Hanwha Vision

NETWORK CAMERA

User Manual

LND-6012R/LND-6022R/LND-6032R/LND-6072R
LNO-6012R/LNO-6022R/LNO-6032R/LNO-6072R
LNV-6012R/LNV-6022R/LNV-6032R/LNV-6072R

CE

Network Camera
User Manual

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Disclaimer

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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 PoE , 0.14A.
16. This product is intended to be supplied by isolation power.
17. If you use excessive force when installing the product, the camera may be damaged and malfunction.
    If you forcibly install the product using non-compliant tools, the product may be damaged.
18. Do not install the product in a place where chemical substances or oil mist exists or may be generated. As edible oils such as soybean oil may damage or warp the product, do not install the product in the kitchen or near the kitchen table.
    This may cause damage to the product.
19. When installing the product, be careful not to allow the surface of the product to be stained with chemical substance.
    Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
20. If you install/disassemble the product in a manner that has not been recommended, the production functions/ performance may not be guaranteed.
    Install the product by referring to "Installation & connection" in the user manual.
21. Installing or using the product in water can cause serious damage to the product.

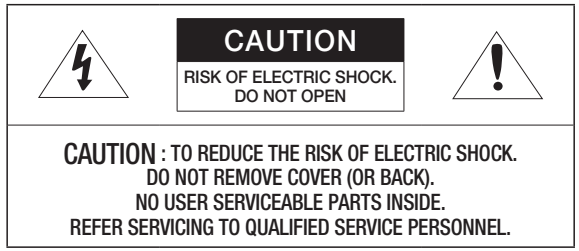
WARNING

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

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

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

CAUTION



EXPLANATION OF GRAPHICAL SYMBOLS

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

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

Class I construction

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

Battery

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

The battery cannot be replaced.

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 802-3af 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.

WARNING

To prevent damage which may caused by IR LED, don't stare at operating lamp.

For below models only.

LND-6012R/LND-6022R/LND-6032R/LND-6072R

LNO-6012R/LNO-6022R/LNO-6032R/LNO-6072R

LNV-6012R/LNV-6022R/LNV-6032R/LNV-6072R

Risk Group 1
WARNING IR emitted from this product. Do not stare at operating lamp.
Product tested against IEC 62471

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PRODUCT FEATURES

- **Dustproof/Waterproof (IP66) (LNO-6012R/6022R/6032R/6072R, LNV-6012R/6022R/6032R/6072R)**
  The dustproof and waterproof design makes you feel at ease when installing the product outdoors or exposing it to rain.
- **IR mode**
  If the IR indicator turns on, the product switches to the IR mode for preventing an object from being too bright, which helps you identify the object in near distance.
- **Supports 2 megapixel resolution videos**
- **Multi-Streaming**
  This network camera can display videos in different resolutions and qualities simultaneously using different CODECs.
- **Web Browser-based Monitoring**
  Using the Internet web browser to display the image in a local network environment.
- **Alarm**
  When an event occurs, related videos are sent to the user's registered e-mail and FTP server or stored on the Micro SD memory card.
- **Tampering Detection**
  Detects tempering attempts on video monitoring.
- **Motion Detection**
  Detects motion from the camera's video input.
- **ONVIF Compliance**
  This product supports ONVIF Profile S/G/T.
  For more information, refer to www.onvif.org.

ONVIF
Driving network video through global standardization

RECOMMENDED PC SPECIFICATIONS

- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
- RAM : 8G or higher
- Supported OS: Windows 7, 8.1, 10, Mac OS X 10.12, 10.13, 10.14
- Recommended Browser: Google Chrome
- Supported Browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
- VGA : PCIe 256MB GDDR3 video graphics card or higher

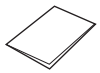
※ Some functions may be restricted even in supported browsers.

RECOMMENDED MICRO SD/SDHC MEMORY CARD SPECIFICATIONS

- Recommended capacity : 16GB ~ 32GB (MLC Type)
- Recommended Manufacturers : SanDisk, Transcend
- Product Type : High endurance
- The compatibility varies depending on the card manufacturers and types.

WHAT'S INCLUDED (LND-6012R/6022R/6032R/6072R)

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	1	
	Warranty card (Optional)	1	
	Template	1	Product installation guide

WHAT'S INCLUDED (LNO-6012R/6022R/6032R/6072R)

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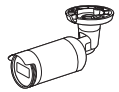
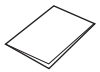
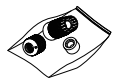
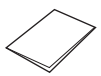
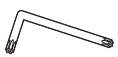
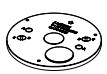
Appearance	Item Name	Quantity	Description
	Camera	1	
	Quick Guide	1	
	Warranty card (Optional)	1	
	Template	1	Product installation guide
	RJ45 waterproof accessory	1	Used to install in humid places

WHAT'S INCLUDED (LNV-6012R/6022R/6032R/6072R)

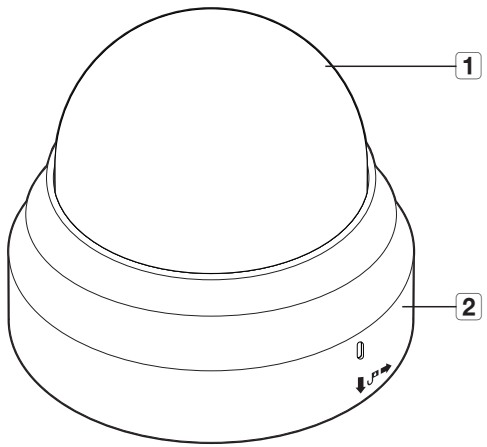
Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

Appearance	Item Name	Quantity	Description	Model Name
	Camera	1		LNV-6012R/6022R/ 6032R
				LNV-6072R
	Quick Guide	1		Use for all models
	Warranty card (Optional)	1		
	Template	1	Product installation guide	
	Star-shaped wrench	1	Used for the assembly and disassembly of dome covers	
	Mount plate (Optional)	1	This is used to place the camera on a mount separately sold.	LNV-6012R/ 6022R/6032R
		1		LNV-6072R

Appearance	Item Name	Quantity	Description	Model Name
	Machine Screws (Optional)	2	Used for assembling the dome case when installing the product on the pipe, wall mount, etc. or blocking a hole.	Use for all models
	Cable bush	1	Used to connect the LAN cable with a diameter of Ø7~8.5.	

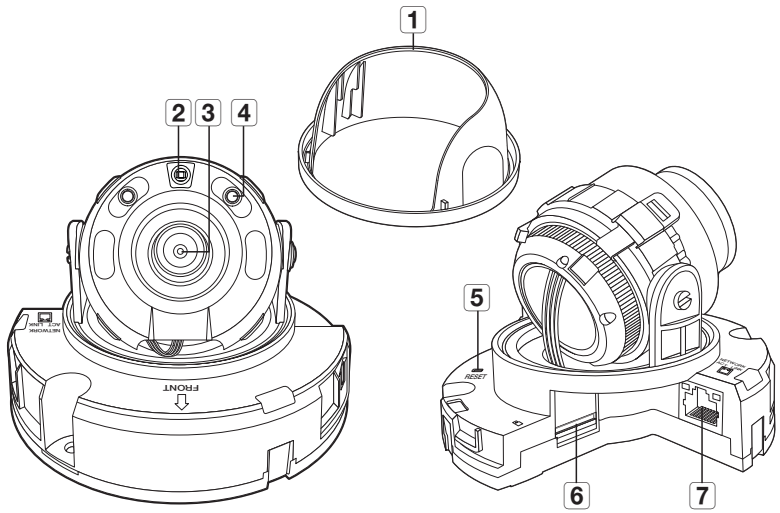
AT A GLANCE (LND-6012R/6022R/6032R)

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.

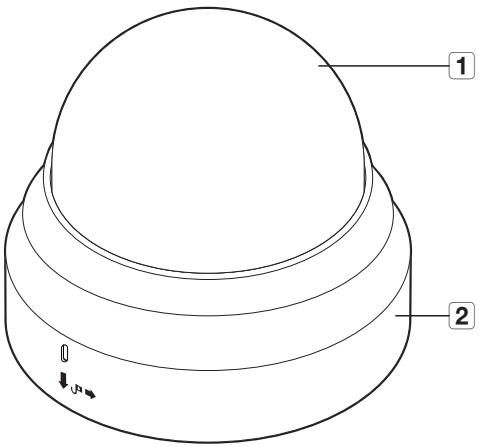
Components



Item	Description
1 Inside cover	Protective cover for the main body.
2 Illumination Sensor	Detects incoming light to control the IR LED.
3 Lens	Lens for the camera.
4 IR LED	These infrared LED's are controlled by the illumination sensor.
5 Reset Button	The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. ! If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.
6 Micro SD Memory Card Compartment	Compartment for the Micro SD memory card.
7 PoE connector	Supply power through the Ethernet cable and connect to the network.

AT A GLANCE (LND-6072R)

Appearance



Item	Description
1 Dome cover	Case cover used to protect the lens and the main unit.
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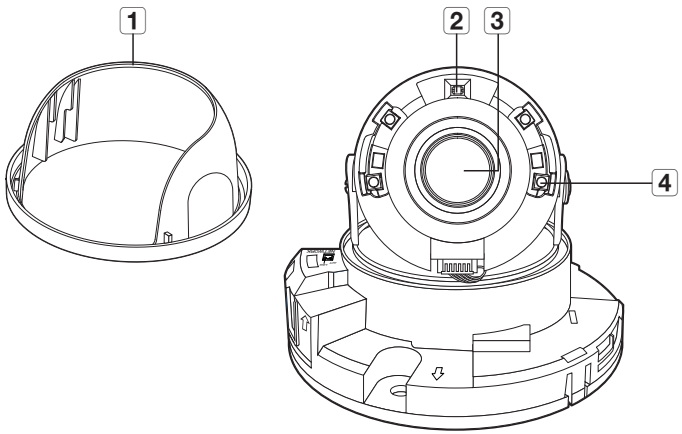

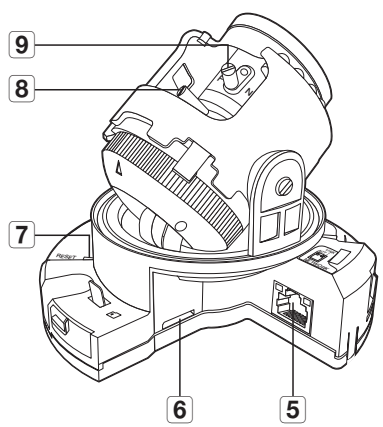

Item	Description	
1 Inside cover	Protective cover for the main body.	
2 Illumination Sensor	Detects incoming light to control the IR LED.	
3 Lens	Lens for the camera.	
4 IR LED	These infrared LED's are controlled by the illumination sensor.	
5 PoE connector	Supply power through the Ethernet cable and connect to the network.	
6 Micro SD Memory Card Compartment	Compartment for the Micro SD memory card.	
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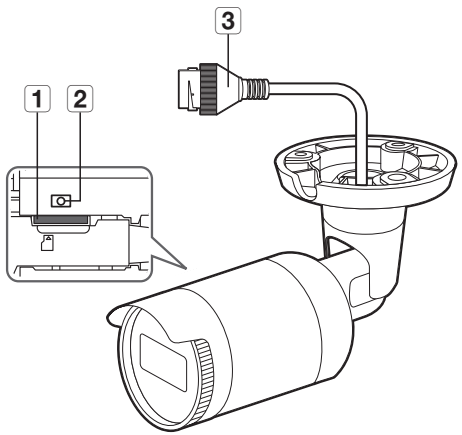
8 Zoom control lever	T	Zoom in (Tele)
	W	Zoom out (Wide)
	Release the lever and move it to left or right to zoom the lens in or out. Turn the lever clockwise to fix the adjusted position to prevent it from being moved.	
9 Focus control lever	N	Focusing on a near object (Near)
	F	Focusing on a far object (Far)
	Release the lever and move it to left or right to adjust the lens focus. Turn the lever clockwise to fix the adjusted position to prevent it from being moved.	

AT A GLANCE (LNO-6012R/6022R/6032R)

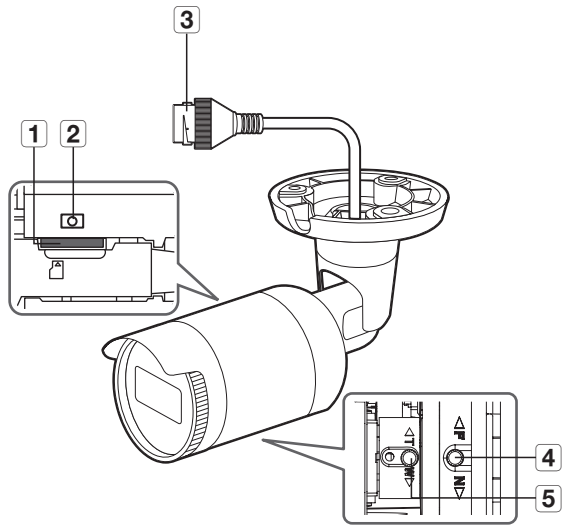
Appearance



Item	Description
1 Micro SD card slot	(Internal space of the product) This is a slot in which you can insert a Micro SD card.
2 Reset button	The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. ! If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.
3 PoE connector	Supply power through the Ethernet cable and connect to the network.

AT A GLANCE (LNO-6072R)

Appearance



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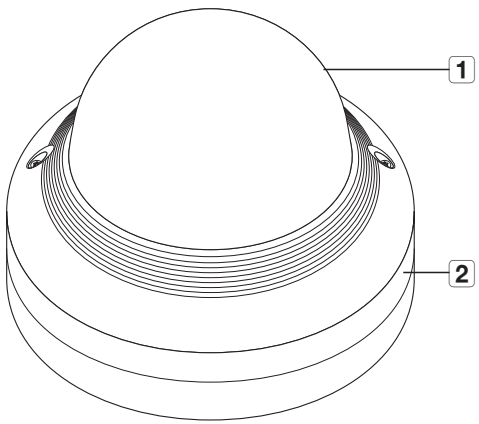
3 PoE connector		Supply power through the Ethernet cable and connect to the network.
4 Focus control lever	N	Focusing on a near object (Near)
	F	Focusing on a far object (Far)
		Release the lever and move it to left or right to adjust the lens focus. Turn the lever clockwise to fix the adjusted position to prevent it from being moved.
5 Zoom control lever	T	Zoom in (Tele)
	W	Zoom out (Wide)
		Release the lever and move it to left or right to zoom the lens in or out. Turn the lever clockwise to fix the adjusted position to prevent it from being moved.

AT A GLANCE (LNV-6012R/6022R/6032R)

Appearance



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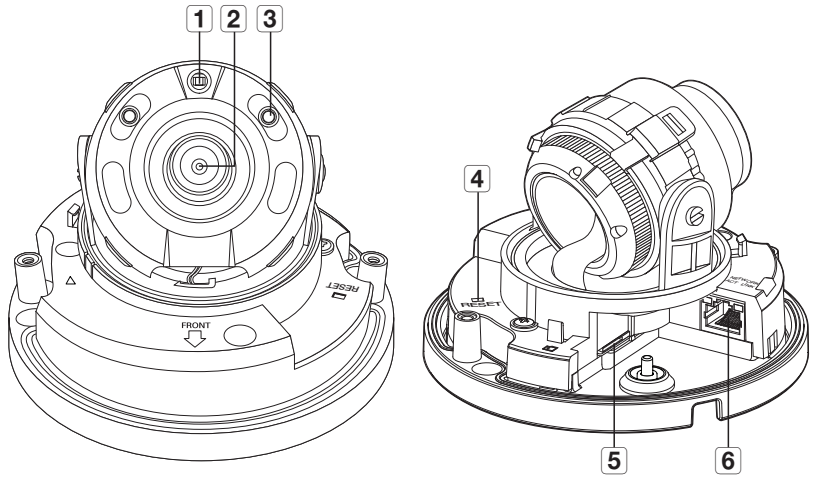
Components



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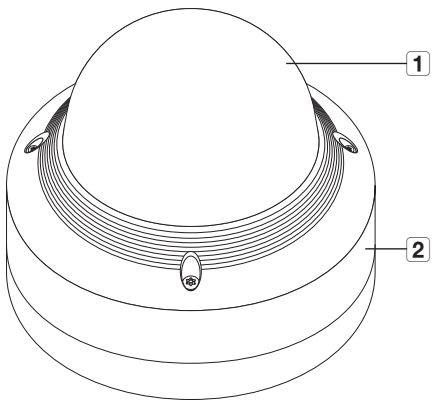
5 Micro SD Memory Card Compartment	Compartment for the Micro SD memory card.
6 PoE connector	Supply power through the Ethernet cable and connect to the network.

AT A GLANCE (LNV-6072R)

Appearance



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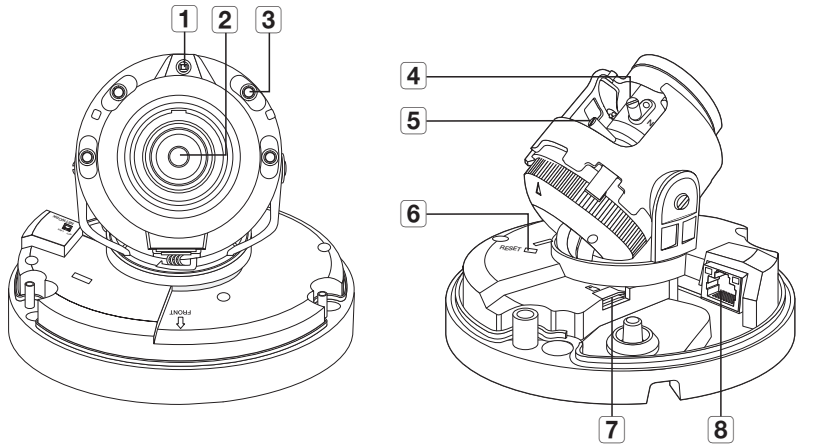

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	Release the lever and move it to left or right to adjust the lens focus. Turn the lever clockwise to fix the adjusted position to prevent it from being moved.	
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	W	Zoom out (Wide)
	Release the lever and move it to left or right to zoom the lens in or out. Turn the lever clockwise to fix the adjusted position to prevent it from being moved.	
6 Reset button	The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. ! If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.	
7 Micro SD Memory Card Compartment	Compartment for the Micro SD memory card.	
8 PoE connector	Supply power through the Ethernet cable and connect to the network.	

INSTALLATION (LND-6012R/6022R/6032R/6072R)

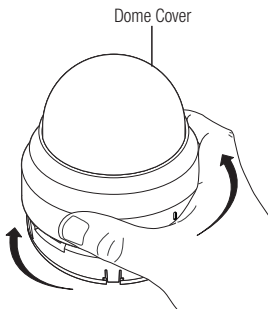
Precautions before installation

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.
- For the manual variable focal lens camera, features such as focus and zoom should be adjusted before installation.
  When adjusting these, be sure to prevent foreign substances from becoming attached.

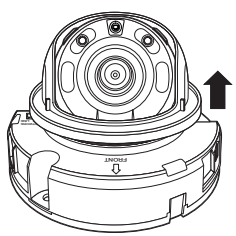
Disassembling

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



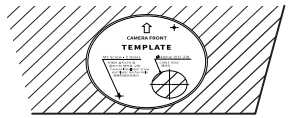
- Do not touch the transparent part of the dome cover once the protective film is removed.

2. Lift up the inner cover to separate it.

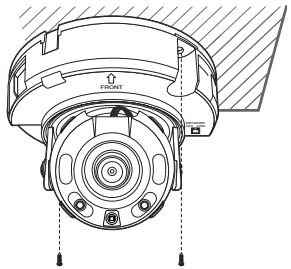


Installation

1. Consider the direction to be monitored, attach the template, and drill holes by following the template.

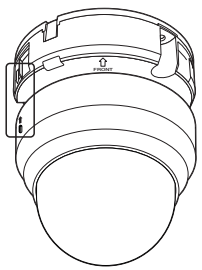


2. Using 2 tapping screws, fix the camera at 2 holes drilled with a template.
   - Set the < ⇧ > mark imprinted on the camera to face the direction of camera monitoring.
3. Connect the camera internal terminal with the corresponding cable.
4. Adjust the lens in a desired direction by referring to the "**Adjusting the monitoring direction for the camera**" section. (page 20)

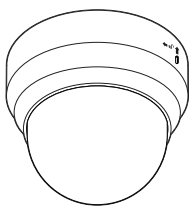


- You are recommended not to touch the lens separately, as it is shipped from the factory with the focus correctly adjusted when the inspection is completed. Touching the lens may cause the focus to become distorted or the lens to become dirty. (LND-6012R/6022R/6032R)
- For the manual variable focal lens camera, features such as focus and zoom should be adjusted before installation. When adjusting these, be sure to prevent foreign substances from becoming attached. (LND-6072R)

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.



- To assemble the dome cover, make the arrows match each other and press the cover firmly.
  If the dome cover is rotated during assembly or is assembled incorrectly, diffused reflection may occur or the lens section may rotate, which will cause the shooting range to be changed.
- 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 (LNO-6012R/6022R/6032R/6072R)

▪ 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.

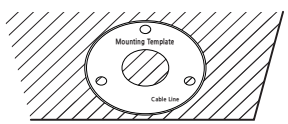
Precautions before installation

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.
- For the manual variable focal lens camera, features such as focus and zoom should be adjusted before installation.
  When adjusting these, be sure to prevent foreign substances from becoming attached.

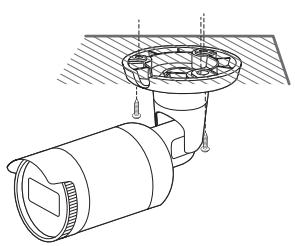
Installation

1. Attach the installation template to the desired location, and drill holes by following the template.



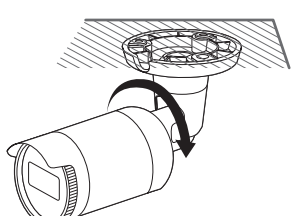
2. Insert and fasten 3 tapping screws into 3 holes to secure the camera.

3. Connect the appropriate cables with camera terminals.



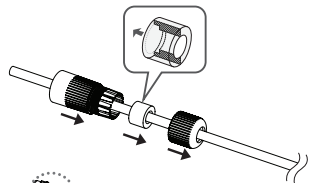
4. Adjust the orientation of the camera using a Phillips screwdriver.

▪ 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.

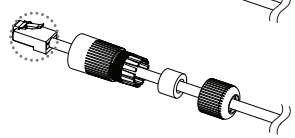


How to connect the RJ45 waterproof cable to a LAN cable

1. Insert it through the arrow direction.

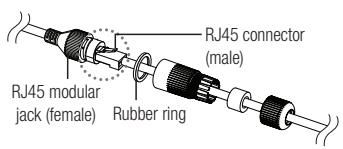


2. Connect the LAN connector (male) to the cable.

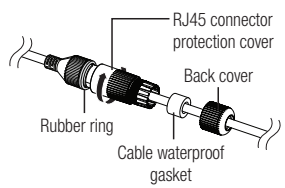


3. Connect the RJ45 modular jack (female) to the RJ45 connector (male).

▪ Please, keep each of the parts separated.

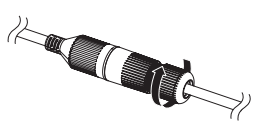


4. Assemble by rotating the RJ45 modular jack (female) and the RJ45 protection cover clockwise (Follow the arrow).



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.

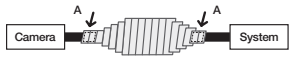
▪ You must fully assemble it to rotate the back cover up to the end of the screw thread of the RJ45 connector.



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.

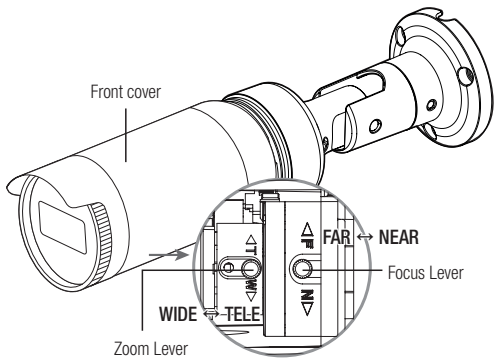
1. Connect the PoE cable.
2. Wrap the black cable jacket (Area A) and the cable connection area with waterproof (butyl rubber) tape so that more than half of the butyl rubber tape is overlapped.



- 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.

To adjust the zoom factor or focus (LNO-6072R)

1. Loosen the front cover as shown.
2. Loosen the zoom/focus lever slightly.
3. Position the zoom/focus lever to WIDE (NEAR) or TELE (FAR) as appropriate.
4. Then, tighten the zoom/focus lever to fix the adjusted position.
5. Turn the front cover to tighten it.

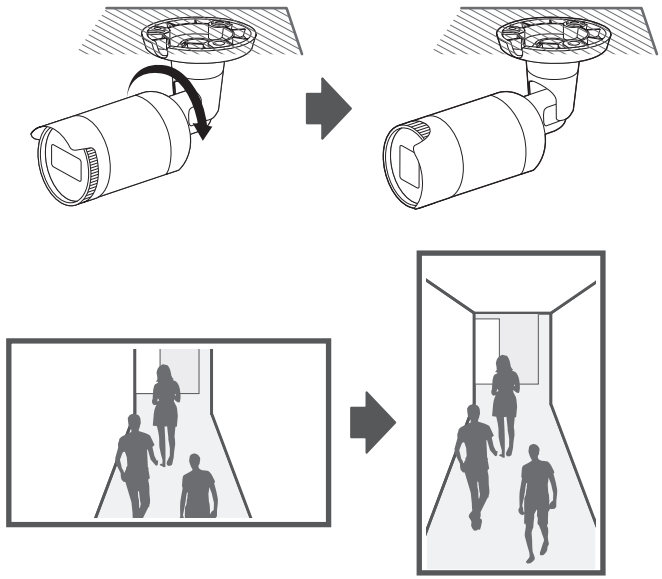


- To ensure seamless waterproofing, tighten up the front cover by turning it to the end.
  When combining the front cover, please combine the main body and the front cover so that the LOCK indicator is interlocked.
- Use the lever to adjust the zoom factor or focus, and turn the lever clockwise to fix it.
- Before you can adjust the zoom factor/focus of the lens, loosen and remove the front cover.

Hallway view

The camera can be rotated to enlarge the vertical monitoring area to an aspect ratio of 9:16, making it suitable for narrow corridors and passageways.

- Rotate both the camera body and the front cover.



INSTALLATION (LNV-6012R/6022R/6032R/6072R)

- 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.

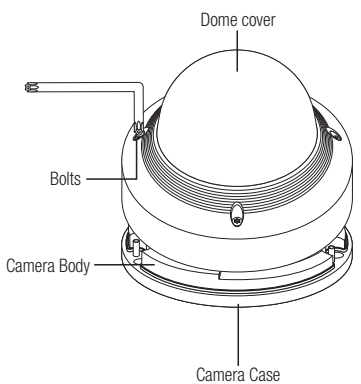
Precautions before installation

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.
- For the manual variable focal lens camera, features such as focus and zoom should be adjusted before installation. When adjusting these, be sure to prevent foreign substances from becoming attached.

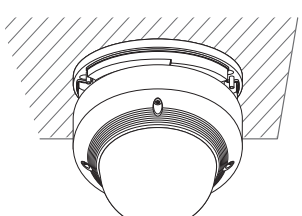
Disassembling

1. Remove the dome cover by loosening the fastening bolts by turning them counterclockwise using the supplied star-shaped wrench.



Installation

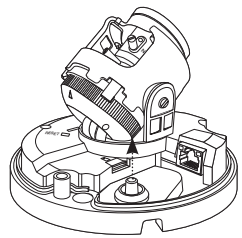
1. Attach the installation template to the desired location, and drill holes by following the template.
2. Using 3 tapping screws, fix the camera at 3 holes drilled with a template.
3. Connect and arrange the necessary cables lest that they should be damaged or twisted while installing the camera.
4. Adjust the lens in a desired direction by referring to the "**Adjusting the monitoring direction for the camera**" section. (page 20)
5. Close the dome cover.
   - Tighten the fastening bolts tightly using the star-shaped wrench to prevent water leakage.



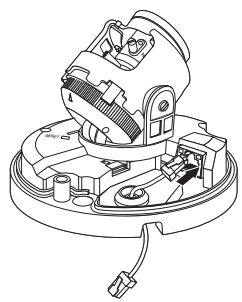
Connecting the LAN cable

1. Remove the dome cover and the case.
2. Pull off the cable bush at the bottom 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 LAN cable through the hole that was formed by removing the protruded part in step 2.
4. Remove the sheath with a cable cutter, and align the cables.
5. Connect the LAN cable with a LAN connector, and insert it into the LAN tool.
6. Connect the finished cable to the Ethernet port.



Attaching to the unbundled adapter

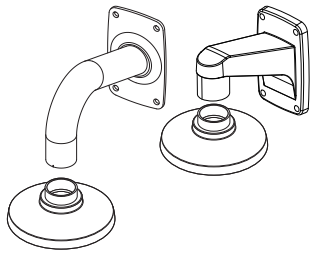
Choose and purchase a necessary one of the following options (unbundled) that is suitable to the installation site or for your convenience.

1. Remove the dome cover from the case by referring to the "**Disassembling**" section. (page 18)
2. Use the 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.

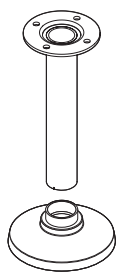
Optional Accessories for Installation

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

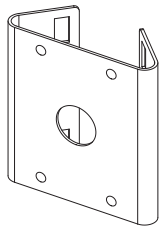
1. WALL MOUNT ADAPTOR(SBP-300WMW1)/ HANGING MOUNT(SBP-122HMW : LND-6072R, LNV-6012R/6022R/6032R, SBP-301HMW2 : LNV-6072R, SBP-300HMW7 : LND-6012R/6022R/6032R)
   This adaptor is used when installing the dome camera onto a wall.



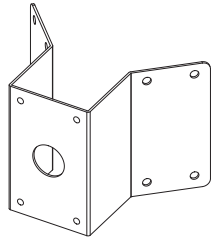
2. CEILING MOUNT ADAPTOR(SBP-300CMW)/HANGING MOUNT(SBP-122HMW : LND-6072R, LNV-6012R/6022R/6032R, SBP-301HMW2 : LNV-6072R, SBP-300HMW7 : LND-6012R/6022R/6032R)
   This adaptor is used when installing the dome camera on a concrete ceiling.



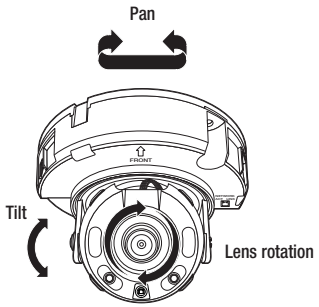
3. POLE MOUNT ADAPTOR(SBP-300PMW)
   This is an adaptor for WALL MOUNT ADAPTOR (SBP-300WMW1) installation on a pole whose diameter is bigger than 80mm.



4. CORNER MOUNT ADAPTOR (SBP-300KMW)
   This is an adaptor for WALL MOUNT ADAPTOR (SBP-300WMW1) installation on the corner of wall joint.



Adjusting the monitoring direction for the camera (LND-6012R/6022R/6032R/6072R, LNV-6012R/6022R/6032R/6072R)



▪ **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 350 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.

▪ **Methods of adjustment**

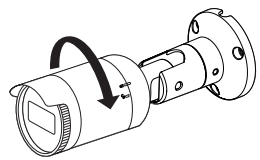
1. After installing the camera, adjust the panning angle in consideration of the monitoring direction.
2. Set the horizontal angle so that the image is not reversed.
3. Adjust the tilt angle so that the camera faces toward the monitoring object.

INSERTING/REMOVING A MICRO SD MEMORY CARD

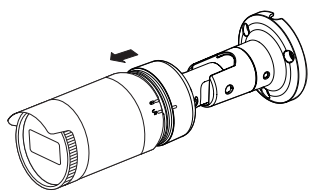
▪ Disconnect the power cable from the camera before inserting the Micro SD memory card.
▪ Do not insert the Micro SD memory card while it's upside down by force.
Otherwise, it may damage the Micro SD memory card.
▪ When it rains or the humidity is high, insertion or ejection of a Micro SD card is not 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 (LNO-6012R/6022R/6032R/6072R)

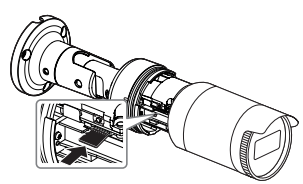
1. Turn the front cover to the UNLOCK [ ] direction.



2. Pull and separate the front cover.

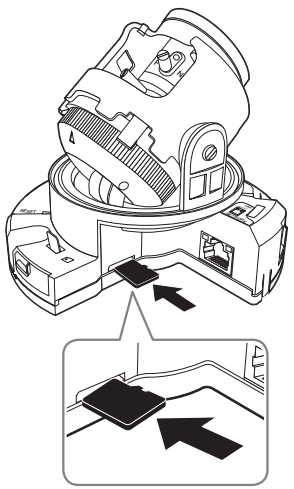


3. Insert a Micro SD card in the arrow direction shown in the figure.

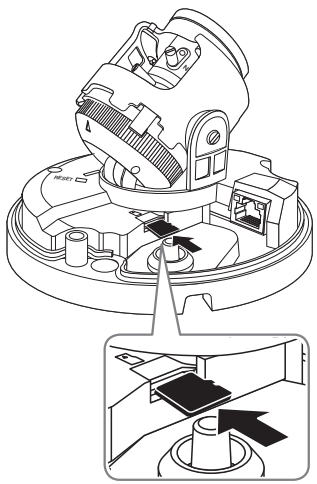


Inserting a Micro SD Memory Card (LND-6012R/6022R/6032R/6072R, LNV-6012R/6022R/6032R/6072R)

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



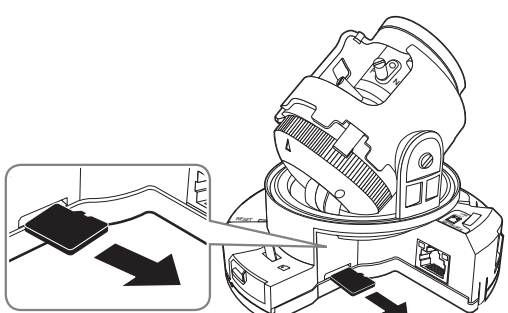
<LND-6012R/6022R/6032R/6072R>



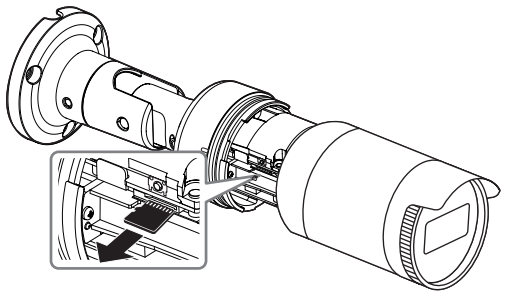
<LNV-6012R/6022R/6032R/6072R>

Removing a Micro SD Memory Card

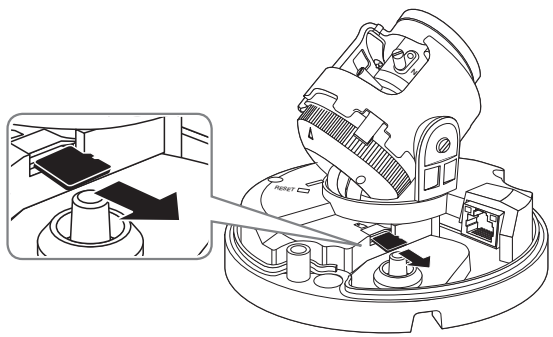
Gently press down on the exposed end of the memory card as shown in the diagram to eject the memory card from the slot.



<LND-6012R/6022R/6032R/6072R>



<LNO-6012R/6022R/6032R/6072R>



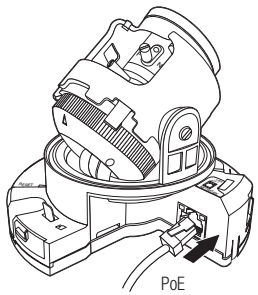
<LNV-6012R/6022R/6032R/6072R>

- 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.

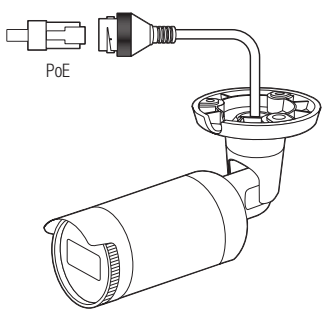
POWERING AND NETWORKING

Connect your PoE device to the camera.

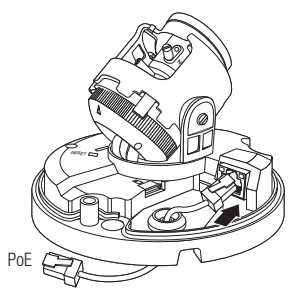
- Connect to a PoE (Power over Ethernet) enabled router's PoE connector.
- Use PoE (Power over Ethernet) equipment that supports the IEEE802.3af standard.



<LND-6012R/6022R/6032R/6072R>



<LNO-6012R/6022R/6032R/6072R>



<LNV-6012R/6022R/6032R/6072R>

Network Cable Specification

Item	Contents	Remark
Connector	RJ45	
Ethernet	10/100BASE-T	10/100 Mbps
Cable	Category 5e	
Max Distance	100M	DC Resistance ≤ 0.125 Ω/m
PoE Support	IEEE 802.3af	

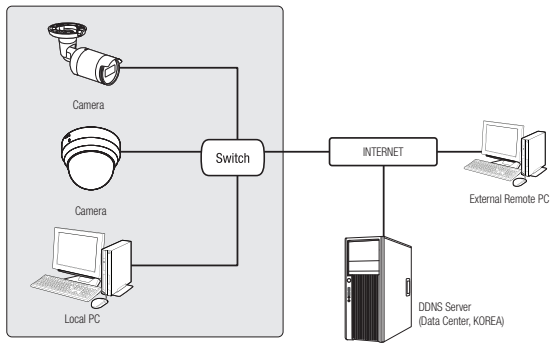
- If you use a cable other than Category 5e standards, 100m of transmission distance is not guaranteed.

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

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

Connecting to the camera from a local PC in the LAN

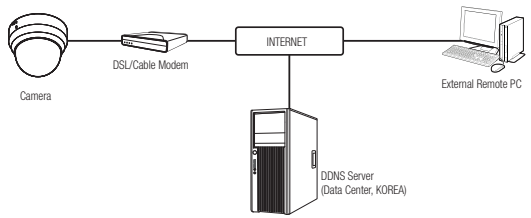
1. Launch an Internet browser on the local PC.
2. Enter the IP address of the camera in the address bar of the browser.



<Local Network>

- A remote PC in an external Internet out of the LAN network may not be able to connect to the camera installed in the intranet if the port-forwarding is not properly set or a firewall is set.
  In this case, to resolve the problem, contact your network administrator.
- By factory default, the IP address will be assigned from the DHCP server automatically.
  If there is no DHCP server available, the IP address will be set to 192.168.1.100.
  To change the IP address, use the Device Manager.
  For further details on Device Manager use, refer to "**Using Device Manager**". (Page 24)

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.

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.

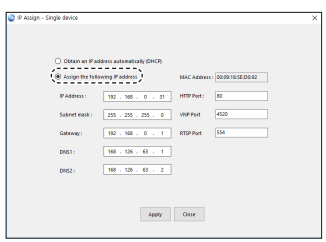
CONFIGURING IP ADDRESS

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.



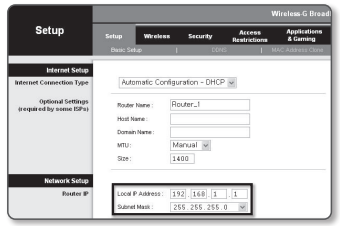
If not using a Broadband Router

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.
- 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 26)

If the Broadband Router has more than one camera connected

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

ex)

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

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

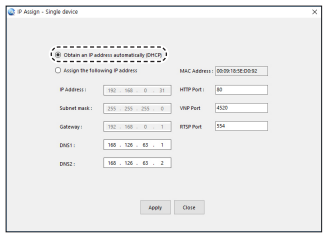
5. Click [**Apply**] Button.
6. If the success message is displayed, click [**OK**].

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

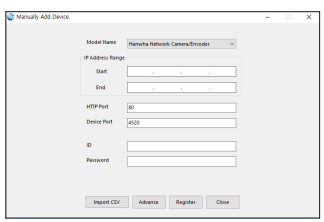
1. Click the camera from the list that you want to change the IP setting.
2. Click <**IP Assign**> at the main page of device manager.
3. Select <**Obtain an IP address automatically (DHCP)**>.
4. Click [**Apply**] button.
5. If the success message is displayed, click [**OK**].



MANUALLY REGISTERING CAMERA

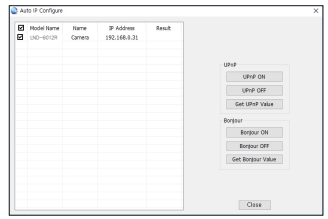
If the camera cannot be found using search function, the camera can be registered remotely by manually inserting IP information, if the camera is connected to external network.

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, ID, and password.
4. Click [**Register**] button.
5. Check if camera is registered.
   - Check MAC address at the sticker attached to the camera.



AUTOMATICALLY CONFIGURING IP

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

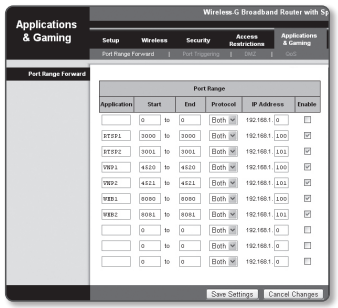


PORT RANGE FORWARD (PORT MAPPING) SETUP

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

Manual Port Range Forwarding

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

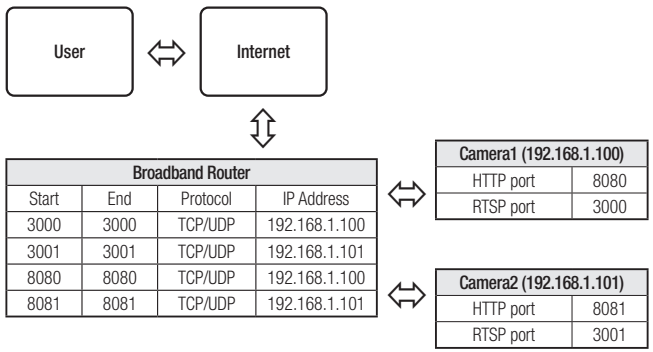


- Port forwarding setting is an example of setting CISCO IP router.
- The settings may differ depending on the connected Broadband Router model.
  For more information, refer to the user manual of the applicable router.

Setting up Port Range Forward for several network cameras

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

When Camera1 and Camera2 are connected to a router :



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

Camera1 (192.168.1.100)	
HTTP port	8080
RTSP port	3000

Camera2 (192.168.1.101)	
HTTP port	8081
RTSP port	3001

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

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

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

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

CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

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

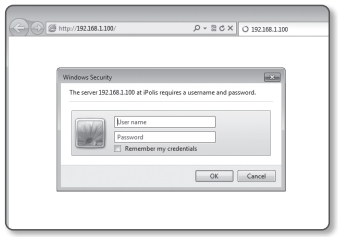
1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
   ex)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

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

CONNECTING TO THE CAMERA

Normally, you would

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



If the HTTP port is other than 80

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

Using URL

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

▪ Network connection is disabled in the LAN only environment.

Connecting via UPnP

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

Connecting via Bonjour

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

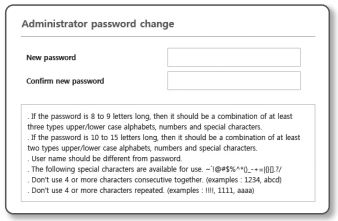
To check the DDNS address

If the camera is connected directly to the DHCP cable modem, DSL 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.

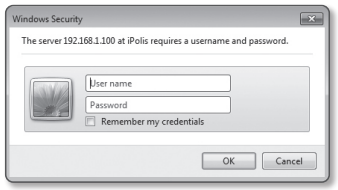


- For a new password with 8 to 9 digits, you must use at least 3 of the following: uppercase/lowercase letters, numbers and special characters. For a password with 10 to 15 digits, you must use at least 2 types of those mentioned.
  - Special characters that are allowed. : ~`!@#$%^*()_-+=|{}[].?/
- For 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.

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 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.

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, network, event, analysis, and system over the network.
4. Click <**Help** ( )> to view detailed descriptions of each function.

TROUBLESHOOTING

PROBLEM	SOLUTION
No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS.	• On the authentication popup window prompted when initially accessing https, click "View Authentication Certificate" and select the "Always trust when connecting to the designated webviewer IP" check box. • If the webviewer continues failing to display a video after you select "Next" on the message window below, press the command key + Q to exit the Safari browser, access again and follow the procedures stated above.
I can't access the camera from a web browser.	• Check to make sure that the camera's Network settings are appropriate. • Check to make sure that all network cables have been connected properly. • If connected using DHCP, verify that the camera is able to acquire dynamic IP addresses without any problem. • If the camera is connected to a Broadband Router, verify that port forwarding is properly configured.
Viewer got disconnected during monitoring.	• Connected Viewers become disconnected upon any change to camera or network configurations. • Check all network connections.
No video is displayed when I newly access the webviewer or connect streaming to the client.	• The maximum number of profiles available is 3. The connection may be lost if you use 4 or more of profiles. Example) If you access MJPEG, H.264 and H.264(Profiles with Different Settings) and then access with a different profile, the connection will be lost.
The camera connected to the network is not detected in the Device Manager program.	• Turn off the firewall settings on your PC and then search the camera again.
Images overlap.	• Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap.
No image appears.	• If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to.

PROBLEM	SOLUTION
File is not transferred to the email even if a motion detection event is generated with <Motion detection> set to <On> in the <Event> page.	• Verify the settings in the following sequence: A. Check <Data & Time> settings. B. The <Motion detection> should be set to <Enable>. C. Check if the <E-mail> option of <Event setup> menu is checked to use.
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.

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GPL/LGPL software license

The software included in this product contains copyrighted software that is licensed under the GPL/LGPL. You may obtain the complete Corresponding Source code from us for a period of three years after our last shipment of this product by sending email to help.cctv@hanwha.com

If you want to obtain the complete Corresponding Source code in the physical medium such as CD-ROM, the cost of physically performing source distribution might be charged.

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	
mtd-1.5.2	GPL 2.0	ftp://ftp.infradead.org/pub/mtd-utils
mii-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	
zeroconf	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/

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

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4. The Distributor of Modification shall determine the name of the Modified Source Code subject to the rules separately established by T-Engine Forum and publish an appropriate notice as required by the rules on the Patch for Modification and the Modified Source Code.

5. The Distributor of Modification may distribute the Modified Source Code to a third party, whether with or without payment, provided that the Distributor of Modification shall take the necessary measures to prohibit the third party from making the re-Distribution of the Modified Source Code.

6. Developer with the Patch for Modification. Provided, however, that the Distributor of Modification shall be obligated to confirm that the System Developer is the Source Code User duly licensed under Article 4.1.

7. The Distributor of Modification may perform the Vicarious Execution of Patch Processing for the System Developer.

8. The System Developer shall not distribute the Modified Source Code in further modified form to any third party as a stand-alone software product.

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Article 6. Distribution and Registration of the Ported Source Code

1. The Source Code User and the System Developer may, whether with or without charge, distribute to any third party only the following parts of the Ported Source Code on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware:

1. The Hardware-dependent Part and/or Compiler-dependent Part; provided that the Source Code User and the System Developer shall inform T-Engine Forum of, and T-Engine Forum may publish, a method for distributing said Part(s) to third parties.

2. The Header File; provided that the Header File shall be distributed together with the Binary Code of the Ported Source Code.

2. Any member of T-Engine Forum may request T-Engine Forum to register and distribute, as an original source code for T-Kernel, the Ported Source Code on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware.

3. Any member of T-Engine Forum who requests the distribution mentioned in the preceding paragraph shall accede to the following conditions:

1. The member shall confirm that the object hardware is the T-Engine Hardware or the Similar Hardware to T-Engine Hardware.

2. The member shall provide T-Engine Forum with a complete set of operational environment for the object hardware and T-Kernel free of charge when requesting the distribution.

3. The member shall submit test results of the Ported Source Code to T-Engine Forum when requesting the distribution.

4. In the event that T-Engine Forum accepts the request mentioned in Article 6.2, T-Engine Forum shall register and distribute the Ported Source Code as the Source Code for T-Kernel. Provided, however, that the Ported Source Code may be treated in the same way as the Modified Source Code until the time of registration hereunder.

5. The provision set forth in Article 3 shall apply to the Ported Source Code registered in accordance with this Article.

Article 7. Use for Other Purpose

1. Any use of the Source Code, the Modified Source Code or the Ported Source Code other than those stipulated in Articles 4, 5 and 6 shall be subject to the prior approval of T-Engine Forum.

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Iperf performance test

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Jean-loup Gailly Mark Adler

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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 (deflate format) and rfc1952.txt (gzip format).

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

eco
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