

WISENET

NETWORK CAMERA

User Manual

LND-6010R/LND-6020R/LND-6030R/LND-6070R
LNO-6010R/LNO-6020R/LNO-6030R/LNO-6070R
LNV-6010R/LNV-6020R/LNV-6030R/LNV-6070R



Network Camera

User Manual

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❖ Design and specifications are subject to change without prior notice.

❖ The initial administrator ID is "admin" and the password should be set when logging in for the first time.

Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.

Please, take note that it's a user's responsibility for the security and any other problems caused by mismanaging a password.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth. (Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
7. Do not block any ventilation openings, Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/ accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lighting storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from PoE , 0.18A.
16. If you use excessive force when installing the product, the camera may be damaged and malfunction. If you forcibly install the product using non-compliant tools, the product may be damaged.
17. Do not install the product in a place where chemical substances or oil mist exists or may be generated. As edible oils such as soybean oil may damage or warp the product, do not install the product in the kitchen or near the kitchen table. This may cause damage to the product.
18. When installing the product, be careful not to allow the surface of the product to be stained with chemical substance. Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
19. If you install/disassemble the product in a manner that has not been recommended, the production functions/ performance may not be guaranteed. Install the product by referring to "Installation & connection" in the user manual.
20. Installing or using the product in water can cause serious damage to the product.



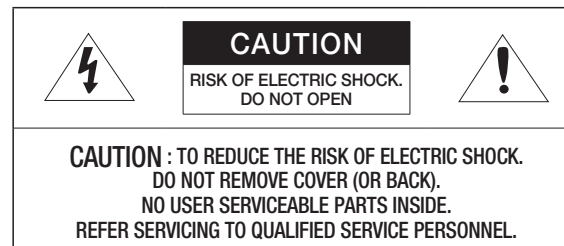
WARNING

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

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

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

CAUTION



EXPLANATION OF GRAPHICAL SYMBOLS



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



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

Class I construction

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

Battery

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

Disconnection Device

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

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

CAUTION

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

ATTENTION

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

These servicing instructions are for use by qualified service personnel only.

To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

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

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

The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802-3af 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-6010R/LND-6020R/LND-6030R/LND-6070R

LNO-6010R/LNO-6020R/LNO-6030R/LNO-6070R

LNV-6010R/LNV-6020R/LNV-6030R/LNV-6070R

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-6010R/6020R/6030R/6070R, LNV-6010R/6020R/6030R/6070R)**
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.
For more information, refer to www.onvif.org.



RECOMMENDED PC SPECIFICATIONS







- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
 - Supported OS : Windows, Mac OS X
 - **Plug-in free web viewer**
Supported web browsers : Google Chrome, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
 - **Plug-in Webviewer**
Supported web browsers : MS Explorer
 - VGA : PCIe 256MB GDDR3 video graphics card or higher
- ※ For detailed version information on the OS and the browser, please refer to the appendix.

RECOMMENDED MICRO SD/SDHC MEMORY CARD SPECIFICATIONS

- Recommended capacity : 16GB ~ 32GB (MLC Type)
- For your camera, we recommend you use a memory card from the following manufacturers:
Micro SD/SDHC Memory Card : Sandisk, Transcend

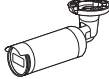







WHAT'S INCLUDED (LND-6010R/6020R/6030R/6070R)

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

| Appearance | Item Name | Quantity | Description |
|---|---------------------------------------|----------|--|
|  | Camera | 1 | |
|  | Instruction book, Installer S/W CD | 1 | |
|  | Quick Guide (Optional) | 1 | |
|  | Warranty card (Optional) | 1 | |
|  | Template | 1 | Product installation guide |
|  | Tapping Screw | 2 | Used for installation on the wall or ceiling |

WHAT'S INCLUDED (LNO-6010R/6020R/6030R/6070R)






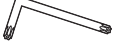




Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

| Appearance | Item Name | Quantity | Description | Model Name |
|--|---------------------------------------|----------|---|---------------------------------|
|  | Camera | 1 | | LNO-6010R/6020R/ 6030R/6070R |
|  | Instruction book, Installer S/W CD | 1 | | |
|  | Quick Guide (Optional) | 1 | | |
|  | Warranty card (Optional) | 1 | | |
|  | Template | 1 | Product installation guide | |
|  | Tapping Screw | 3 | Used for installation on the wall or ceiling | |
|  | RJ45 waterproof accessory | 1 | Used to install in humid places | |
|  | Card-type moisture absorbent | 1 | Attached when installed. | LNO-6070R |

Use for all models

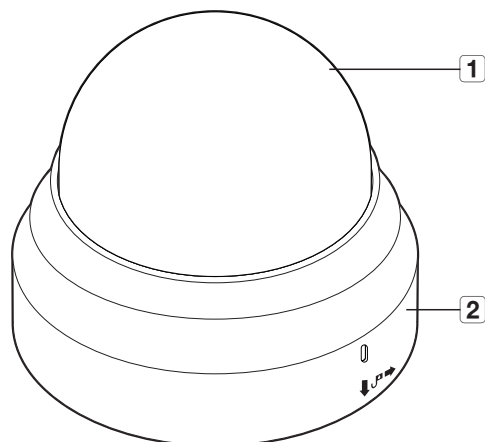
WHAT'S INCLUDED (LNV-6010R/6020R/6030R/6070R)

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

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|---|---------------------------------------|----------|---|---------------------------------|
|  | Camera | 1 | | LNV-6010R/6020R/ 6030R/6070R |
|  | Instruction book, Installer S/W CD | 1 | | Use for all models |
|  | Quick Guide (Optional) | 1 | | |
|  | Warranty card (Optional) | 1 | | |
|  | Template | 1 | Product installation guide | |
|  | Star-shaped wrench | 1 | Used for the assembly and disassembly of dome covers | |
|  | Card-type moisture absorbent | 1 | Attached when installed. | |
|  | Cable bush | 1 | Used to connect the LAN cable with a diameter of Ø7~8.5. | |
|  | Tapping Screw | 2 | Used for installation on the wall or ceiling | |
|  | | 3 | | LNV-6070R |

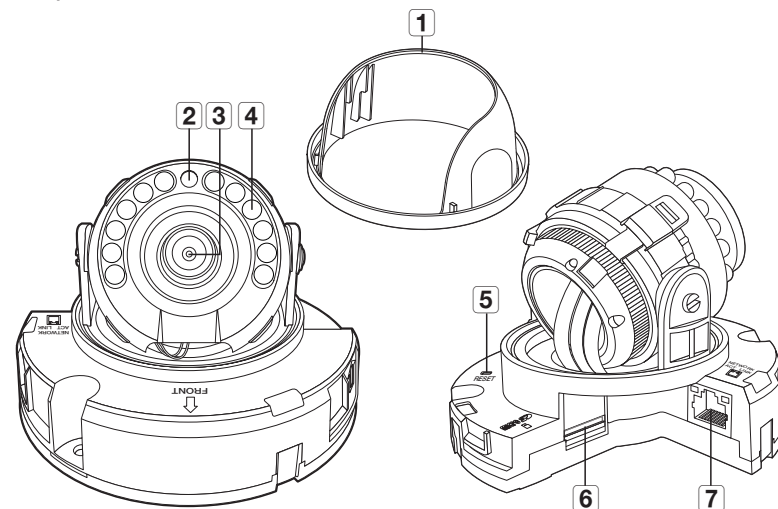
AT A GLANCE (LND-6010R/6020R/6030R)

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

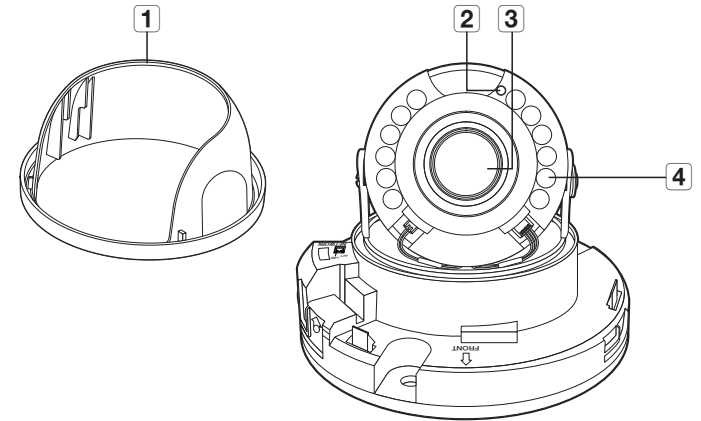
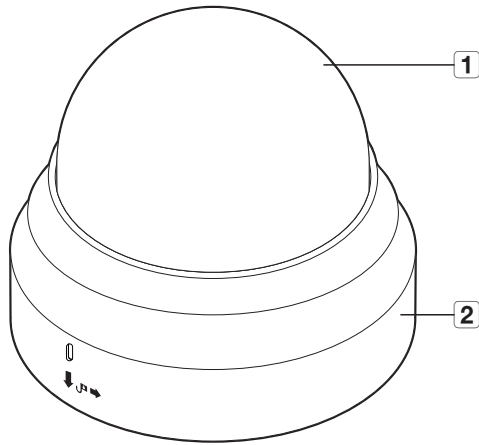


| Item | Description |
|---|---|
| 1 Inside cover | Protective cover for the main body. |
| 2 Illumination Sensor | Detects incoming light to control the IR LED. |
| 3 Lens | Lens for the camera. |
| 4 IR LED | These infrared LED's are controlled by the illumination sensor. |
| 5 Reset Button | The button 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 IP Installer 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. |

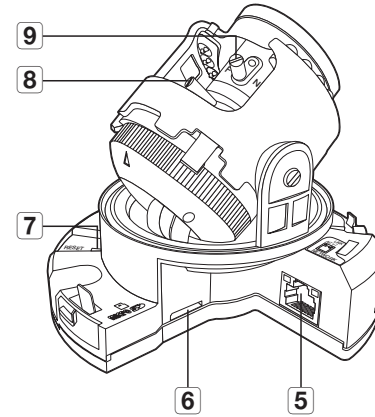
AT A GLANCE (LND-6070R)

Components

Appearance



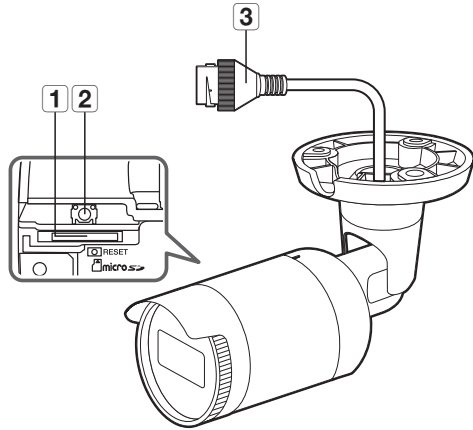
| Item | Description |
|----------------------|--|
| 1 Dome cover | Case cover used to protect the lens and the main unit. |
| 2 Camera Case | Housing part that covers the camera body. |



| 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. | |
| 7 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 IP Installer program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.</p> | |
| 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-6010R/6020R/6030R)

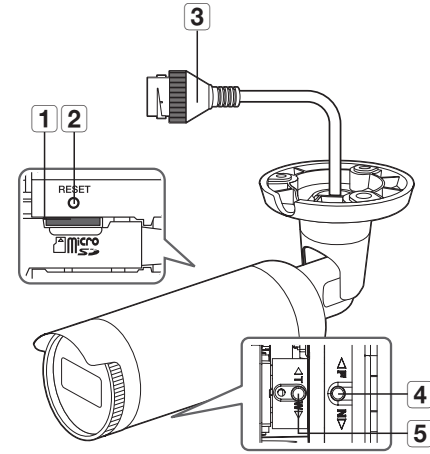
Appearance



| 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 IP Installer 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-6070R)

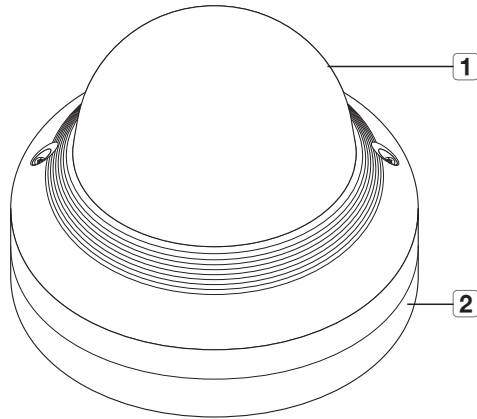
Appearance



| 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 IP Installer 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. | |
| 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. | | |

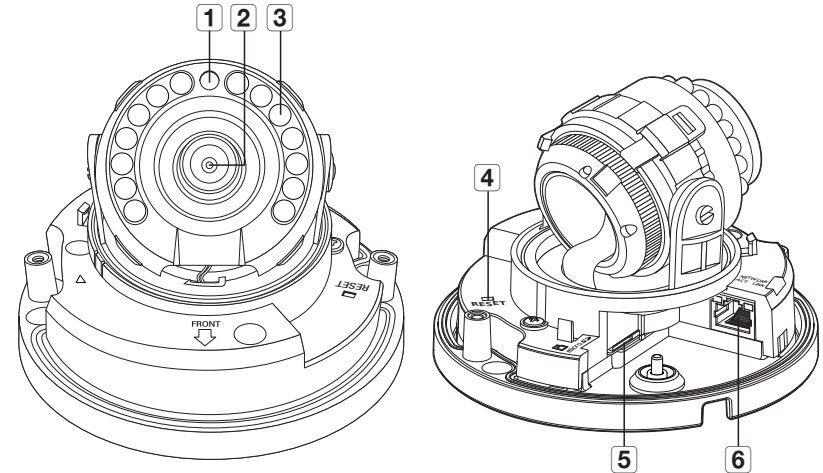
AT A GLANCE (LNV-6010R/6020R/6030R)

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. |

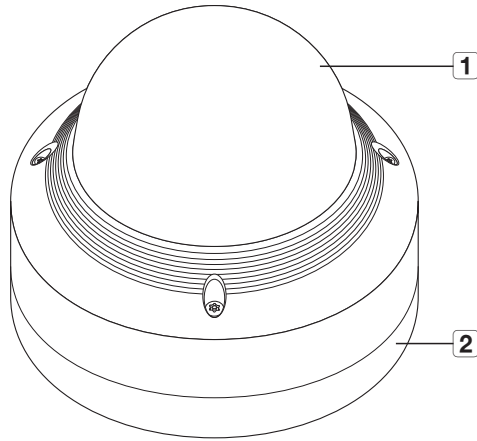
Components



| Item | Description |
|---|---|
| 1 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 | 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 IP Installer program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network. |
| 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. |

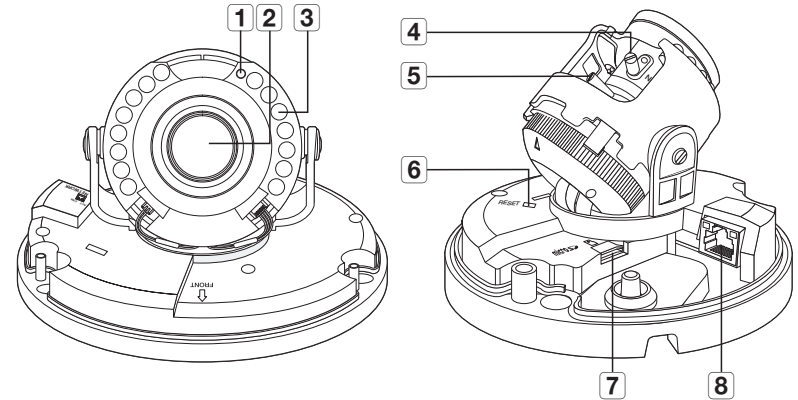
AT A GLANCE (LNV-6070R)

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 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 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. | | |
| 6 Reset button | The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. | |
| <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 IP Installer program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.</p> | | |
| 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-6010R/6020R/6030R/6070R)

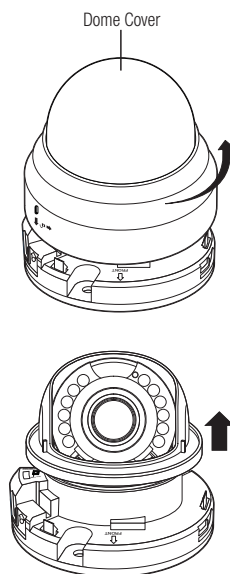
Precautions before installation

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

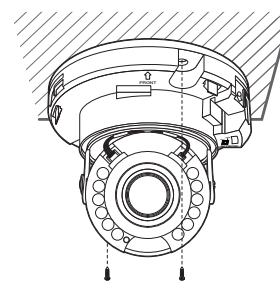
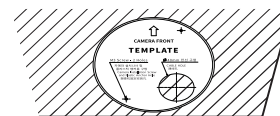
1. Use one hand to hold the camera's bottom part and turn the cover counterclockwise with another hand to separate it.



2. Lift up the inner cover to separate it.

Installation

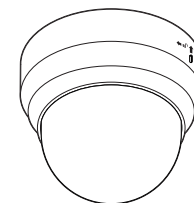
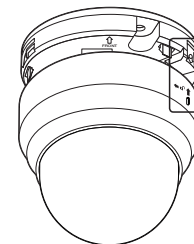
1. Attach the installation template to the desired location, and drill holes by following the template.
2. Use the provided tapping screws to secure the camera to the holes drilled through the template.
 - Set the < ↑ > mark imprinted on the camera to face the direction of camera monitoring.
3. Connect 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-6010R/6020R/6030R)
- 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-6070R)

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-6010R/6020R/6030R/6070R)

- ! 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.

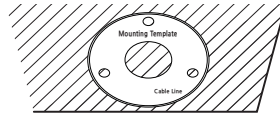
Precautions before installation

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

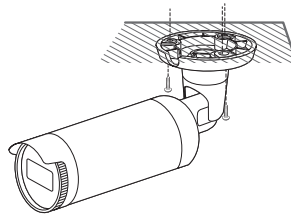
- It must be installed on the area (ceiling or wall) that can withstand 5 times the weight of the camera including the installation bracket.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside 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.



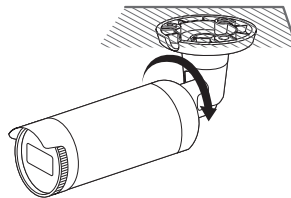
2. Use the provided tapping screws to secure the camera to the holes drilled through the template.



3. Connect the appropriate cables with camera terminals.

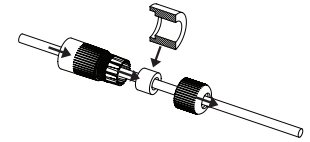
4. Adjust the orientation of the camera using a Phillips screwdriver.

- ! 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.

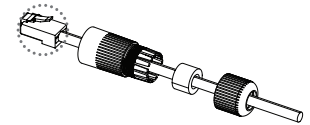


How to connect the RJ45 waterproof cable to a LAN cable

1. Insert it through the arrow direction.

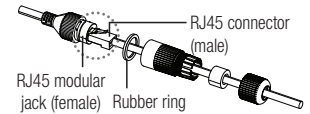


2. Connect the LAN connector (male) to the cable.

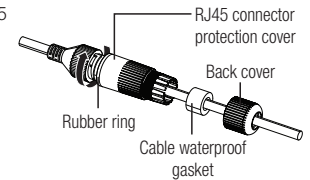


3. Connect the RJ45 modular jack (female) to the RJ45 connector (male).

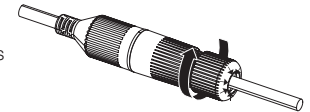
- ! Please, keep each of the parts separated.



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.

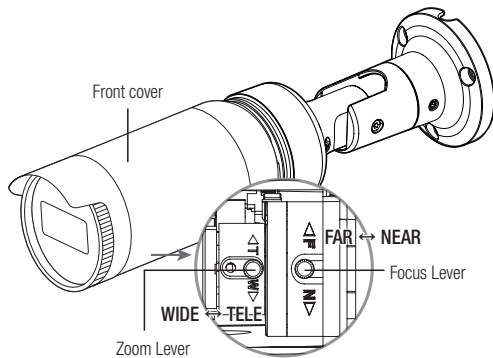
1. Connect the PoE cable.
2. Wrap the black cable jacket (Area A) and the cable connection area with waterproof (butyl rubber) tape so that more than half of the butyl rubber tape is overlapped.



- ! 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-6070R)

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.

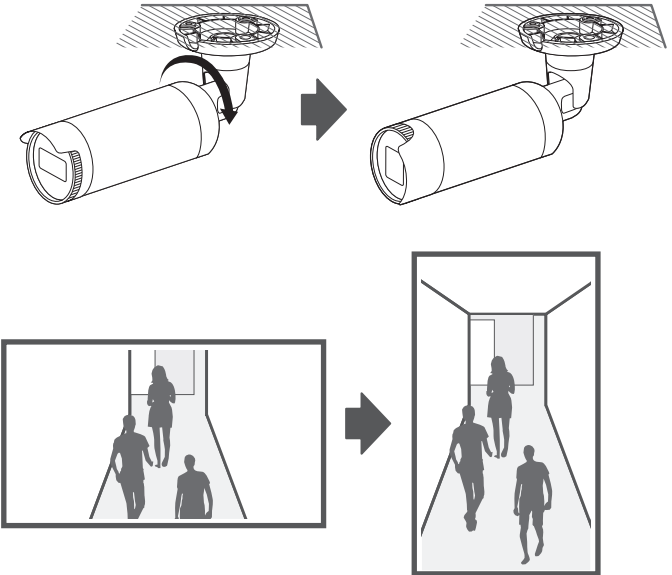


- ! To ensure seamless waterproofing, tighten up the front cover by turning it to the end. When combining the front cover, please combine the main body and the front cover so that the LOCK indicator is interlocked.
- Use the lever to adjust the zoom factor or focus, and turn the lever clockwise to fix 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-6010R/6020R/6030R/6070R)

- !** 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.

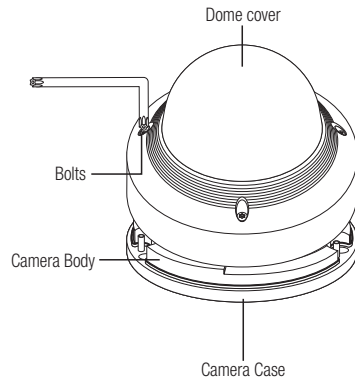
Precautions before installation

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.

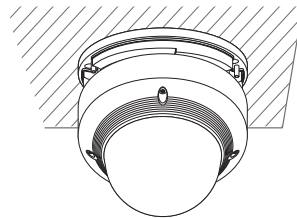
Disassembling

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



Installation

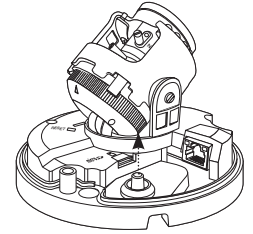
1. Attach the installation template to the desired location, and drill holes by following the template.
2. Use the provided tapping screws to secure the camera to the holes drilled through the template.
3. Connect and arrange the necessary cables lest that they should be damaged or twisted while installing 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.



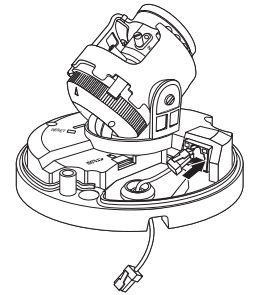
Connecting the LAN cable

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

- !**
- Use an appropriate cable bush for the LAN cable to be connected.
 - Basic camera : Use the cable with a diameter of $\varnothing 5\sim 6.5$.
 - Components provided : Use the cable with a diameter of $\varnothing 7\sim 8.5$.



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

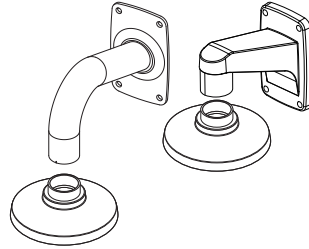
Choose and purchase a necessary one of the following options (unbundled) that is suitable to the installation site or for your convenience.

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

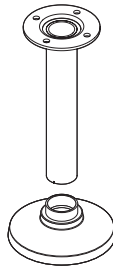
Optional Accessories for Installation

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

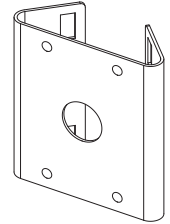
1. WALL MOUNT ADAPTOR(SBP-300WMW1)/
HANGING MOUNT(SBP-122HMW : LND-6070R, LNV-
6010R/6020R/6030R, SBP-301HMW2 : LNV-6070R, SBP-
300HMW7 : LND-6010R/6020R/6030R)
This adaptor is used when installing the dome camera onto a
wall.



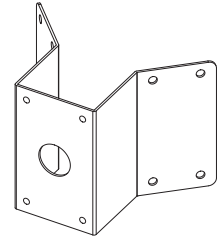
2. CEILING MOUNT ADAPTOR(SBP-300CM)/HANGING MOUNT(SBP-
122HMW : LND-6070R, LNV-6010R/6020R/6030R, SBP-301HMW2 :
LNV-6070R, SBP-300HMW7 : LND-6010R/6020R/6030R)
This adaptor is used when installing the dome camera on a concrete
ceiling.



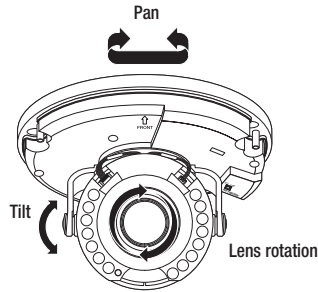
3. POLE MOUNT ADAPTOR(SBP-300PM)
This is an adaptor for WALL MOUNT ADAPTOR (SBP-300WM or SBP-
300WM1) installation on a pole whose diameter is bigger than 80mm.



4. 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 (LND-6010R/6020R/6030R/6070R, LNV-6010R/6020R/6030R/6070R)



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.
- 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

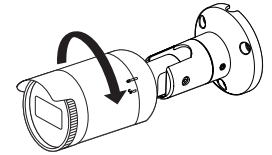
1. After installing the camera, adjust the panning angle in consideration of the monitoring direction.
2. Set the horizontal angle so that the image is not reversed.
3. Adjust the tilt angle so that the camera faces toward the monitoring object.

INSERTING/REMOVING A MICRO SD MEMORY CARD

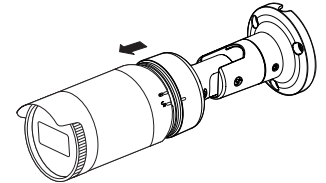
- ! Disconnect the power cable from the camera before inserting the Micro SD memory card.
- Do not insert the Micro SD memory card while it's upside down by force. Otherwise, it may damage the Micro SD memory card.
- When it rains or the humidity is high, insertion or ejection of a Micro SD card is not 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-6010R/6020R/6030R/6070R)

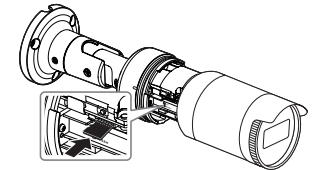
1. Turn the front cover to the UNLOCK [UNLOCK] direction.



2. Pull and separate the front cover.

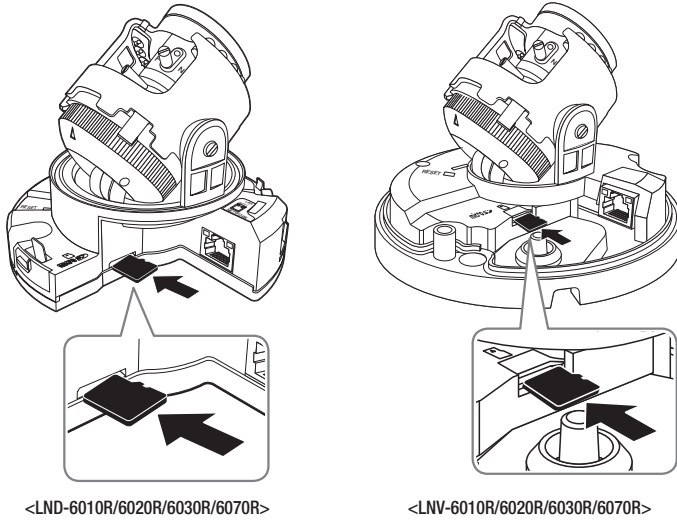


3. Insert a Micro SD card in the arrow direction shown in the figure.



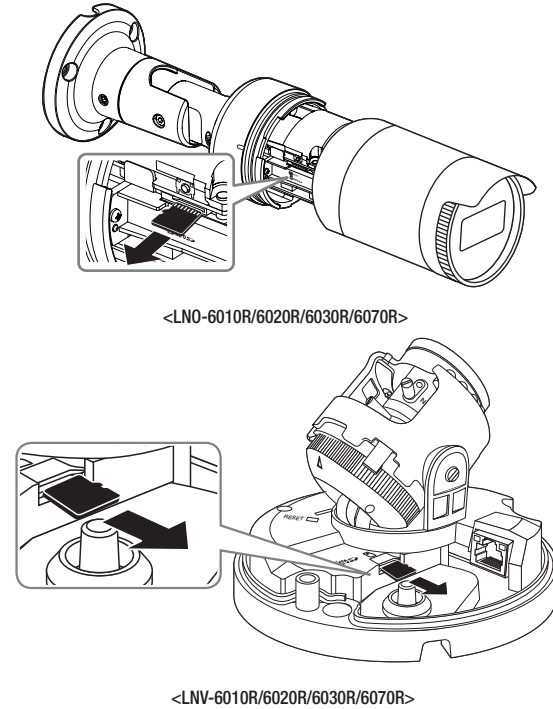
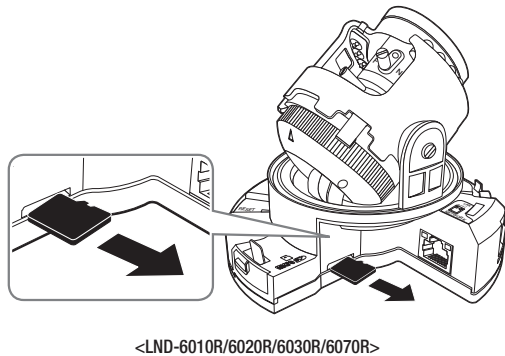
Inserting a Micro SD Memory Card (LND-6010R/6020R/6030R/6070R, LNV-6010R/6020R/6030R/6070R)

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



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.

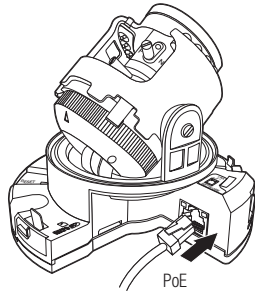


- ! Please note that if you firmly push and release the Micro SD memory card when it is ejected, it may pop out.
- Before removing the Micro SD memory card, in <Storage>, set the device to <Off> and press the [Apply] button and turn the camera off.
- If you turn off the camera or remove the Micro SD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

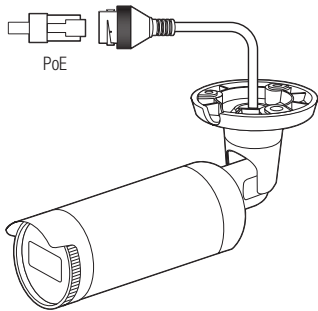
POWERING AND NETWORKING

Connect your PoE device to the camera.

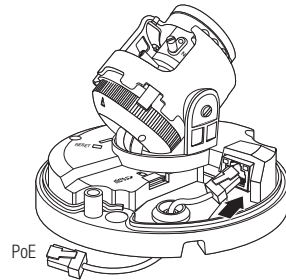
- ! ■ Connect to a PoE (Power over Ethernet) enabled router's PoE connector.
- Use PoE (Power over Ethernet) equipment that supports the IEEE802.3af standard.



<LND-6010R/6020R/6030R/6070R>



<LNO-6010R/6020R/6030R/6070R>



<LNV-6010R/6020R/6030R/6070R>

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 | |

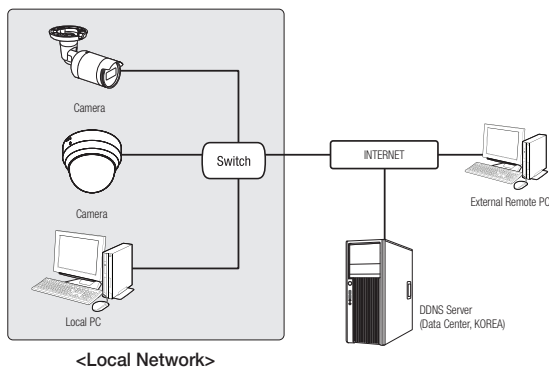
network connection and setup

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

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

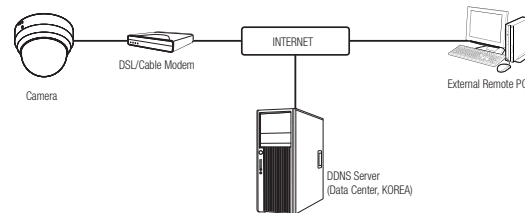
Connecting to the camera from a local PC in the LAN

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 IP installer, you can use the initial password, "4321" to set IP Address, Subnet Mask, Gateway, HTTP Port, VNP Port, IP type. After changing the network interface, for better security, access the web viewer and change the password.
- By factory default, the IP address will be assigned from the DHCP server automatically. If there is no DHCP server available, the IP address will be set to 192.168.1.100. To change the IP address, use the IP Installer. For further details on IP Installer use, refer to "Static IP Setup". (Page 25)

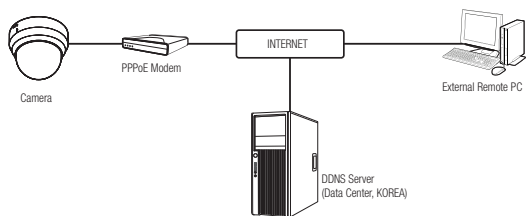
CONNECTING THE CAMERA DIRECTLY TO A DHCP BASED DSL/CABLE MODEM




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

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

CONNECTING THE CAMERA DIRECTLY TO A PPPoE MODEM

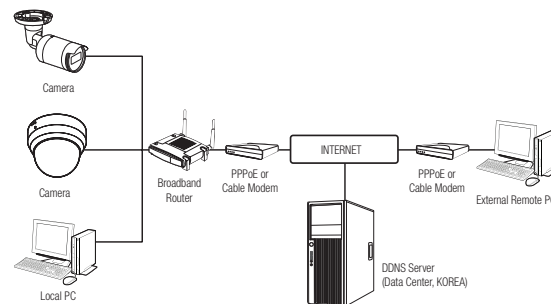


1. Connect the user PC directly with the network camera.
2. Run the IP Installer and change the IP address of the camera so that you can use the web browser on your desktop to connect to the Internet.
3. Use the Internet browser to connect to the web viewer.
4. Move to **[Setup]** page.
5. Move to **[Network]** – **[DDNS]** and configure the DDNS settings.
6. Move to **[Basic]** – **[IP & Port]** 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.

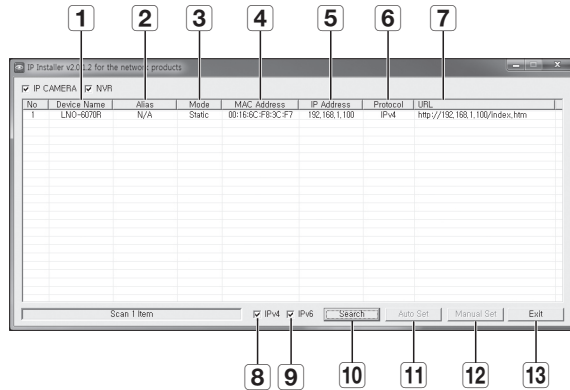


Configuring the network settings of the local PC connected to a Broadband Router

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)

BUTTONS USED IN IP INSTALLER



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

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

- For the IP installer, use only the installer version provided in the installation CD or use the latest one if available. You can download the latest version from the Hanwha Techwin web site.

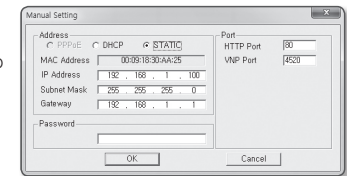
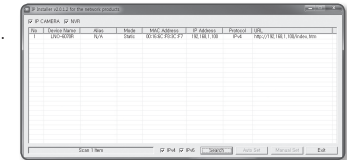
STATIC IP SETUP

Manual Network Setup

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

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

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



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

If not using a Broadband Router

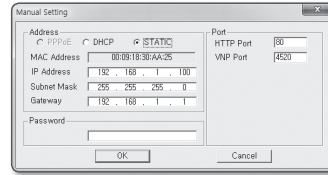
For setting <IP Address>, <Subnet Mask>, and <Gateway>, contact your network administrator.

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

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

5. Enter the password.

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



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

6. Click [OK].

Manual network setup will be completed.

If using a Broadband Router

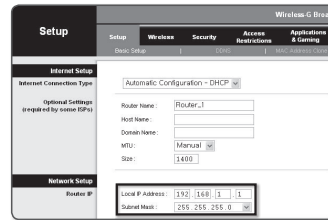
- IP Address : Enter an address falling in the IP range provided by the Broadband Router.

ex) 192.168.1.2~254, 192.168.0.2~254, 192.168.XXX.2~254

- Subnet Mask : The <Subnet Mask> of the Broadband Router will be the <Subnet Mask> of the camera.

- Gateway : The <Local IP Address> of the Broadband Router will be the <Gateway> of the camera.

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

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

Auto Network Setup

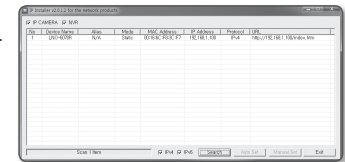
Run <IP Installer_v2.XX.exe> to display the camera search list.

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

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

1. Select a camera in the search list.

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



2. Click [Auto Set].

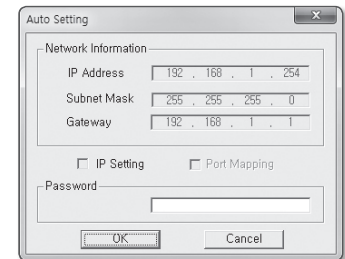
The Auto Setting dialog appears.

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

3. Enter the password.

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

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



4. Click [OK].

Auto network setup will be completed.

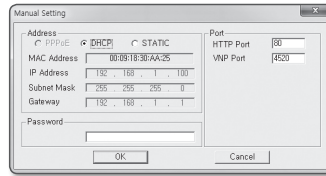
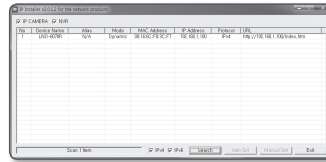
DYNAMIC IP SETUP

Dynamic IP Environment Setup

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

Checking the Dynamic IP

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

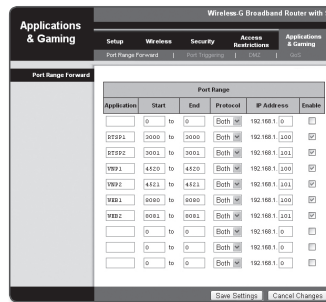


PORT RANGE FORWARD (PORT MAPPING) SETUP

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.



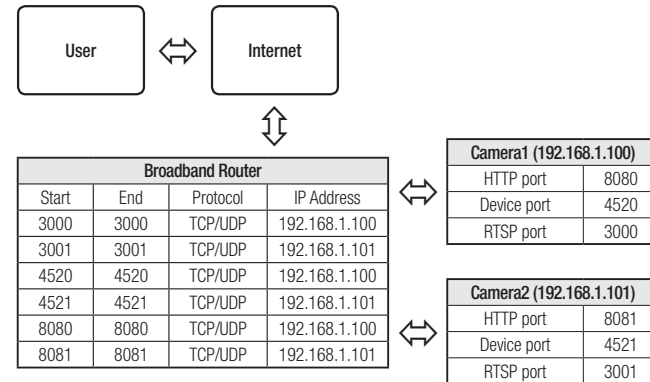
3. When done, click **[Save Settings]**.
Your settings will be saved.

- ☑ Above sample instructions are based on the CISCO's Broadband Router.
- The settings may differ depending on the connected Broadband Router model.
For more information, refer to the user manual of the applicable router.

Setting up Port Range Forward for several network cameras

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

When Camera1 and Camera2 are connected to a router :

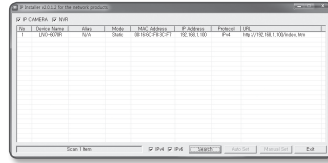


- ☑ Port forwarding can be done without additional router setup if the router supports the UPnP (Universal Plug and Play) function.
After connecting the network camera, select the checkbox from the menu <Quick connect> in <Wisenet DDNS> in "Settings -> Network -> DDNS".

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

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

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



CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

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

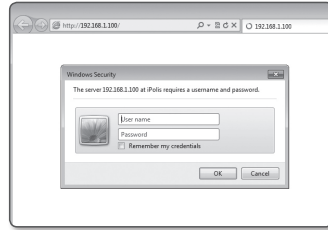
1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
ex) <http://ddns.hanwha-security.com/ID>

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

CONNECTING TO THE CAMERA

Normally, you would

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

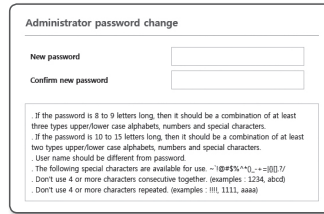
To register your device to the <DDNS> server, visit <http://ddns.hanwha-security.com> and register your device first, and then set the Web Viewer's <Network> - <DDNS> to <Wisenet DDNS>, as well as providing <Product ID> that had been used for DDNS registration.

PASSWORD SETTING

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

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

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



Administrator password change

New password

Confirm new password

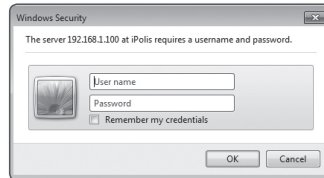
. If the password is 8 to 9 letters long, then it should be a combination of at least three types: upper/lower case alphabets, numbers and special characters.
 . If the password is 10 to 15 letters long, then it should be a combination of at least two types: upper/lower case alphabets, numbers and special 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.

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.



Windows Security

The server 192.168.1.100 at iPolis requires a username and password.

User name

Password

Remember my credentials

OK Cancel

PLUG-IN SUPPORT SPECIFICATIONS FOR EACH BROWSER

The web viewer has a built-in plugin web viewer and a new plugin-free web viewer together. This means that the web viewer can be used even in modern browser environments that do not support plugins, such as Chrome, EDGE, and FireFox (Windows 64bit only). It is recommended to install the plugin in the IE browser, which allows plugin installation.

The following differences will occur depending on your browser environment:

- **Chrome, FireFox(Windows 64bit only), EDGE, Safari** : Although they don't support plug-ins, you can use a web viewer as a plug-in free web viewer is embedded.
- !
 - As the plug-in free webviewer has lower performance than the plug-in webviewer, it has a limit on the monitoring of high quality profiles and playback of saved videos.
To monitor high quality profiles and play saved videos, use either a plug-in webviewer or SmartViewer.
 - A plugin-free profile is automatically created when there is a delay in live video.
 - Playback may cause delays, depending on the codec and resolution.
 - The plug-in free feature has been optimized for the Chrome browser.
- **IE browser** : You can use a web viewer even if you don't install the existing plug-in web viewer.
- !
 - To monitor/play saved video seamlessly, you are required to install a plug-in.

INSTALLING WebViewer PLUGIN

If you try to access the plugin-free web viewer from the IE browser and request a live view with a codec other than the one currently in use, or request to use the recorded video playback function, an installation message appears. At this time, the web viewer plugin must be installed to use the functions normally.

1. When the monitoring page is accessed for the very first time, the installation page is displayed. Click **[Click Here]** to begin installation.

! ■ If the plug-in installation file download status is suspended at 99% in the Internet Explorer browser, retry it after selecting "Release SmartScreen filter" in "Tool → SmartScreen filter".

2. Click **[Run]** in the message window.

3. Click **[Yes]** when the notice window saying that all browser windows will be closed.

✍ ■ Steps 4 and 5 will be skipped if no Web Viewer Plug-in is installed.

4. When the old version of the Web Viewer Plug-in is installed, a notice window saying the old version will be deleted is displayed.

Click **[Yes]** when the notice window is displayed.

5. Click **[OK]**.

The old version of Web Viewer Plug-in is deleted.

6. Click **[Install]** to begin installation of the Web Viewer Plug-in.

7. Click **[Finish]**.

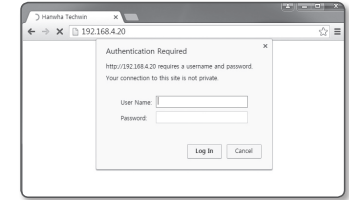
Web Viewer Plug-in installation is completed.

! ■ In your internet explorer, if you need to move to the installation screen after installing the webviewer plugin, check whether webviewer_activexplugin_lib.control in the "Tool → Additional Function Management" menu is "Activated". If not, and if there is a persisting problem, then select "Tools → Internet Options → General" and delete all the search records. If the problem persists, please register the IP or Domain of your camera in "Tools → Internet Options → Security → Trusted sites".

USING A PLUG-IN FREE WEBVIEWER

If you connect to a camera from Google Chrome, Mozilla Firefox, MS Edge, or the Safari web browser, you cannot install a separate plug-in, but you can view and control the camera videos in real time, without any plugin.

1. Enter your username and password to log in.
2. When you are logged in, a camera live view screen appears.



To set the camera

1. Click the **[Setup (⚙)]** icon.
2. The Settings window appears.
3. You can perform 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.

SPECIFICATION

| Items | | Description | | |
|--------------|---------------------------|---|-----------------------|-----------------------|
| | | LND-6010R/6020R/6030R | LNO-6010R/6020R/6030R | LNV-6010R/6020R/6030R |
| Video | Imaging Device | 1/2.9" 2.19M CMOS | | |
| | Total Pixels | 2,000(H) x 1,121(V) | | |
| | Effective Pixels | 1,984(H) x 1,105(V) | | |
| | Scanning System | Progressive | | |
| | Min. Illumination | Color : 0.18Lux (1/30sec, F2.0), 0.003Lux (2sec, F2.0) B/W : 0Lux (IR LED on) | | |
| Lens | Focal Length (Zoom Ratio) | LND-6010R/LNO-6010R/LNV-6010R : 3mm LND-6020R/LNO-6020R/LNV-6020R : 4mm LND-6030R/LNO-6030R/LNV-6030R : 6mm | | |
| | Max. Aperture Ratio | F 2.0 | | |
| | Angular Field of View | LND-6010R/LNO-6010R/LNV-6010R : H : 102° / V : 54° / D : 120° LND-6020R/LNO-6020R/LNV-6020R : H : 80° / V : 43° / D : 94° LND-6030R/LNO-6030R/LNV-6030R : H : 51° / V : 29° / D : 58° | | |
| | Min. Object Distance | 0.5m(1.64ft) | | |
| | Lens Type | Fixed | | |
| | Mount Type | Board type | | |
| | Pan / Tilt /Rotate | Pan Range | 0~350° | - |
| Tilt Range | | 0~67° | - | 0~67° |
| Rotate Range | | 0~355° | - | 0~355° |
| Operational | Viewable Length | 20m | 30m | |
| | Camera Title | Off / On (Displayed up to 15 characters) | | |
| | Day & Night | Auto(ICR) / Color / B/W / Schedule | | |
| | Backlight Compensation | Off / BLC / WDR | | |

| Items | Description | | |
|-------------|-------------------------------|--|-----------------------|
| | LND-6010R/6020R/6030R | LNO-6010R/6020R/6030R | LNV-6010R/6020R/6030R |
| Operational | Wide Dynamic Range | 120dB | |
| | Contrast Enhancement | SSDR (Off / On) | |
| | Digital Noise Reduction | SSNR (Off / On) | |
| | Motion Detection | Off / On (4ea polygon zones) | |
| | Privacy Masking | Off / On (6ea rectangle zones) | |
| | Gain Control | Off / Low / Middle / High | |
| | White Balance | ATW / AWC / Manual / Indoor / Outdoor | |
| | LDC (Lens distortion control) | On/Off (5 levels with Min/Max) | |
| | Electronic Shutter Speed | Minimum / Maximum / Anti flicker | |
| | Flip / Mirror | Flip / Mirror / Hallway view | |
| | Intelligent Video Analytics | Motion Detection, Tampering | |
| | Alarm Triggers | Motion detection, Tampering Detection, SD card error | |
| | Alarm events | <ul style="list-style-type: none"> File upload via FTP, E-Mail Notification via E-Mail Local storage recording at Event | |
| Network | Ethernet | RJ-45 (10/100BASE-T) | |
| | Video Compression Format | H.264, MJPEG | |
| | Resolution | 1920x1080 / 1280x1024 / 1280x960 / 1280x720 / 1024x768 / 800x600 / 800x448 / 720x576 / 720x480 / 640x480 / 640x360 / 320x240 | |
| | Max. Framerate | H.265/H.264 - Max 30fps at all resolutions MJPEG - Max. 1fps at 1920x1080/1280x1024/1280x960/1280x720/1024x768, Max. 15fps at other resolution | |
| | WiseStream II | Support | |
| | Video Quality Adjustment | H.264/MJPEG : Target Bitrate Level Control | |

| Items | Description | | |
|--|---|-----------------------|-----------------------|
| | LND-6010R/6020R/6030R | LNO-6010R/6020R/6030R | LNV-6010R/6020R/6030R |
| Bitrate Control Method | H.264 : CBR or VBR MJPEG : VBR | | |
| Streaming Capability | Multiple Streaming (Up to 3 Profiles) | | |
| Audio I/O | - | | |
| Audio Compression Format | - | | |
| Audio Communication | - | | |
| IP | IPv4, IPv6 | | |
| Protocol | TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour | | |
| Security | HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP) | | |
| Streaming Method | Unicast / Multicast | | |
| Max. User Access | 6 users at Unicast Mode | | |
| Edge Storage | Micro SD/SDHC (up to 32G) - motion Images recorded in the SD memory card can be downloaded. Manual recording at Local PC | | |
| Application Programming Interface | ONVIF Profile S/G SUNAPI(HTTP API) | | |
| Webpage Language | English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek | | |

Network

| Items | Description | | | |
|----------------------|---|---|---|-------------------------------------|
| | LND-6010R/6020R/6030R | LNO-6010R/6020R/6030R | LNV-6010R/6020R/6030R | |
| Network | Web Viewer | Supported OS : Windows 7 / 8.1 / 10, MAC OS X 10.10, 10.11, 10.12 Plug-in free web viewer Supported web browsers : Google Chrome 63, MS Edge 41, Mozilla Firefox 57 (Window 64bit only), Apple Safari 11 (Mac OS X only) Plug-in web viewer Supported web browsers : MS Explorer 11 | | |
| | Central Management Software | SmartViewer, SSM | | |
| Environmental | Operating Temperature / Humidity | -10°C ~ +55°C (14°F ~ +131°F) / Less than 90% RH | -30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH * Start up should be done at above -20°C | |
| | Storage Temperature / Humidity | -30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH | | |
| | Ingress Protection | - | IP66 | |
| | Vandal Resistance | - | IK10 | |
| Electrical | Input Voltage / Current | PoE(IEEE802.3af, Class3) | | |
| | Power Consumption | 6.5W | | |
| Mechanical | Color / Material | White(RAL-9003) / Plastic | Dark gray / Plastic | White(RAL-9003) / Aluminum, Plastic |
| | Dimension (ØxH) | Ø110.0mm(4.33") x H86.0(3.39")mm | Ø58.6mm(2.31") x H182.0(7.17")mm | Ø120.3 mm(4.74") x H91.7(3.61")mm |
| | Weight | 230g(0.51lb) | 240g(0.53lb) | 395g(0.87lb) |

| Items | Description | | |
|--------------|---------------------------|---|-----------|
| | LND-6070R | LNO-6070R | LNV-6070R |
| Video | Imaging Device | 1/2.9" 2.19M CMOS | |
| | Total Pixels | 2,000(H) x 1,121(V) | |
| | Effective Pixels | 1,984(H) x 1,105(V) | |
| | Scanning System | Progressive | |
| | Min. Illumination | Color : 0.095Lux (1/30sec, F1.6), 0.003Lux (2sec, F1.6) B/W : 0Lux (IR LED on) | |
| Lens | Focal Length (Zoom Ratio) | 3.2~10mm (3,1x) varifocal | |
| | Max. Aperture Ratio | F1.6~2.9 | |
| | Angular Field of View | H : 101.6°(Wide) ~ 31.3°(Tele) V : 54.1°(Wide) ~ 17.8°(Tele) D : 120.6°(Wide) ~ 36.0°(Tele) | |
| | Min. Object Distance | 0.5m(1.64ft) | |
| | Focus control | Manual | |
| | Lens Type | DC auto iris | |
| | Mount Type | Board type | |
| | Pan / Tilt / Rotate | Pan Range | 0~350° |
| Tilt Range | | 0~67° | 0~67° |
| Rotate Range | | 0~355° | 0~355° |
| Operational | Viewable Length | 20m | 30m |
| | Camera Title | Off / On (Displayed up to 15 characters) | |
| | Day & Night | Auto(ICR) / Color / B/W / Schedule | |
| | Backlight Compensation | Off / BLC / WDR | |

| Items | Description | | |
|--------------------------|-------------------------------|--|----------------------|
| | LND-6070R | LNO-6070R | LNV-6070R |
| Operational | Wide Dynamic Range | 120dB | |
| | Contrast Enhancement | SSDR (Off / On) | |
| | Digital Noise Reduction | SSNR (Off / On) | |
| | Motion Detection | Off / On (4ea polygon zones) | |
| | Privacy Masking | Off / On (6ea rectangle zones) | |
| | Gain Control | Off / Low / Middle / High | |
| | White Balance | ATW / AWC / Manual / Indoor / Outdoor | |
| | LDC (Lens distortion control) | On/Off (5 levels with Min/Max) | |
| | Electronic Shutter Speed | Minimum / Maximum / Anti flicker | |
| | Flip / Mirror | Flip / Mirror / Hallway view | |
| | Intelligent Video Analytics | Motion Detection, Tampering | |
| | Alarm Triggers | Motion detection, Tampering Detection, SD card error | |
| | Alarm events | <ul style="list-style-type: none"> • File upload via FTP, E-Mail • Notification via E-Mail • Local storage recording at Event | |
| | Network | Ethernet | RJ-45 (10/100BASE-T) |
| Video Compression Format | | H.264, MJPEG | |
| Resolution | | 1920x1080 / 1280x1024 / 1280x960 / 1280x720 / 1024x768 / 800x600 / 800x448 / 720x576 / 720x480 / 640x480 / 640x360 / 320x240 | |
| Max. Framerate | | H.265/H.264 - Max 30fps at all resolutions MJPEG - Max. 1fps at 1920x1080/1280x1024/1280x960/1280x720/1024x768, Max. 15fps at other resolution | |
| WiseStream II | | Support | |
| Video Quality Adjustment | | H.264/MJPEG : Target Bitrate Level Control | |

| Items | Description | | |
|--|---|-----------|-----------|
| | LND-6070R | LNO-6070R | LNV-6070R |
| Bitrate Control Method | H.264 : CBR or VBR MJPEG : VBR | | |
| Streaming Capability | Multiple Streaming (Up to 3 Profiles) | | |
| Audio I/O | - | | |
| Audio Compression Format | - | | |
| Audio Communication | - | | |
| IP | IPv4, IPv6 | | |
| Protocol | TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour | | |
| Security | HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP) | | |
| Streaming Method | Unicast / Multicast | | |
| Max. User Access | 6 users at Unicast Mode | | |
| Edge Storage | Micro SD/SDHC (up to 32G) - motion Images recorded in the SD memory card can be downloaded. Manual recording at Local PC | | |
| Application Programming Interface | ONVIF Profile S/G SUNAPI(HTTP API) | | |
| Webpage Language | English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek | | |

Network

| Items | Description | | | |
|----------------------|---|---|---|-------------------------------------|
| | LND-6070R | LNO-6070R | LNV-6070R | |
| Network | Web Viewer | Supported OS : Windows 7 / 8.1 / 10, MAC OS X 10.10, 10.11, 10.12 Plug-in free web viewer Supported web browsers : Google Chrome 63, MS Edge 41, Mozilla Firefox 57 (Window 64bit only), Apple Safari 11 (Mac OS X only) Plug-in web viewer Supported web browsers : MS Explorer 11 | | |
| | Central Management Software | SmartViewer, SSM | | |
| Environmental | Operating Temperature / Humidity | -10°C ~ +55°C (14°F ~ +131°F) / Less than 90% RH | -30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH * Start up should be done at above -20°C | |
| | Storage Temperature / Humidity | -30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH | | |
| | Ingress Protection | - | IP66 | |
| | Vandal Resistance | - | IK10 | |
| Electrical | Input Voltage / Current | PoE(IEEE802.3af, Class3) | | |
| | Power Consumption | 6.5W | | |
| Mechanical | Color / Material | White(RAL-9003) / Plastic | Dark gray / Plastic | White(RAL-9003) / Aluminum, Plastic |
| | Dimension (ØxH) | Ø119.8mm(4.72") x H98.8(3.89")mm | Ø78.0mm(3.07") x H262.0(10.32")mm | Ø137.8mm(5.43") x H106.1(4.18")mm |
| | Weight | 274g(0.6lb) | 380g(0.84lb) | 515g(1.16lb) |

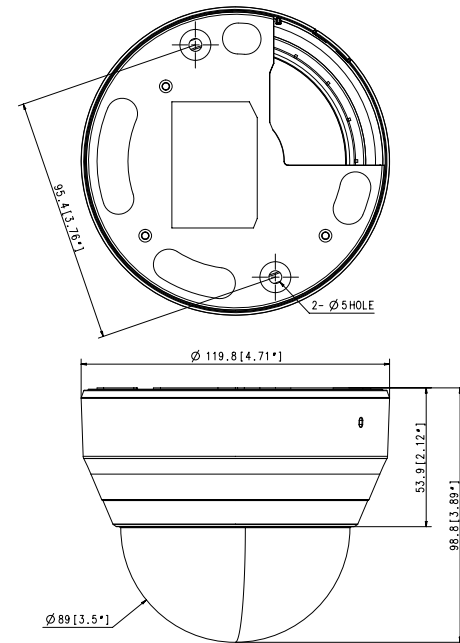
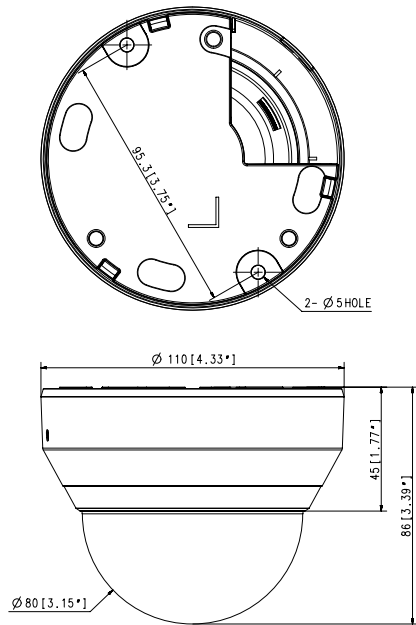
PRODUCT OVERVIEW

LND-6070R

Unit : mm (inch)

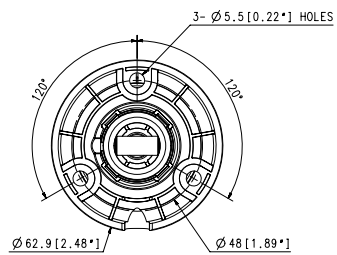
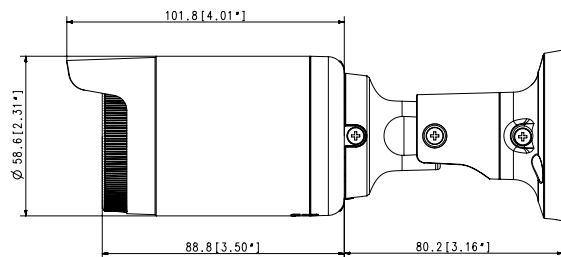
LND-6010R/6020R/6030R

Unit : mm (inch)



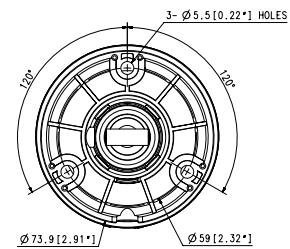
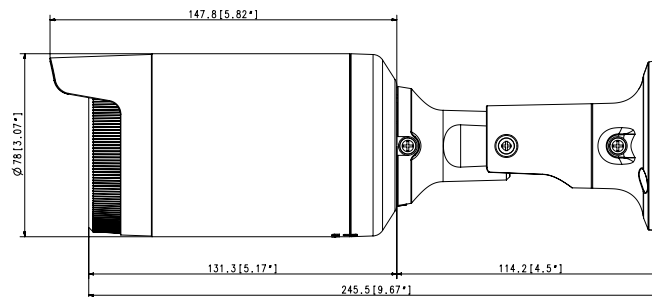
LNO-6010R/6020R/6030R

Unit : mm (inch)



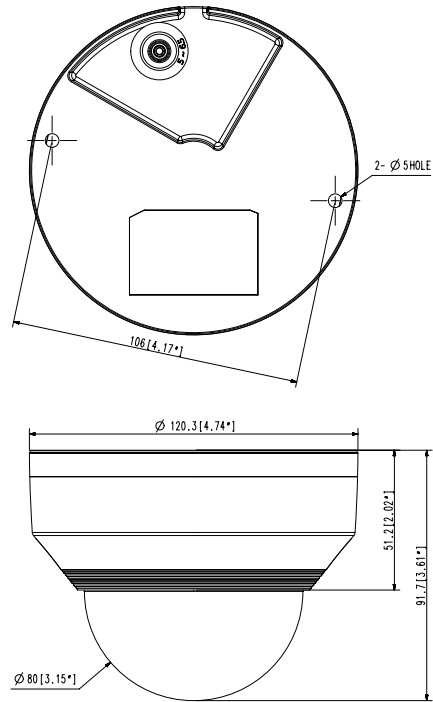
LNO-6070R

Unit : mm (inch)



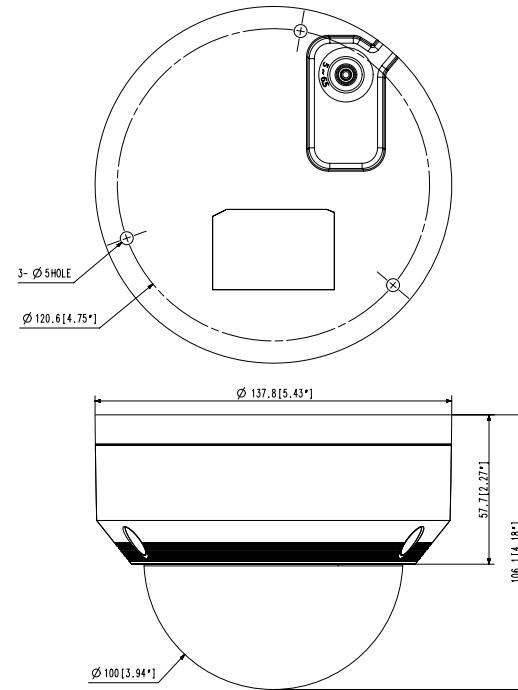
LNV-6010R/6020R/6030R

Unit : mm (inch)



LNV-6070R

Unit : mm (inch)



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. |
| No video is displayed when I newly access the webviewer or connect streaming to the client. | <ul style="list-style-type: none"> 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 IP installer 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 |
|---|---|
| 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. | <ul style="list-style-type: none"> Verify the settings in the following sequence: <ol style="list-style-type: none"> Check <Data & Time> settings. The <Motion detection> should be set to <Enable>. Check if the <E-mail> option of <Event setup> menu is checked to use. |
| 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. |

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GPL SW

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

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- Version 1.1

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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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1. This License Agreement sets forth copyrights and the terms and conditions of use applicable to the source code of T-Kernel distributed by T-Engine Forum and any derivative work created therefrom.

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1. "T-Kernel" means a real-time operating system controlled and distributed by T-Engine Forum on behalf of the copyright holder thereof.
2. "Source Code" means a source program, including related comments and documentations, for the T-Kernel and the Ported Source Code defined in Article 2.8 which is registered with T-Engine Forum.
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3. to distribute a copy of a work to the general public or a large number of specific persons.

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4. to distribute the Binary Code created from the Source Code provided by T-Engine Forum hereunder or from the Source Code modified in accordance with the provision of Article 4.3 (1) above.
4. In accordance with the license granted under Article 4.1 above, the System Developer may perform the following acts:

1. to perform any and all acts set forth in the Article 4.3 above.
2. to develop and manufacture the Embedded Product containing the Binary Code, and, whether with or without payment, provide the End User with the same and make the Binary Code available to the End User on the Embedded Product.

5. The Source Code User and the System Developer shall be obligated to give a notice that the Source Code is used, in such a way as separately specified by T-Engine Forum, when they use the Source Code or the Binary Code, or make the Binary Code available for the End User on the Embedded Product.

Article 5. Distribution of Modified Source Code

1. Any of A- members of T-Engine Forum may become the Distributor of Modification by obtaining the approval of T-Engine Forum through the registration procedure as prescribed by the Forum provided that only the department of the A- member which has taken the registration procedure may distribute the Modified Source Code in such a way as provided for in this Article as long as it holds the Amembership.

2. The Distributor of Modification may create the Modified Source Code based on the Source Code provided by T-Engine Forum and the Patch for Modification to be applied to create such Modified Source Code from the Source Code.

3. The Distributor of Modification shall, prior to the distribution, inform T-Engine Forum of and register a name and description of the Modified Source Code in such a way as specified by T-Engine Forum.

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.

9. The System Developer may, under the same obligation as imposed in Article 4.5, make the Embedded Product available for the End User through use of the Patch for Modification distributed by the Distributor of Modification or the Derivative Works obtained through the Vicarious Execution of Patch Processing.

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.

Article 8. Limited Warranty

1. T-Engine Forum and the copyright holder of the Source Code warrant that the Source Code does not infringe third party's copyrights. Provided, however, that T-Engine Forum and the copyright holder of the Source Code make no warranty as to the Hardware-dependent Part and/or Compiler-dependent Part set forth in Article 6.2 in the Ported Source Code by any third party.

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3. Any legal dispute which may arise in relation to any breach of this License Agreement shall be subject to the exclusive jurisdiction of the Tokyo District Court.

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Julian Seward, jseward@bzip.org

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iperf performance test

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



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