

NETWORK CAMERA

User Manual

XND-L6080R/XND-L6080RV/XND-L6080V
XNO-L6080R
XNV-L6080/XNV-L6080R



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 lightning 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. 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.
16. 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.
17. 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.
18. 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.
19. Installing or using the product in water can cause serious damage to the product.



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.

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

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.

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

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 802-3af 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
- RAM : 8G or higher
- Supported OS : MS Windows, Mac OS X
- **Web viewer**
Recommended browser: Google Chrome
Supported browsers: MS Edge, MS IE, Firefox (Window 64bit only), Apple Safari (Mac OSX only)

※ 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 or higher 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.








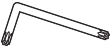
| Recommended products | Available sizes |
|----------------------|--|
| QNAP NAS | A maximum of 16 cameras can access simultaneously. |
| Synology NAS | A maximum of 16 cameras can access simultaneously. |




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

WHAT’S INCLUDED (XND-L6080R/L6080RV/L6080V)








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 | Model Name |
|---|-------------------------------|----------|--|------------------------|
|  | Camera | 1 | | XND-L6080R |
|  | | 1 | | XND-L6080RV/ L6080V |
|  | Quick Guide (Optional) | 1 | | Use for all models |
|  | Warranty card (Optional) | 1 | | |
|  | Cable for the testing monitor | 1 | Used to test the camera connection to a portable display device | |
|  | Template | 1 | Product installation guide | |
|  | Tapping Screw | 2 | Used for installation on the wall or ceiling | |
|  | L Wrench | 1 | Used to remove and replace the dome cover | XND-L6080RV/ L6080V |

| Appearance | Item Name | Quantity | Description | Model Name |
|---|-----------------------|----------|--|--------------------|
| Options (not included) | | | | |
|  | Indoor Buried Housing | | Housing for installing indoor buried type cameras | Use for all models |

WHAT’S INCLUDED (XNO-L6080R)







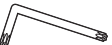
Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)





| Appearance | Item Name | Quantity | Description |
|---|-------------------------------|----------|---|
|  | Camera | 1 | |
|  | Quick Guide (Optional) | 1 | |
|  | Warranty card (Optional) | 1 | |
|  | Cable for the testing monitor | 1 | Used to test the camera connection to a portable display device |
|  | Template | 1 | Product installation guide |
|  | L Wrench | 1 | Used to control the direction of the camera |
|  | Tapping Screw | 3 | Used for installation on the wall or ceiling |

| Appearance | Item Name | Quantity | Description |
|---|---|----------|--|
|  | Sunshield | 1 | It protects the camera from the direct sunlight. |
|  | Sunshield fixing screw | 1 | It fixes the sunshield with the camera. |
|  | RJ45 waterproof accessory | 1 | Used to install in humid places |
|  | RJ45 water-proof accessory installation guide | 1 | |

WHAT'S INCLUDED (XNV-L6080/L6080R)

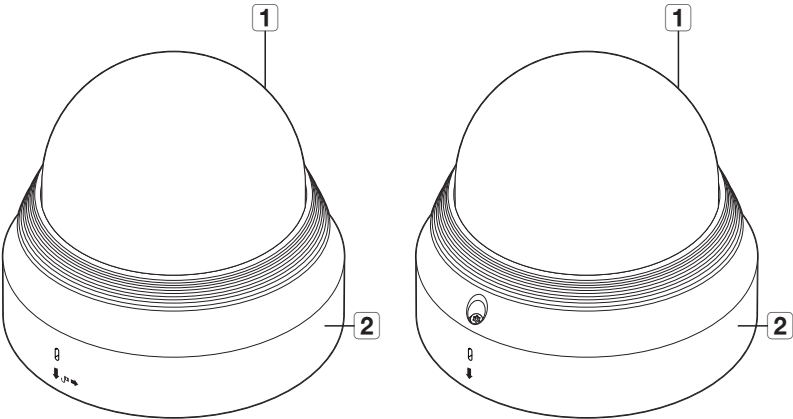
Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

| Appearance | Item Name | Quantity | Description |
|---|-------------------------------|----------|---|
|  | Camera | 1 | |
|  | Quick Guide (Optional) | 1 | |
|  | Warranty card (Optional) | 1 | |
|  | Cable for the testing monitor | 1 | Used to test the camera connection to a portable display device |
|  | Template | 1 | Product installation guide |
|  | Tapping Screw | 3 | Used for installation on the wall or ceiling |
|  | L Wrench | 1 | Used to remove and replace the dome cover |

| Appearance | Item Name | Quantity | Description |
|---|-----------------------|----------|---|
|  | Plastic Anchor | 3 | For fixing a screw, Inserted in a hole (reinforced anchoring force) |
|  | Machine Screws | 3 | Used for assembling the dome case when installing the product on the pipe, wall mount, etc. or blocking a hole. |
|  | Cap Installer | 1 | Used when connecting RJ45 cable |
| Options (not included) | | | |
|  | Indoor Buried Housing | | Housing for installing indoor buried type cameras |

AT A GLANCE (XND-L6080R/L6080RV/L6080V)

Appearance

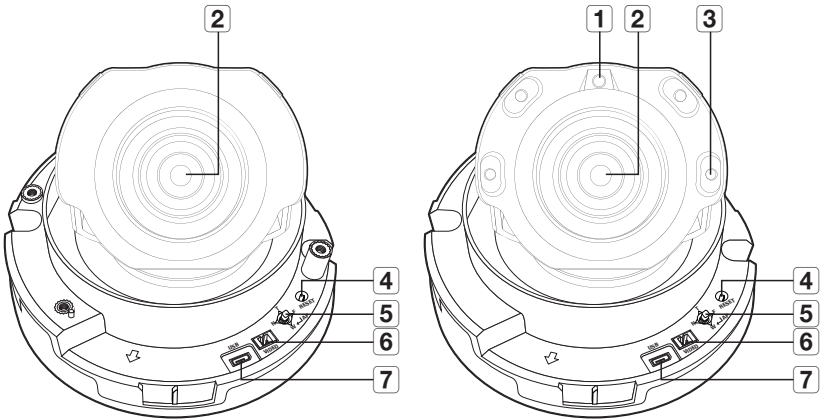


<XND-L6080R>

<XND-L6080RV/L6080V>

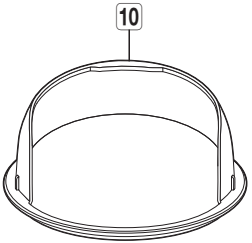
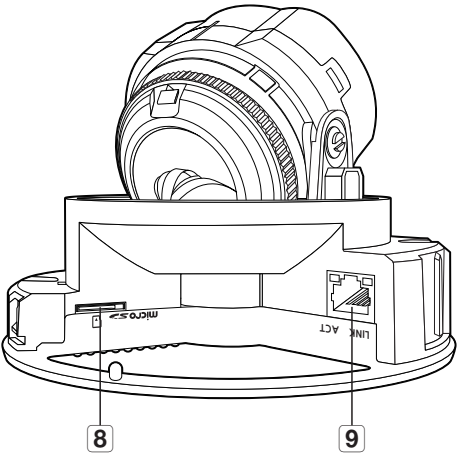
| Item | Description |
|---------------|--|
| 1 Dome cover | Case cover used to protect the lens and the main unit. |
| 2 Camera Case | Housing part that covers the camera body. |

Components



<XND-L6080V>

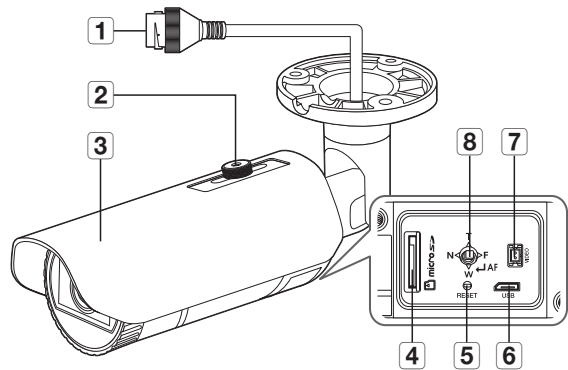
<XND-L6080R/L6080RV>



| Item | Description | |
|---|--|--|
| 1 Illumination Sensor | Detects incoming light to control the IR LED. | |
| 2 Lens | Lens for the camera. | |
| 3 IR LED | These infrared LED's are controlled by the illumination sensor. | |
| 4 Reset Button | <p>The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system.</p> <p>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 Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.</p> | |
| 5 Zoom/Focus Control Button | T | Zoom in (Tele) |
| | W | Zoom out (Wide) |
| | N | Focusing on a near object (Near) |
| | F | Focusing on a far object (Far) |
| | Focus Control | Press this button for automatic focus control. |
| 6 Test Monitor Out | Output port for test monitoring the video output. Use the test monitor cable to connect to a mobile display and check the test video. | |
| 7 MICRO USB port | <p>Port to connect the WiFi dongle.</p> <p>You can check the installation video through the applications installed in the smartphone. Refer to "Connect to WiFi dongle" on page 22.</p> <ul style="list-style-type: none"> WiFi dongle and OTG adapter are sold separately. | |
| 8 Micro SD Memory Card Compartment | Compartment for the Micro SD memory card. | |
| 9 PoE Connector | Connects to the network and supplies power through an Ethernet cable. | |
| 10 Inside cover | Protective cover for the main body. | |

AT A GLANCE (XNO-L6080R)

Appearance & Components

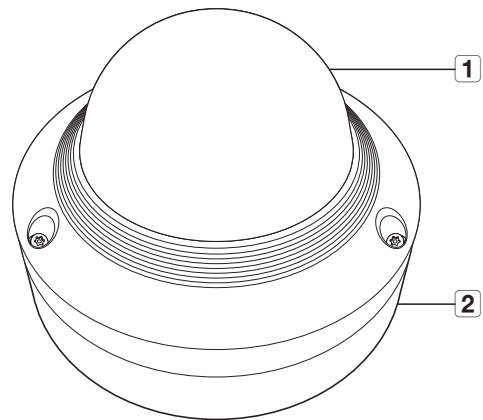


| Item | Description |
|--------------------------|---|
| 1 PoE Connector | Connects to the network and supplies power through an Ethernet cable. |
| 2 Sunshield fixing screw | It fixes the sunshield with the camera. |
| 3 Sunshield | It protects the camera from the direct sunlight. |
| 4 Micro SD card slot | This is a slot in which you can insert a Micro SD card. |
| 5 Reset Button | <p>The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system.</p> <p>■ If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.</p> |
| 6 MICRO USB port | <p>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 22.</p> <p>■ WiFi dongle and OTG adapter are sold separately.</p> |

| Item | Description | |
|-----------------------------|---|--|
| 7 Test Monitor Out | Output port for test monitoring the video output. Use the test monitor cable to connect to a mobile display and check the test video. | |
| 8 Zoom/Focus Control Button | T | Zoom in (Tele) |
| | W | Zoom out (Wide) |
| | N | Focusing on a near object (Near) |
| | F | Focusing on a far object (Far) |
| | Focus Control | Press this button for automatic focus control. |

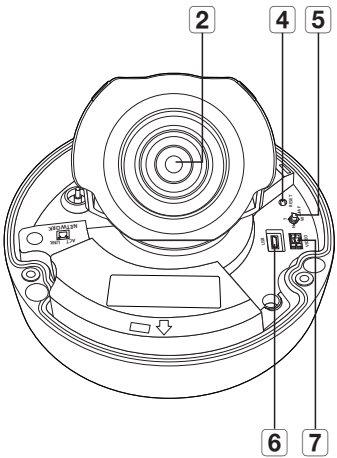
AT A GLANCE (XNV-L6080/L6080R)

Appearance

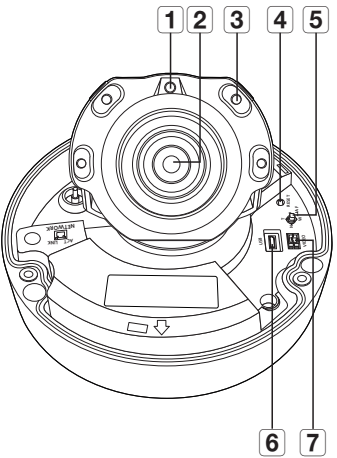


| Item | Description |
|---------------|--|
| 1 Dome cover | Case cover used to protect the lens and the main unit. |
| 2 Camera Case | Housing part that covers the camera body. |

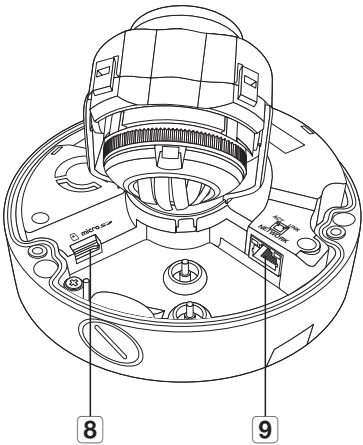
Components



<XNV-L6080>



<XNV-L6080R>



| Item | Description | |
|---|--|--|
| 1 Illumination Sensor | Detects incoming light to control the IR LED. | |
| 2 Lens | Lens for the camera. | |
| 3 IR LED | These infrared LED's are controlled by the illumination sensor. | |
| 4 Reset Button | <p>The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system.</p> <p>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 Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.</p> | |
| 5 Zoom/Focus Control Button | T | Zoom in (Tele) |
| | W | Zoom out (Wide) |
| | N | Focusing on a near object (Near) |
| | F | Focusing on a far object (Far) |
| | Focus Control | Press this button for automatic focus control. |
| 6 MICRO USB port | <p>Port to connect the WiFi dongle.</p> <p>You can check the installation video through the applications installed in the smartphone. Refer to "Connect to WiFi dongle" on page 22.</p> <ul style="list-style-type: none"> WiFi dongle and OTG adapter are sold separately. | |
| 7 Test Monitor Out | Output port for test monitoring the video output. Use the test monitor cable to connect to a mobile display and check the test video. | |
| 8 Micro SD Memory Card Compartment | Compartment for the Micro SD memory card. | |
| 9 PoE Connector | Connects to the network and supplies power through an Ethernet cable. | |

INSTALLATION (XND-L6080R)

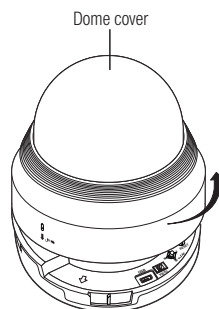
Precautions before installation

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

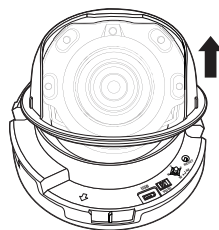
- It must be installed on the area (ceiling or wall) that can withstand 5 times the weight of the camera including the installation bracket.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside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

Disassembling

1. Use one hand to hold the camera's bottom part and turn the cover counterclockwise with another hand to separate it.

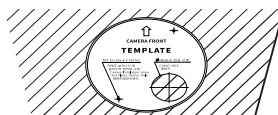


2. Lift up the inner cover to separate it.

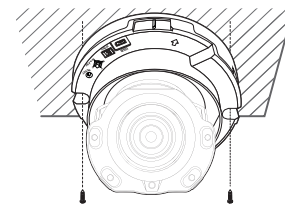


Installation

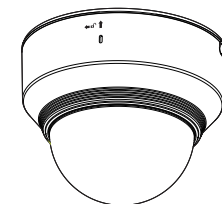
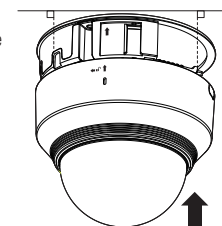
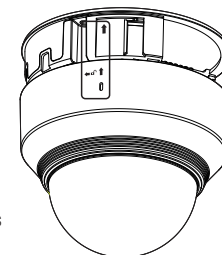
1. Attach the installation template based on the monitoring direction, and drill a hole to fit the template.
 - Set the <↑> mark imprinted on the camera to face the direction of camera monitoring.



2. Use the included tapping screw to fasten camera in the hole.
3. Connect the camera internal terminal with the corresponding cable.
4. Adjust the lens in a desired direction by referring to the "Adjusting the monitoring direction for the camera" section. (page 20)



- ! ■ We recommend you not to touch the lens as the camera lens has been properly focused in the final process of manufacturing. If so, the lens may be out of focus or stained by alien substances.
5. Please connect the inner cover to the main body.
 6. While grabbing the bottom side of the camera with your hand, please grab and push its cover with the other hand to align the two arrow signs, as shown in the figure.
- ! ■ When connecting the dome cover, align the arrows and connect it perpendicularly to the main body.
If the dome cover is not connected properly, it can result in a distortion of the hood around the lens, causing scattered reflection. Secure the dome cover firmly. If the dome cover has not been turned or is not assembled properly, it could cause scattered reflection, or the parts around the lens could move and cause a change in the shooting range.
 - Make sure that the dome cover is correctly connected to the bottom part as shown in the figure.
If the snap-fit is not connected correctly, the dome cover may fall, which may cause injury.



INSTALLATION (XND-L6080RV/L6080V)

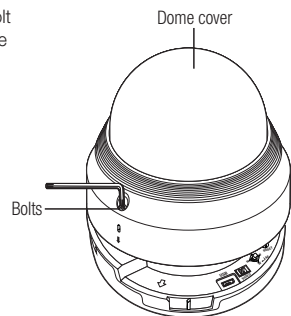
Precautions before installation

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

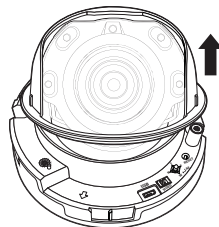
- It must be installed on the area (ceiling or wall) that can withstand 5 times the weight of the camera including the installation bracket.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside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

Disassembling

1. Use the supplied L wrench to loosen the dome cover fastening bolt by turning it in a counterclockwise direction, and remove the dome cover.

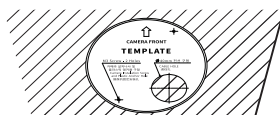


2. Lift up the inner cover to separate it.



Installation

1. Attach the installation template based on the monitoring direction, and drill a hole to fit the template.
 - Set the <↑> mark imprinted on the camera to face the direction of camera monitoring.

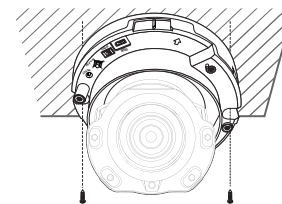


2. Use the included tapping screw to fasten camera in the hole.

3. Connect the camera internal terminal with the corresponding cable.

4. Adjust the lens in a desired direction by referring to the "Adjusting the monitoring direction for the camera" section. (page 20)

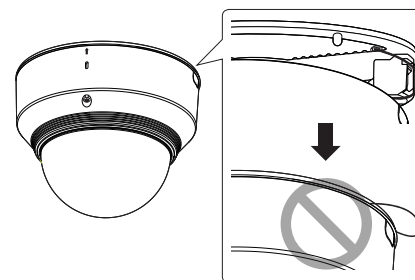
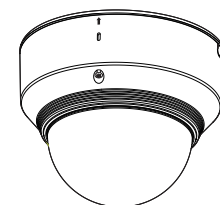
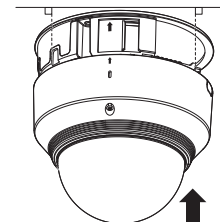
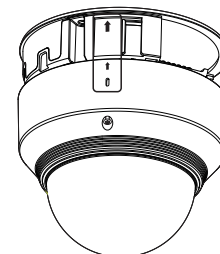
- ! We recommend you not to touch the lens as the camera lens has been properly focused in the final process of manufacturing. If so, the lens may be out of focus or stained by alien substances.



5. Please connect the inner cover to the main body.

6. Grab the bottom part of the camera with one hand and the cover with the other hand, align the arrows and assemble them using the hex key.

- ! When connecting the dome cover, align the arrows and connect it perpendicularly to the main body. If the dome cover is not connected properly, it can result in a distortion of the hood around the lens, causing scattered reflection. Make sure that the dome cover is connected firmly to the other part. If the dome cover is not correctly connected to the bottom of the main body, scattered reflection might occur.
- Make sure that the dome cover is correctly connected to the bottom part as shown in the figure. If the snap-fit is not connected correctly, the dome cover may fall, which may cause injury.
 - When assembling the dome cover to the camera, make sure not to let the safety wire get stuck between the dome cover and the camera. This will cause IR scattered reflection.



INSTALLATION (XNO-L6080R)



- 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.

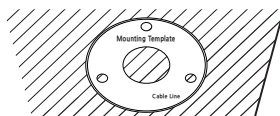
Precautions before installation

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

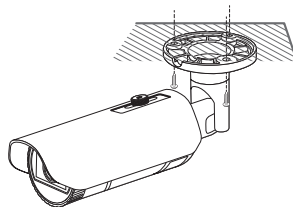
- It must be installed on the area (ceiling or wall) that can withstand 5 times the weight of the camera including the installation bracket.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside personal belongings from the site, just in case.
- Do not use the sunshield hole for any purpose other than for connecting the sunshield.
- 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.

Installation

1. Attach the installation template based on the monitoring direction, and drill a hole to fit the template.



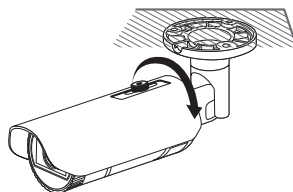
2. Use the included tapping screw to fasten camera in the hole.
3. Connect the appropriate cables with camera terminals.



4. Adjust the camera direction using the L wrench provided.

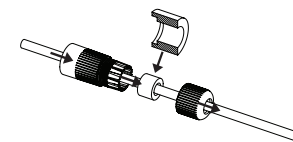


- When you adjust the camera position using a bracket, please loosen the bracket screw, adjust the camera, and tighten it. If you attempt to adjust it forcibly while the screw is tight, it may result in a scratch or other problems.

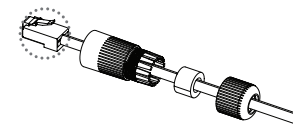


How to connect the RJ45 waterproof cable to a LAN cable

1. Insert it through the arrow direction.



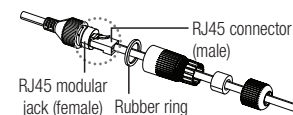
2. Connect the LAN connector (male) to the cable.



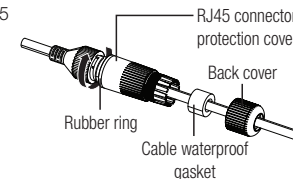
3. Connect the RJ45 modular jack (female) to the RJ45 connector (male).



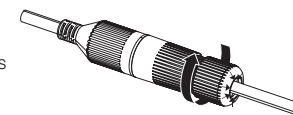
- Please, keep each of the parts separated.



4. Assemble by rotating the RJ45 modular jack (female) and the RJ45 protection cover clockwise (Follow the arrow).



5. Assemble by rotating RJ45 protection cover and back cover clockwise (Follow the arrow). When the back cover is assembled, the cable waterproof gasket is tightly attached to the cable to make it waterproof.



- You must fully assemble it to rotate the back cover up to the end of the screw thread of the RJ45 connector.

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 to PoE cable.
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.

INSTALLATION (XNV-L6080/L6080R)



- 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.

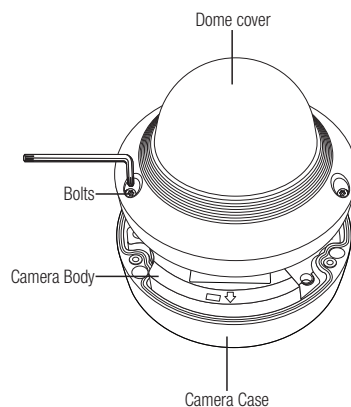
Precautions before installation

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

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

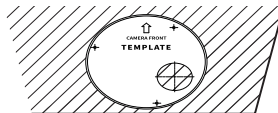
Disassembling

1. Use the supplied L wrench to loosen the dome cover fastening bolt by turning it in a counterclockwise direction, and remove the dome cover.

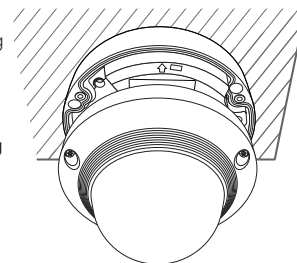


Installation

1. Attach the installation template based on the monitoring direction, and drill a hole to fit the template.
 - Set the <↑> mark imprinted on the camera to face the direction of camera monitoring.

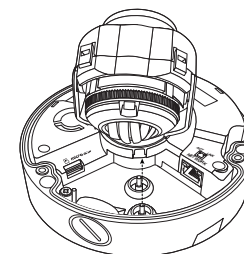


2. Insert the included plastic anchor all the way to the end.
3. Fit the bottom hole to the anchor hole and insert and fix the taping screw.
4. Connect and arrange the necessary cables lest that they should be damaged or twisted while installing the camera.
5. Adjust the lens in a desired direction by referring to the **"Adjusting the monitoring direction for the camera"** section. (page 20)
6. Close the dome cover.
 - Securely fasten the fastening bolt using an L wrench to prevent water from leaking.

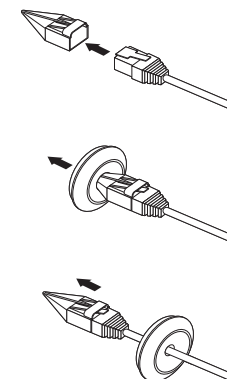


Connecting the LAN cable

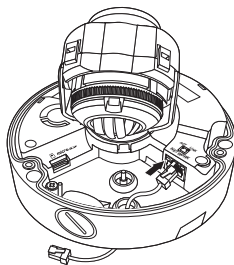
1. Remove the dome cover and the case.
2. Pull out the long projected part of the rubber plug on the bottom and remove it as shown in the figure.
3. Pull the rubber cover over the hole to remove it.



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.



Attaching to the unbundled adapter

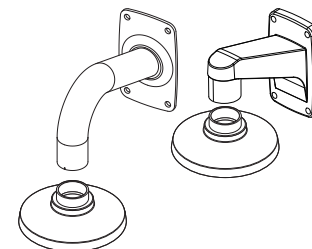
Choose and purchase a necessary one of the following options (unbundled) that is suitable to the installation site or for your convenience.

1. Remove the dome cover from the case by referring to the “Disassembling” section. (page 18)
2. Use the provided machine screw to fix the camera case to the unbundled adapter.
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 20)
6. Close the dome cover.
 - Securely fasten the fastening bolt using an L wrench to prevent water from leaking.

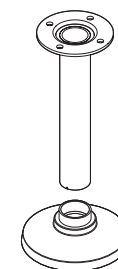
Optional Accessories for Installation

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

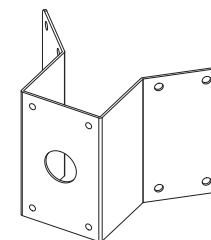
1. WALL MOUNT ADAPTOR(SBP-300WM or SBP-300WM1)/
HANGING MOUNT(XND-L6080R/L6080RV/L6080V : SBP-300HM8, XNV-L6080/L6080R : SBP-300HM6)
This adaptor is used when installing the dome camera onto a wall.



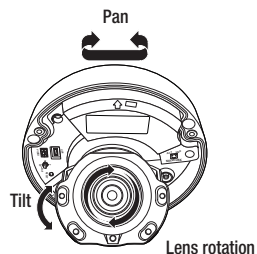
2. CEILING MOUNT ADAPTOR(SBP-300CM)/HANGING MOUNT(XND-L6080R/L6080RV/L6080V : SBP-300HM8, XNV-L6080/L6080R : SBP-300HM6)
This adaptor is used when installing the dome camera on a concrete ceiling.



3. CORNER MOUNT ADAPTOR (SBP-300KM)
This is an adaptor for WALL MOUNT ADAPTOR (SBP-300WM or SBP-300WM1) installation on the corner of wall joint.



Adjusting the monitoring direction for the camera (XND-L6080R/L6080RV/L6080V, XNV-L6080/L6080R)



■ Adjusting the monitoring direction

You can adjust the camera direction only when the camera is fixed on the ceiling.

Where, rotating the camera unit to the left or right is called Pan, adjusting the tilt is called Tilt, and turning the lens on its axis is called Rotation.

- The effective range of pan is a total of 354 degrees.
- The effective range of rotation is a total of 355 degrees.
- The effective range of tilt is a total of 67 degrees.

- !**
- The image can be covered up by the camera case depending on the angle.
 - Do not forcefully turn the focus/zoom lens after the dome case is disassembled. Otherwise, it may cause an incorrect focus due to a motor failure.

■ Methods of adjustment

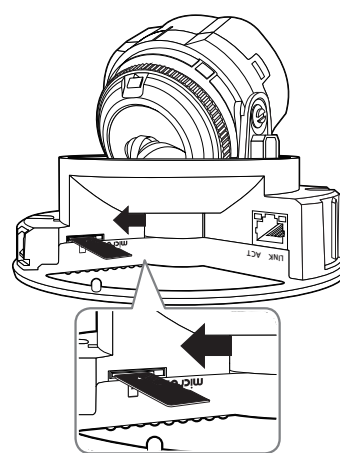
1. Adjust the Pan angle after installing the camera, considering the direction to be monitored.
2. Set the horizontal angle so that the image is not reversed.
3. Adjust the tilt angle so that the camera faces toward the monitoring object.

INSERTING/REMOVING A MICRO SD MEMORY CARD

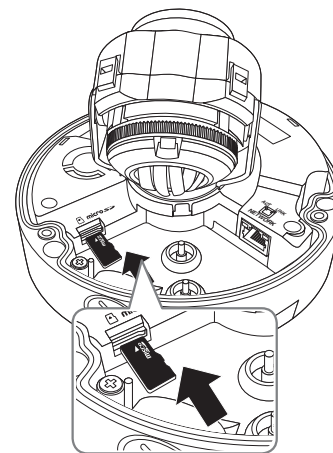
- !**
- Disconnect the power cable from the camera before inserting the Micro SD memory card.
 - Do not insert the Micro SD memory card while it's upside down by force. Otherwise, it may damage the Micro SD memory card.
 - When it rains or the humidity is high, insertion or ejection of a Micro SD card is not recommended.
 - Disassembly of the product cover should be finished within 5 minutes, or there will be the risk of internal dew condensation.

Inserting a Micro SD Memory Card

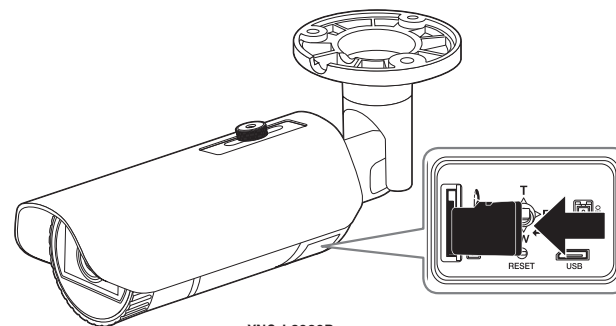
1. Insert a Micro SD card in the arrow direction shown in the figure.



<XND-L6080R/L6080RV/L6080V>



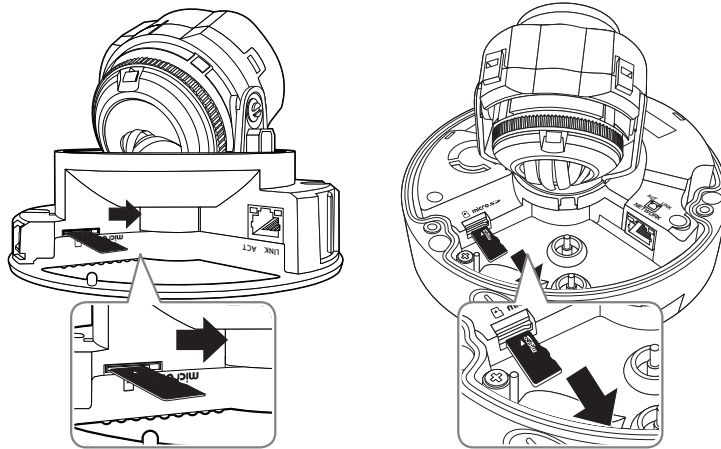
<XNV-L6080/L6080R>



<XNO-L6080R>

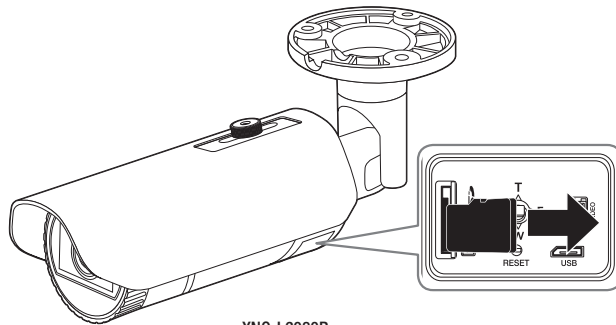
Removing a Micro SD Memory Card

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



<XND-L6080R/L6080RV/L6080V>

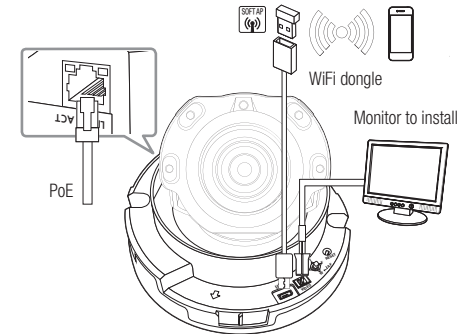
<XNV-L6080/L6080R>



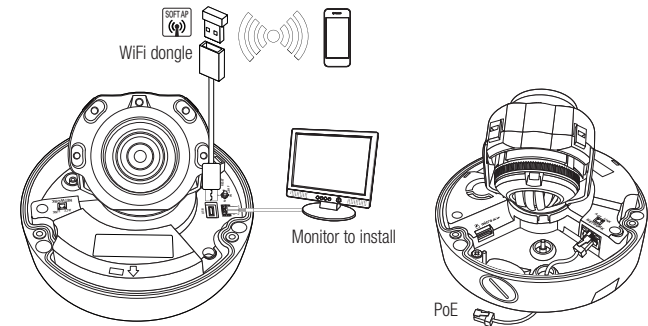
<XNO-L6080R>

- Be careful, as the Micro SD memory card may suddenly pop out if you press it hard and release, which will remove it from the camera.
- 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.

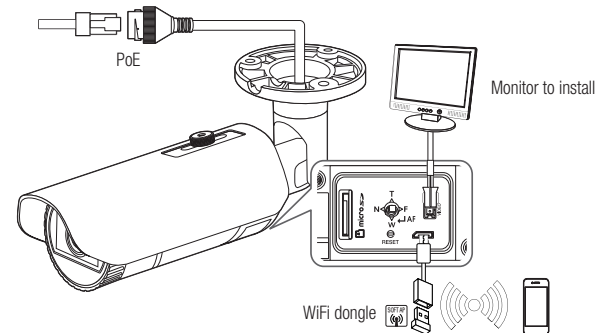
CONNECTING WITH OTHER DEVICE



<XND-L6080R/L6080RV/L6080V>



<XNV-L6080/L6080R>



<XNO-L6080R>



- The CVBS out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.
- The Micro USB out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.
- This product includes an additional damp-proof part to prevent condensation. Due to the characteristics of the product, condensation may form when the power is turned on, but it will disappear after about two to three hours.

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. (initial password: 4321)
 - 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 |

Powering and networking

Connect your PoE device to the camera.



- Connect to a PoE (Power over Ethernet) enabled router's PoE connector.
- Use PoE (Power over Ethernet) equipment that supports the IEEE802.3af standard.

Network Cable Specification

| Item | Contents | Remark |
|--------------|-----------------|---------------------------|
| Connector | RJ45 | |
| Ethernet | 10/100BASE-T | 10/100 Mbps |
| Cable | UTP Category 5e | |
| Max Distance | 100M | DC resistance ≤ 0.188 Ω/m |
| PoE Support | IEEE 802.3af | |

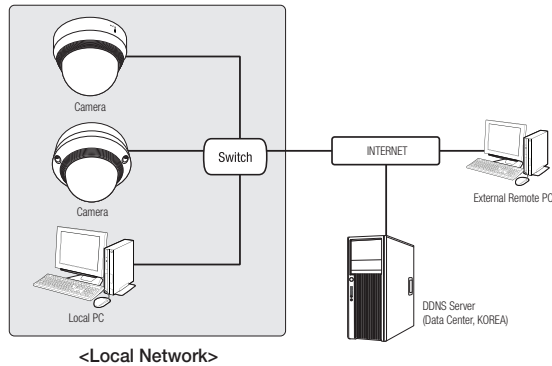
network connection and setup

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

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

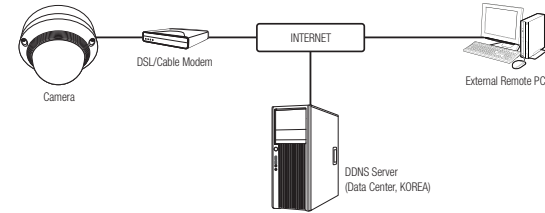
Connecting to the camera from a local PC in the LAN

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 Device Manager, 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 Device Manager. For further details on Device Manager use, refer to "Using Device Manager". (Page 25)

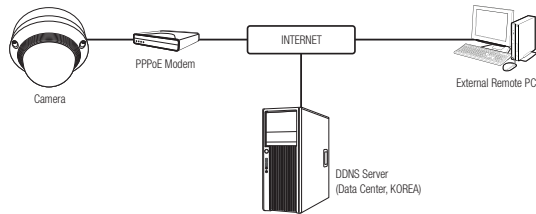
CONNECTING THE CAMERA DIRECTLY TO A DHCP BASED DSL/CABLE MODEM



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

CONNECTING THE CAMERA DIRECTLY TO A PPPoE MODEM



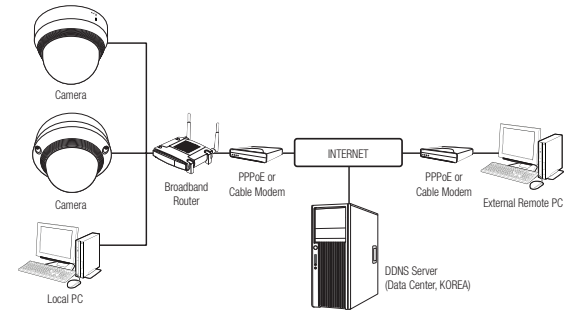
1. Connect the user PC directly with the network camera.
2. Run the Device Manager and change the IP address of the camera so that you can use the web browser on your desktop to connect to the Internet.
3. Use the Internet browser to connect to the web viewer.
4. Move to **[Setup]** page.
5. Move to **[Network]** – **[DDNS]** and configure the DDNS settings.
6. Move to **[Basic]** – **[IP & Port]** Setup Page, set the IP type to **[PPPoE]**, and enter the network service's ID and password.
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.

CONNECTING THE CAMERA TO A BROADBAND ROUTER WITH THE PPPoE/CABLE MODEM

This is for a small network environment such as homes, SOHO and ordinary shops.



Configuring the network settings of the local PC connected to a Broadband Router

Configuring the network settings of the local PC connected to a Broadband Router, follow the instructions below.

- Select : **<Network>** → **<Properties>** → **<Local Area Connection>** → **<General>** → **<Properties>** → **<Internet Protocol (TCP/IP)>** → **<Properties>** → **<Obtain an IP address automatically>** or **<Use the following IP address>**.
- Follow the instructions below if you select **<Use the following IP address>**:
 - ex1) If the address (LAN IP) of the Broadband Router is 192.168.1.1
IP address : 192.168.1.100
Subnet Mask : 255.255.255.0
Default Gateway : 192.168.1.1
 - ex2) If the address (LAN IP) of the Broadband Router is 192.168.0.1
IP address : 192.168.0.100
Subnet Mask : 255.255.255.0
Default Gateway : 192.168.0.1
 - ex3) If the address (LAN IP) of the Broadband Router is 192.168.xxx.1
IP address : 192.168.xxx.100
Subnet Mask : 255.255.255.0
Default Gateway : 192.168.xxx.1



- For the address of the Broadband Router, refer to the product's documentation.
- For more information about port forwarding of the broadband router, refer to **"Port Range Forward (Port Mapping) Setup"**. (Page 27)

USING DEVICE MANAGER



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

AUTOMATICALLY SEARCHING CAMERA

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

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

CONFIGURING IP ADDRESS

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

Configuring Static IP

Manually insert and configure IP address & port information.

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

If not using a Broadband Router

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

- HTTP Port : Used to access the camera using the Internet browser, defaulted to 80.
- VNP Port : Used to control the video signal transfer, defaulted to 4520.
- RTSP Port : A port that controls real-time streaming. The initial value is 554.

If using a Broadband Router

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



- The settings may differ depending on the connected Broadband Router model. For more information, refer to the user manual of the applicable router.
- For more information about port forwarding of the broadband router, refer to "Port Range Forward (Port Mapping) Setup". (Page 27)

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 |
| | 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

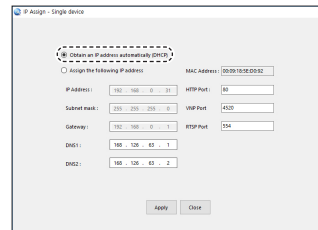
5. Click [Apply] Button.
6. If the success message is displayed, click [OK].

Configuring Dynamic IP

Receive IP address from DHCP

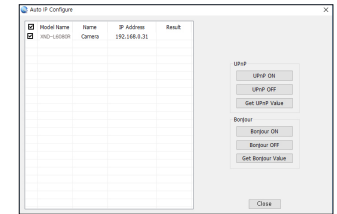
- Example of the Dynamic IP environment
 - If a Broadband Router, with cameras connected, is assigned an IP address by the DHCP server
 - If connecting the camera directly to modem using the DHCP protocols
 - If IPs are assigned by the internal DHCP server via the LAN

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



AUTOMATICALLY CONFIGURING IP

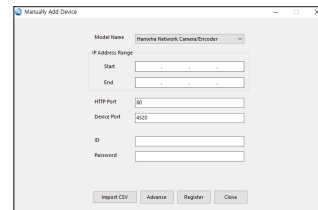
1. Click the camera from the list that you want to automatically configure the IP.
2. Click **<+>** at the main page of device manager.
 - Equipment Setting menu appears.
3. At the menu, click **<Auto IP Configure>**.
4. Click **[Close]** button.



MANUALLY REGISTERING CAMERA

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

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

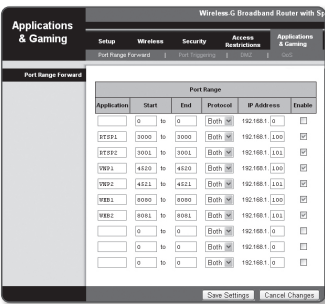


PORT RANGE FORWARD (PORT MAPPING) SETUP

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.

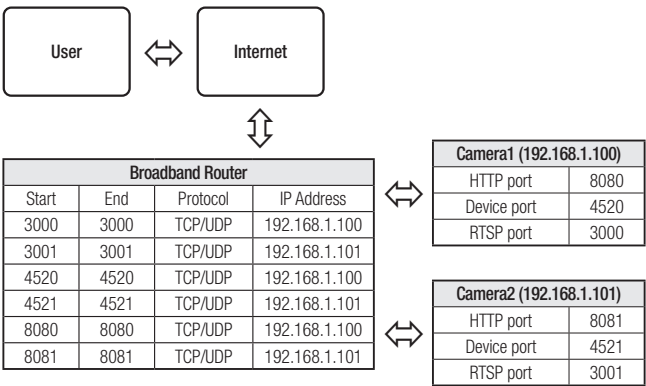


- Port forwarding setting is an example of setting CISCO IP router.
- The settings may differ depending on the connected Broadband Router model.
For more information, refer to the user manual of the applicable router.

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 **<Settings>** -> **Network -> DDNS**.

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

1. Run device manager.
It will scan for connected cameras and display them as a list.
2. Double-click a camera to access.
The Internet browser starts and connects to the camera.



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

CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

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

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

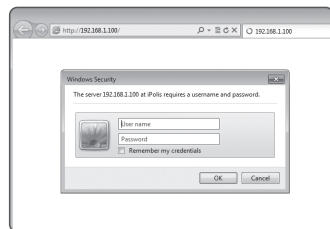


- To use DDNS, sign up at the DDNS homepage (<http://ddns.hanwha-security.com>) and register the product at **[My DDNS]>[Register Product]**.

CONNECTING TO THE CAMERA

Normally, you would

1. Launch the Internet browser.
2. Type the IP address of the camera in the address bar.
ex) • IP address (IPv4) : 192.168.1.100 → <http://192.168.1.100>
- the Login dialog should appear.
• IP address (IPv6) : 2001:230:abcd:ffff:0000:0000:ffff:1111
→ [http://\[2001:230:abcd:ffff:0000:0000:ffff:1111\]](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 the DHCP cable modem, DSL modem, or PPPoE modem, the IP address of your network will be changed each time you try to connect to the ISP (Internet Service Provider) server.

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.

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.

Administrator password change

New password

Confirm new password

. 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.

- Enter “**admin**” in the <User name> input box.
The administrator ID, “**admin**”, is fixed and can not be changed.

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

- Click **[OK]**.

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.



- 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.

Windows Security

The server 192.168.1.100 at iPolis requires a username and password.

User name

Password

☐ Remember my credentials

OK Cancel

SETTING THE CAMERA WEBVIEWER

- Click the **[Setup (⚙)]** icon.
- The Settings window appears.
- It is possible to manage the settings of the camera's basic information, PTZ, video, network, event, analysis, system, and open platform via the network.
- Click **<Help (?)>** to view detailed descriptions of each function.

TROUBLESHOOTING

| PROBLEM | SOLUTION |
|--|--|
| No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS. | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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 Device Manager program. | <ul style="list-style-type: none"> Turn off the firewall settings on your PC and then search the camera again. |
| Images overlap. | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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. |

| PROBLEM | SOLUTION |
|---|---|
| <Motion detection> of <Analytics> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred. | <ul style="list-style-type: none"> Verify the settings in the following sequence: <ul style="list-style-type: none"> 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. |
| Cannot record into the Micro SD memory card. | <ul style="list-style-type: none"> Check if the memory card is defective. |
| Micro SD memory card is inserted but the camera does not operate properly. | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> Confirm that the information registered in the NAS is correct. |
| It reports that NAS setting has failed. | <ul style="list-style-type: none"> 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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| Component Name | License | URL |
|--------------------|---------|--|
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| 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/ |
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It appears that the arithmetic coding option of the JPEG spec is covered by patents owned by IBM, AT&T, and Mitsubishi. Hence arithmetic coding cannot legally be used without obtaining one or more licenses. For this reason, support for arithmetic coding has been removed from the free JPEG software. (Since arithmetic coding provides only a marginal gain over the unpatented Huffman mode, it is unlikely that very many implementations will support it.) So far as we are aware, there are no patent restrictions on the remaining code.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

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established by T-Engine Forum
on January 23, 2004
revised on June 17, 2004
revised on December 21, 2006
revised on March 24, 2009

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