren) that exceed the voltage and current specifications are connected by using the open collector method, it may cause malfunction.
Refer to the "**Alarm Out Wiring Diagram**" when connecting devices that exceed the voltage and current specifications. (page 18)

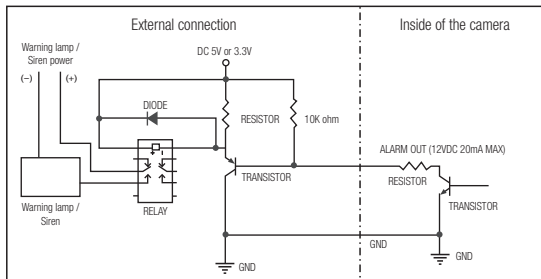
To connect the external sensor

Connect one strand of each signal line (2-strand) of the sensors to the **[ALARM IN]** port, and connect the other strand to the **[GND]** port.

Alarm In Wiring Diagram



Alarm Out Wiring Diagram



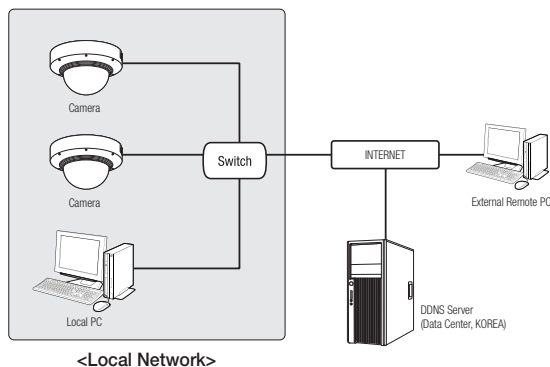
network connection and setup

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

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

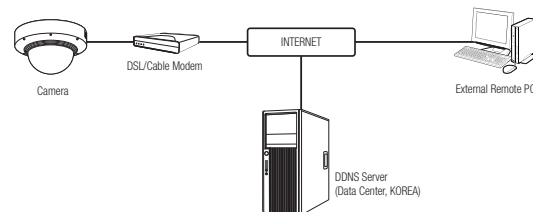
Connecting to the camera from a local PC in the LAN

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



- 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.
- In the IP installer, you can use the initial password, "4321" to set IP Address, Subnet Mask, Gateway, HTTP Port, VNP Port, IP type. After changing the network interface, for better security, access the web viewer and change the password.
- 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 IP Installer. For further details on IP Installer use, refer to "Static IP Setup". (Page 20)

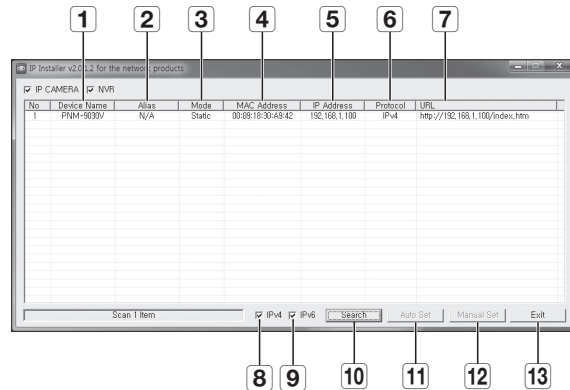
CONNECTING THE CAMERA DIRECTLY TO A DHCP BASED DSL/CABLE MODEM



1. Connect the user PC directly with the network camera.
2. Run the IP Installer and change the IP address of the camera so that you can use the web browser on your desktop to connect to the Internet.
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.

BUTTONS USED IN IP INSTALLER



Item	Description
1 Device Name	Model name of the connected camera. Click the column to sort the list by model name. However, search will be stopped if clicked during the search.
2 Alias	This function is not currently implemented.
3 Mode	Displays either <Static> or <Dynamic> for the current network connection status.
4 MAC(Ethernet) Address	Ethernet address for the connected camera. Click the column to sort the list by Ethernet address. However, search will be stopped if clicked during the search.
5 IP Address	IP address. Click the column to sort the list by IP address. However, search will be stopped if clicked during the search.
6 Protocol	Network setting for the camera. The factory default is "IPv4". Cameras with the IPv6 setting will be displayed "IPv6".
7 URL	DDNS URL address enabling access from the external Internet. However, this will be replaced with the <IP Address> of the camera if DDNS registration has failed.
8 IPv4	Scans for cameras with the IPv4 setting.

Item	Description
9 IPv6	Scans for cameras with the IPv6 setting. Activated in an IPv6 compliant environment only.
10 Search	Scans for cameras that are currently connected to the network. However, this button will be grayed out if neither IPv4 nor IPv6 is checked.
11 Auto Set	The IP Installer automatically configures the network settings.
12 Manual Set	You should configure the network settings manually.
13 Exit	Exits the IP Installer program.

- For the IP installer, use only the installer version provided in the installation CD or use the latest one if available. You can download the latest version from the Hanwha Techwin web site.
- If the supporting OS is Windows 8.1, it is recommended that you use the Wisenet Device Manager instead of the IP Wisenet. The Wisenet Device Manager Program can be downloaded by visiting the Hanwha Techwin website (<http://www.hanwha-security.com>) under the menu <Technical Guides> - <Online Tool>.

STATIC IP SETUP

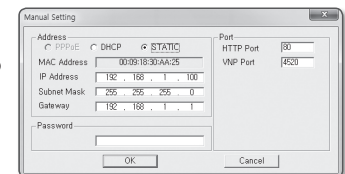
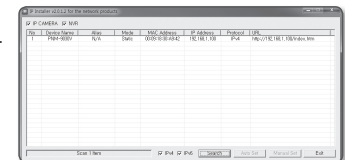
Manual Network Setup

Run <IP Installer_v2.XX.exe> to display the camera search list.
At the initial startup, both [Auto Set] and [Manual Set] will be grayed out.

- For cameras found with the IPv6 setting, these buttons will be grayed out as the cameras do not support this function.

- Select a camera in the search list.
Check the MAC address of the camera on the camera's label.
Both the [Auto Set] and [Manual Set] buttons will be activated.
- Click [Manual Set].
The Manual Setting dialog appears.
<IP Address>, <Subnet Mask>, <Gateway>, <HTTP Port>, and <VNP Port> of the camera are displayed in the preset values.
- In the <Address> pane, provide the necessary information.
 - MAC (Ethernet) Address : The MAC address imprinted on the camera label is automatically displayed and requires no user setting.

- IP related parameters can be set only when DHCP is not checked.



If not using a Broadband Router

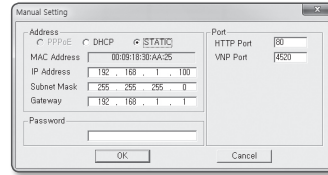
For setting <IP Address>, <Subnet Mask>, and <Gateway>, contact your network administrator.

4. In the <Port> pane, provide necessary information.

- HTTP Port : Used to access the camera using the Internet browser, defaulted to 80.
- VNP Port : Used to control the video signal transfer, defaulted to 4520.

5. Enter the password.

Enter the password of "admin" account, which was used to access the camera.



- For the security purposes, you are recommended to use a combination of numbers, alphabets uppercase and lowercase and special characters for your password.
- For information on how to change the password, refer to the online help of Web Viewer.

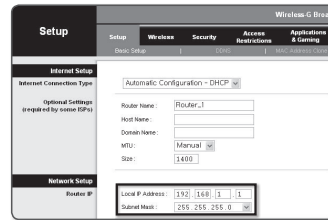
6. Click [OK].

Manual network setup will be completed.

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 22)



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
	VNP Port	4520	4521

- 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

Auto Network Setup

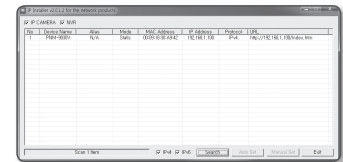
Run <IP Installer_v2.XX.exe> to display the camera search list.

At the initial startup, both [Auto Set] and [Manual Set] will be grayed out.

- For cameras found with the IPv6 setting, these buttons will be grayed out as the cameras do not support this function.

1. Select a camera in the search list.

Check the MAC address of the camera on the camera's label. Both the [Auto Set] and [Manual Set] buttons will be activated.



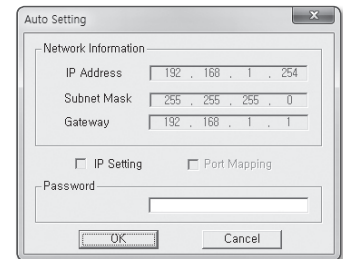
2. Click [Auto Set].

The Auto Setting dialog appears.

The <IP Address>, <Subnet Mask>, and <Gateway> will be set automatically.

3. Enter the password.

Enter the password of "admin" account, which was used to access the camera.



- For the security purposes, you are recommended to use a combination of numbers, alphabets uppercase and lowercase and special characters for your password.
- For information on how to change the password, refer to the online help of Web Viewer.

4. Click [OK].

Auto network setup will be completed.

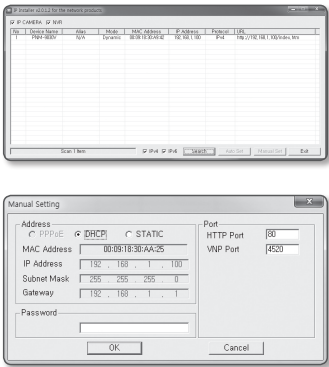
DYNAMIC IP SETUP

Dynamic IP Environment Setup

- 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

Checking the Dynamic IP

1. Run the IP Installer on the user's local computer.
Cameras allocated with <Dynamic IP> address are shown in the list.
2. Select a camera from the search result.
3. Click the [Manual Set] button and check the camera's <Dynamic IP> address.
If you uncheck <DHCP>, you can change IP to <Static>.



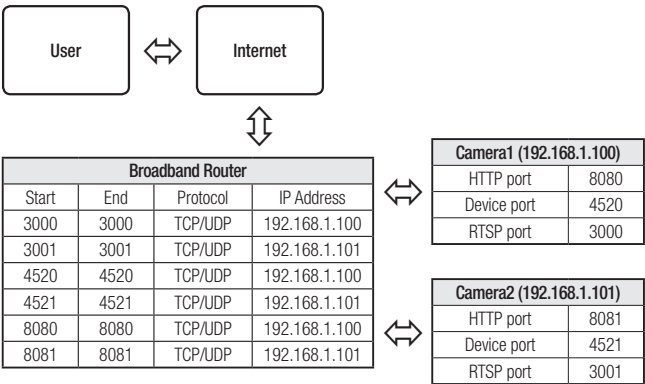
3. When done, click [Save Settings].
Your settings will be saved.

- Above sample instructions are based on the CISCO's Broadband 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 :

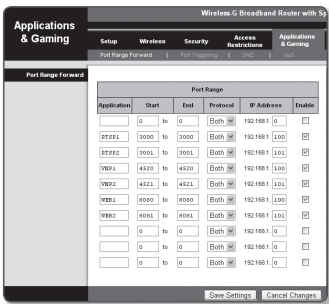


PORT RANGE FORWARD (PORT MAPPING) SETUP

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.

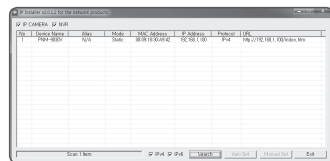


- Port forwarding can be done without additional router setup if the router supports the UPnP (Universal Plug and Play) function.
After connecting the network camera, select the checkbox from the menu <Quick connect> in <Wisenet DDNS> in "Settings -> Network -> DDNS".

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

1. Run the IP Installer.
It will scan for connected cameras and display them as a list.
2. 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

Since using the IP Installer 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.

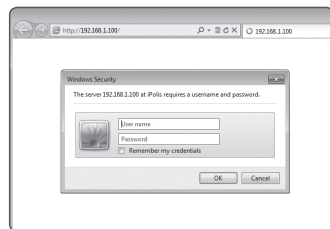
1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
ex) <http://ddns.hanwha-security.com/ID>

- For information on how to register DDNS, refer to the network setup guide.

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://\[2001:230:abcd:ffff:0000:0000:ffff:1111\]](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 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 <Wisenet 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.

When the “**Password change**” window appears, enter the new password.



- For a new password with 8 to 9 digits, you must use at least 3 of the following: uppercase/lowercase letters, numbers and special characters. For a password with 10 to 15 digits, you must use at least 2 types of those mentioned.
 - Special characters that are allowed: ~!@#%&^*()_+={}|~.:/
- For higher security, you are not recommended to repeat the same characters or consecutive keyboard inputs for your passwords.
- If you lost your password, you can press the **[RESET]** button to initialize the product. So, don't lose your password by using a memo pad or memorizing it.

The image shows a web-based form titled "Administrator password change". It has two input fields: "New password" and "Confirm new password". Below these fields, there is a list of password requirements in small text: ". If the password is 8 to 9 letters long, then it should be a combination of at least three types: upper/lower case alphabets, numbers and special characters.", ". If the password is 10 to 15 letters long, then it should be a combination of at least two types: upper/lower case alphabets, numbers and special characters.", ". User name should be different from password.", ". The following special characters are available for use: ~!@#%&^*()_+={}|~.:/", ". Don't use 4 or more characters consecutive together. (examples: 1234, abcd)", ". Don't use 4 or more characters repeated. (examples: 1111, aaaa)".

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 ID, “**admin**”, is fixed and can not be changed.

2. Enter the password in the <Password> input field.

3. Click **[OK]**.

If you have logged in successfully, you will see 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.



- If you check the “**Remember my credentials**” option when your input is done, in future you will be logged in automatically without being prompted to enter the login information.
- You will experience the best video quality if the screen size is 100%. Reducing the ratio may cut the image on the borders.

The image shows a "Windows Security" dialog box. It says "The server 192.168.1.100 at ipolis requires a username and password." There are two input fields: "User name" and "Password". Below the "Password" field is a checkbox labeled "Remember my credentials". At the bottom are "OK" and "Cancel" buttons.

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.

SPECIFICATION

Items		Description
Video	Imaging Device	1/2.8" 5M CMOS x 4CH
	Total Pixels	2,704(H) x 2,104(V) 5.69M x 4CH
	Effective Pixels	2,616(H) x 1,964(V) 5M x 4CH
	Scanning System	Progressive Scan
	Min. Illumination	Color : 0.15Lux(F2.0, 1/30sec, 30IRE) B/W : 0.01Lux(F2.0, 1/30sec, 30IRE)
	Video Out	USB : Micro USB Type B, 1280x720 for installation
Lens	Focal Length (Zoom Ratio)	4mm
	Max. Aperture Ratio	F2.0
	Angular Field of View	[180° mode] H : 180°, V : 70° [220° mode] H : 220°, V : 52°
	Min. Object Distance	3m (9.84ft) : Minimum recommended distance
	Lens Type	Fixed focal
	Mount Type	Board-in type (M12)
Pan / Tilt / Rotate	Pan Range	355°
	Tilt Range	60°
	Rotate Range	-
Operational	Camera Title	Off / On (Displayed up to 75 characters) - W/W : English/Numeric/Special Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
	Day & Night	Auto (ICR) / Color / B/W / Schedule
	Backlight Compensation	Off / BLC / WDR
	Wide Dynamic Range	120dB
	Contrast Enhancement	SSDR (Off / On)
	Digital Noise Reduction	SSNRIII (2D+3D Noise Filter) (Off / On)

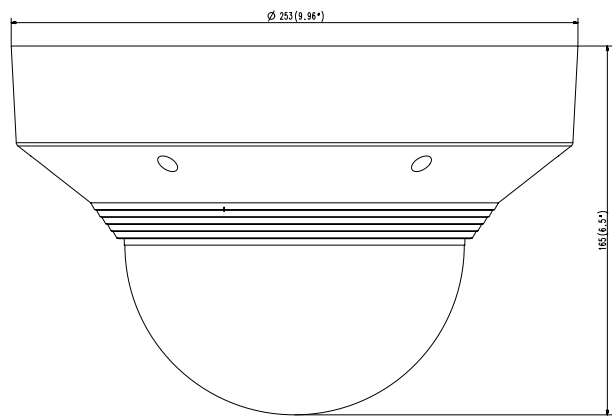
Items		Description
Operational	LDC	Support
	Defog	Auto/Manual/Off
	Motion Detection	Off/ On (8ea, 8point Polygonal zones), Handover
	Privacy Masking	Off / On (16ea, rectangle zones) - Color : Grey, Green, Red, Blue, Black, White - Mosaic
	Gain Control	Off / Low / Middle / High
	White Balance	ATW / AWC / Manual / Indoor / Outdoor
	Contrast	Level adjustment
	Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
	Flip / Mirror	Flip : On/Off Mirror : On/Off
	Digital PTZ	Support
	Intelligent Video Analytics	Tampering, Loitering, Directional detection, Virtual line, Enter/Exit, (Dis)Appear, Audio detection, Motion detection, Sound classification, Heatmap
	Alarm I/O	Input 1ea / Output 1ea
	Audio In	Line IN Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
	Audio out	Line out (3.5mm stereo mini jack)
	Alarm Triggers	Alarm Input, Motion Detection, Video&Audio analytics, Network disconnect
	Alarm events	• File upload via FTP, E-Mail • Notification via E-Mail • Local storage(SD/SDHC/SDXC) or NAS recording at Event (Alarm Triggers) • External output
	Pixel Counter	Support

Items		Description
Network	Ethernet	RJ-45 (10/100/1000 BASE-T)
	Video Compression Format	H.265 (HEVC) : Main H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High MJPEG
	Resolution	[180° mode] 6096x2540, 5760x2400, 5472x2280, 5184x2160, 4800x2000, 4560x1900, 4096x1704, 3840x1600, 2688x1120, 2560x1064, 2048x852, 1920x800, 1280x532, 640x264 [220° mode] 7744x1936, 6096x1524, 5760x1440, 5472x1368, 5184x1296, 4800x1200, 4560x1140, 4096x1024, 3840x960, 2688x672, 2560x640, 2048x512, 1920x480, 1280x320, 640x160
	Max. Framerate	H.265/H.264 : Max. 30fps at all resolutions MJPEG : Max. 15fps at under 2MP
	Smart Codec	Manual mode(Area-based : 5ea)
	WiseStream II	Support
	Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
	Bitrate Control Method	H.264/H.265 : CBR or VBR Motion JPEG : VBR
	Streaming Capability	Multiple Streaming (Up to 5 or 3 Profiles for each CH)
	Audio Compression Format	G.711 μ-law /G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC : 48Kbps at 16KHz
	Audio Communication	Bi-directional (2-Way)
	IP	IPv4, IPv6
	Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, LLDP

Items		Description
Network	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP)
	Streaming Method	Unicast / Multicast
	Max. User Access	15 users at Unicast Mode
	Edge Storage	SD/SDHC/SDXC (up to 256GB) - motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording
	Application Programming Interface	ONVIF Profile S/G SUNAPI(HTTP API)
	Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
	Web Viewer	Supported OS : Windows 7 / 8.1 / 10, MAC OS X 10.10, 10.11, 10.12 Supported Browser : Google Chrome 63, MS Edge 41, Mozilla Firefox 57 (Window 64bit only), Apple Safari 11 (Mac OS X only)
	Central Management Software	Smart viewer, SSM
	Operating Temperature / Humidity	-40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH * Start up should be done at above -30°C
	Storage Temperature / Humidity	-40°C ~ +60°C (-40°F ~ +140°F) / Less than 90% RH
Environmental	Ingress Protection	IP66
	Vandal Resistance	IK10
Electrical	Input Voltage / Current	PoE+(IEEE802.3at Class4), DC 12V
	Power Consumption	Max 25.5W (PoE+), Max 21.0W (DC 12V)
Mechanical	Color / Material	Ivory / Aluminum
	Dimension (ØxH)	Ø253mm x H165mm (Ø9.96" x H6.5")
	Weight	3.2Kg

PRODUCT OVERVIEW

Unit : mm (inch)



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. - If the camera is connected over an PPPoE network, it's possible for Viewer to disconnect under poor network conditions.
The camera connected to the network is not detected in the IP installer 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>.

PROBLEM	SOLUTION
After setting <Motion detection> to "Enable" in <Analytics>, no file is delivered through E-mail although a video analytics event has occurred on the camera.	- Verify the settings in the following sequence: - Check <Data & Time> settings. - The <Motion detection> should be set to <Enable>. - 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 memory card.	Check if the memory card is defective.
Micro SD memory card is inserted but the camera does not operate properly.	- Check if the memory card is inserted in the proper direction. Operation of memory card that is formatted by other devices is not guaranteed with this camera unit - Format the memory 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.

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GPL SW

Component Name	License	URL
Base Kernel	GPL 2.0	
Busybox	GPL 2.0	http://www.busybox.net/downloads/snapshots
iproute2-4.3.0	GPL 2.0	
iptables-1.4.21	GPL 2.0	http://ftp.netfilter.org/pub/iptables
ethtool-4.2	GPL 2.0	
mtdd-1.5.2	GPL 2.0	ftp://ftp.infradead.org/pub/mtdd-utils
mi-diag-2.11	GPL 2.0	
rp-pppoe-3.11	GPL 2.0	http://www.roaringpenguin.com/pppoe/
wpa_supplicant-2.5	GPL 2.0	
bash-4.3.30	GPL 3.0	
zerocoinf	GPL 2.0	

LGPL SW

Component Name	License	URL
glibc	LGPL 2.0	
inetutils	LGPL 3.0	
neon-0.29.6	LGPL 2.0	http://www.webdav.org/neon/

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- Version 1.1

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revised on December 21, 2006
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The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files <http://www.ietf.org/rfc/rfc1950.txt> (zlib format), [rfc1951.txt](http://www.ietf.org/rfc/rfc1951.txt) (deflate format) and [rfc1952.txt](http://www.ietf.org/rfc/rfc1952.txt) (gzip format).



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.



Hanwha Techwin 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 Techwin'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.

