

WISENET

NETWORK CAMERA

User Manual

QNV-6023R/QNV-6024RM



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(48Vdc) 0.14A.
16. This product is intended to be supplied by isolation power.
17. If you use excessive force when installing the product, the camera may be damaged and malfunction. If you forcibly install the product using non-compliant tools, the product may be damaged.
18. Do not install the product in a place where chemical substances or oil mist exists or may be generated. As edible oils such as soybean oil may damage or warp the product, do not install the product in the kitchen or near the kitchen table. This may cause damage to the product.
19. When installing the product, be careful not to allow the surface of the product to be stained with chemical substance. Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
20. If you install/disassemble the product in a manner that has not been recommended, the production functions/ performance may not be guaranteed. Install the product by referring to "Installation & connection" in the user manual.
21. Installing or using the product in water can cause serious damage to the product.



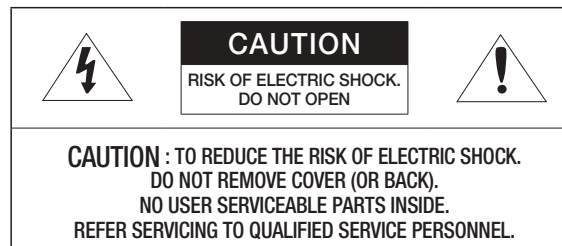
WARNING

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

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

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

CAUTION



EXPLANATION OF GRAPHICAL SYMBOLS



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



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

Class I construction

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

Battery

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

The battery cannot be replaced.

Disconnection Device

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

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

CAUTION

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.

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PRODUCT FEATURES

- **Surveillance camera for car**
Enables monitoring of a running train or vehicle without camera shake.
- **Dustproof/waterproof (IP66)**
The dustproof/waterproof design protects the product from rain and dust when installed outdoors.
- **Supports 2M pixel 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, video is either sent to the email address registered by the user, sent to the FTP server, saved in a Micro SD card or NAS.
- **Tampering Detection**
Detects tampering attempts on video monitoring.
- **Defocus detection function**
Detects the defocus phenomenon of the camera lens.
- **Motion Detection**
Detects motion from the camera's video input.
- **Smart Codec**
Adaptively applies codecs for a portion of the camera's field of view to improve the quality of such area specified by user.
- **Auto Detection of Disconnected Network**
Detects network disconnection before triggering an event.
- **ONVIF Compliance**
This product supports ONVIF Profile S/G/T .
For more information, refer to www.onvif.org.



RECOMMENDED PC SPECIFICATIONS

- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
 - RAM : 8G or higher
 - Supported OS : Windows 7, 8.1, 10, Mac OS X 10.12, 10.13, 10.14
 - Recommended browser : Google Chrome
 - Supported browsers : MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
 - VGA : PCIe 256MB GDDR3 video graphics card or higher
- ※ Please see the appendix for detailed information on verified OS and browsers.

RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS

- Recommended capacity : 16GB to 128GB (MLC type)
- Recommended Manufacturers : SanDisk, Transcend
- Product Type : High endurance
- The compatibility varies depending on the card manufacturers and types.

NAS RECOMMENDED SPECS



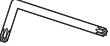




- Recommended capacity : 200GB or higher is recommended.
- Simultaneous access : One unit of NAS can accept a maximum of sixteen camera accesses.
- For this camera, you are recommended to use a NAS with the following manufacturer's specs.

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

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

WHAT'S INCLUDED

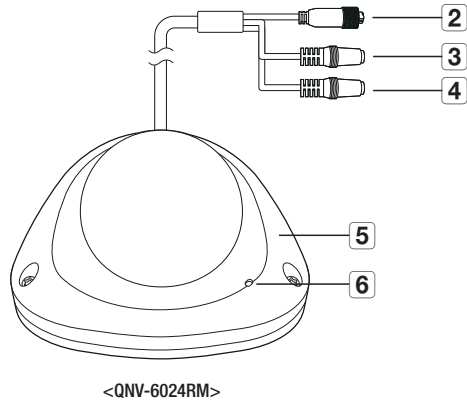
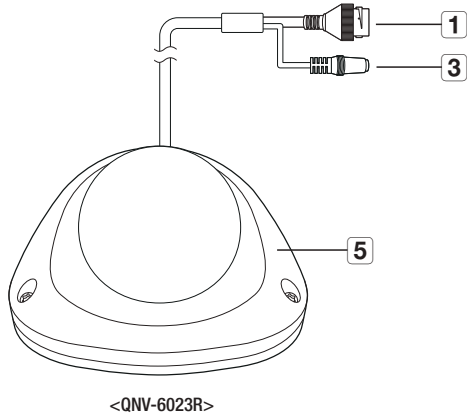
Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

Appearance	Item Name	Quantity	Description	Model Name
	Camera	1		QNV-6023R/ QNV-6024RM
	Quick Guide (Optional)	1		
	Star-shaped wrench	1	Used to remove/fix the dome cover	
	Cable for the testing monitor	1	Used to test the camera connection to a portable display device	
	Template	1	Used when installing the camera	
	Installation bracket	1	Used when installing the camera on the wall or a gang box (single)	
	M4 screw for installation bracket	2	Used when fixing the camera on the installation bracket	

Appearance	Item Name	Quantity	Description	Model Name
	RJ45 waterproof accessory	1	Used for waterproofing the RJ45 connector cable	QNV-6023R

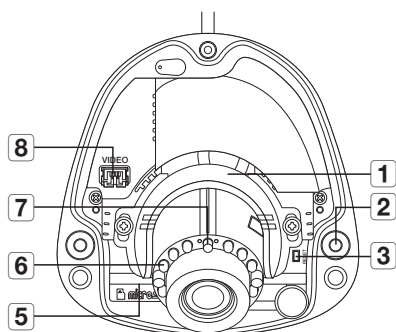
AT A GLANCE

Appearance

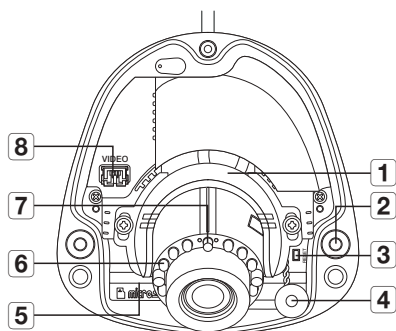


Item	Description
1 PoE Connector	Connects to the network and supplies power through Ethernet cable.
2 M12 Female connector cable	Connect to the M12 Male connector cable for power supply and network connections.
3 Audio In Jack	Used to connect to a microphone. (pink)
4 Audio Out Jack	Used to connect to speakers. (green)
5 Dome Cover	Dome cover for the lens and unit protection.
6 Microphone hole	Microphone is embedded.

Inside



<QNV-6023R>



<QNV-6024RM>

Item	Description
1 Lens Cover	Used for protecting and fixing the lens.
2 Fixing Hole	Hole used for securing the camera on a ceiling.
3 Reset Button	Resets the camera settings to the default. Press and hold for about 5 seconds to reboot the system. ! If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.
4 Microphone hole	A microphone is embedded.
5 Micro SD Memory Card Compartment	Compartment for the Micro SD memory card.
6 IR LED	These infrared LED's are controlled by the illumination sensor.
7 Illumination Sensor	Detects incoming light to control the IR LED.
8 Test Monitor Out	Output port for test monitoring the video output. Use the test monitor cable to connect to a mobile display and check the test video.

INSTALLATION

Precautions before installation

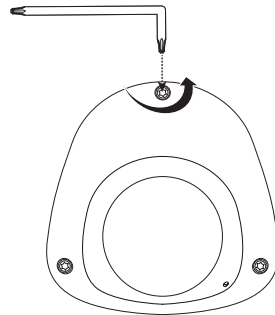
Ensure you read out the following instructions before installing the camera:

- When installing on a ceiling, desired spot must be capable of supporting at least 5 times of the camera's weight.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside personal belongings from the site, just in case.
- This camera is a waterproof product that meets IP66 standards. However, if the M12 standard connector and cable are not used, the jack part will not be waterproof. It is recommended to use an M12 standard external cable when installing this product.

Disassembling

Remove the dome cover after loosening the screws by turning them counterclockwise using the supplied star-shaped wrench.

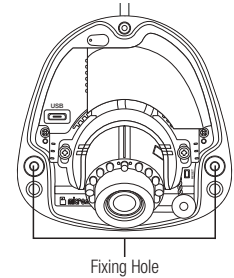
- ☑ ■ Note that it is not necessary to loosen the screw completely.



How to install

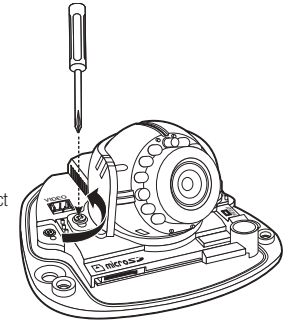
1. Consider the direction to be monitored, attach the template, and drill holes by following the template.
2. Secure the camera to the holes using the tapping screws.

- ☑ ■ Use the enclosed installation bracket when installing the product on the wall.

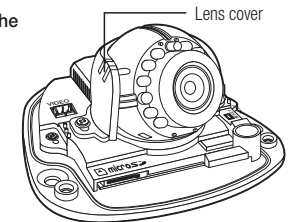


3. Turn the screws on both sides of the camera lens cover counterclockwise to loosen them.

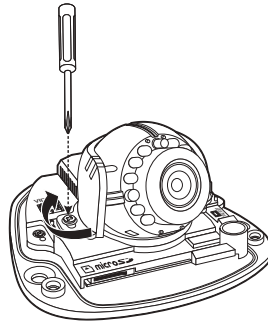
- ! ■ Forcing to tilt the lens (hood) without loosening the screws may cause a product defect.



4. Adjust the lens in a desired direction by referring to the "Adjusting the monitoring direction for the camera" section. (page 13)

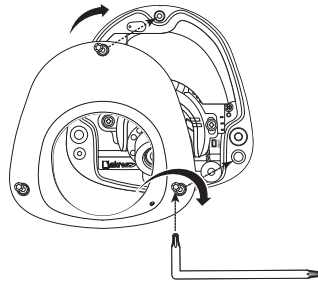


- After adjusting the angle, turn the screws clockwise to fix the lens angle.



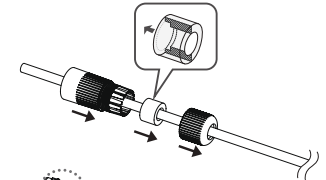
- Cover the dome cover and tighten the screws by turning them clockwise using a star-shaped wrench to secure the cover.

- ! If the cover is not fixed tightly, you may encounter a problem with waterproofing.

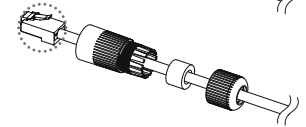


How to connect the RJ45 waterproof cable to a LAN cable (QNV-6023R)

- Insert it through the arrow direction.

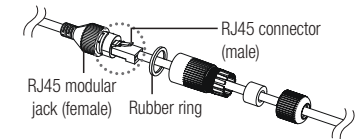


- Connect the LAN connector (male) to the cable.

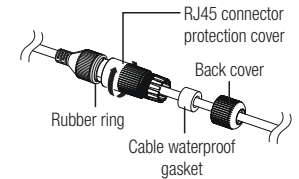


- Connect the RJ45 modular jack (female) to the RJ45 connector (male).

- ! Please, keep each of the parts separated.



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



- 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.



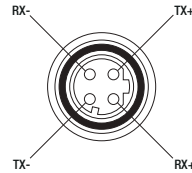
- ! You must fully assemble it to rotate the back cover up to the end of the screw thread of the RJ45 connector.

Connecting a connector cable (QNV-6024RM)

Connect the M12 male connector into the hole of the M12 Female connector of the camera.

- This camera uses Female, D-coded types.
- PoE (Power over Ethernet) is supported.
- You are recommended to use a shielded network connector.

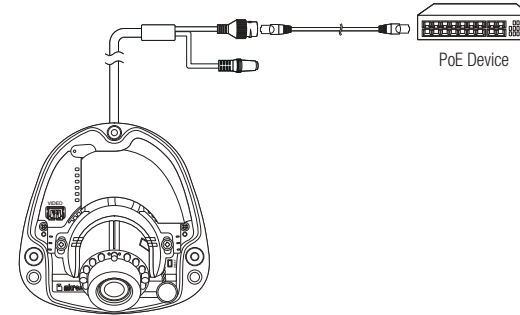
- Connect this camera to a shielded network cable (STP).
- Please, use 4 poles, Male, D-coded type external cables that meet the M12 specification.
- Check whether the PoE device is properly connected to the ground.



Powering and networking (QNV-6023R)

Connect a camera to a PoE equipment.

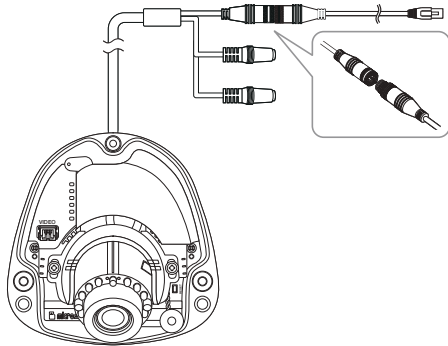
- Connect to a PoE (Power over Ethernet) enabled router's PoE connector.
- Use PoE (Power over Ethernet) that is compliant with the IEEE802.3af protocols.



Making a connection using the M12-RJ45 conversion cable (QNV-6024RM)

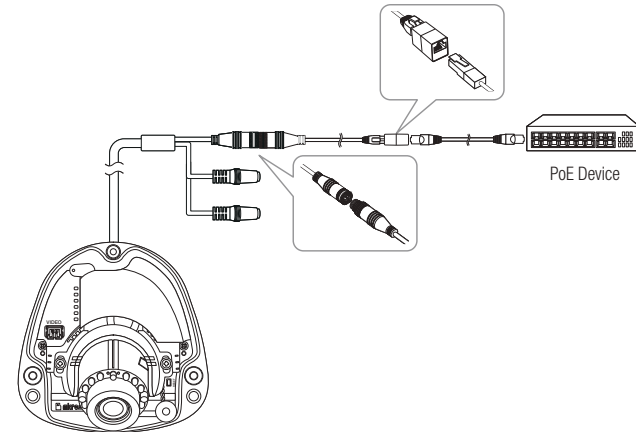
Connect the M12 male connector for the conversion cable to the groove of the M12 Female connector for your camera.

- M12-RJ45 cable is sold separately.



Powering and networking (QNV-6024RM)

Connect a camera to a PoE equipment or connect the M12-RJ45 connector for the conversion cable of your camera to a PoE equipment.



- A connection method may vary depending on the installation environment of a user.
- Connect to a PoE (Power over Ethernet) enabled router's PoE connector.
- Use PoE (Power over Ethernet) that is compliant with the IEEE802.3af protocols. You can only use a Mode A PoE device that supplies power through data pin pair 1, 2, 3, 6.
- Even if you use the M12-RJ45 conversion cable, you can only use a mode A type PoE equipment that supplies power to data pair pins 1, 2, 3, 6.

Network Cable Specification

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

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

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. (QNV-6023R)

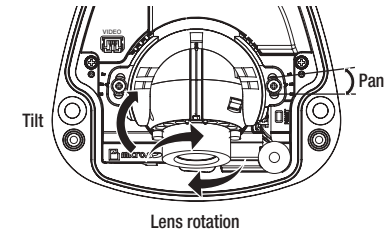
As water can leak from the gap of the externally connected cable if you install it outside a building without using an M12 connector and an M12 cable, you need to use waterproofing butyl rubber tape for waterproofing as shown below. (QNV-6024RM)



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.

Adjusting the monitoring direction for the camera



Adjusting the monitoring direction

You can adjust the camera direction only when the camera is fixed on the ceiling. 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 maximum PAN range is from -5° to $+5^{\circ}$.
- The angle of ROTATE is either -90° or $+90^{\circ}$.
- The total range of TILT is 67° .

- ! Use of the camera at an angle that is out of the specifications may cause reflection by IR or blind image.

Methods of adjustment

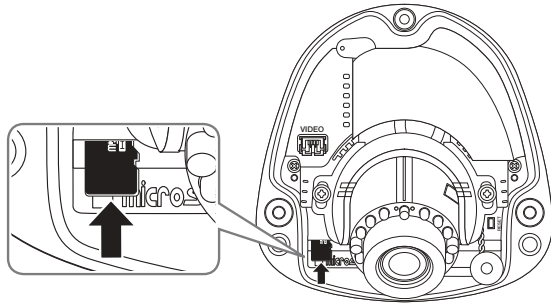
1. Adjust the Pan angle after installing the camera considering the direction to be monitored.
2. Set the horizontal angle so that the image is not reversed.
3. Adjust the tilt angle so that the camera faces toward the monitoring object.

INSERTING/REMOVING A MICRO SD MEMORY CARD

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

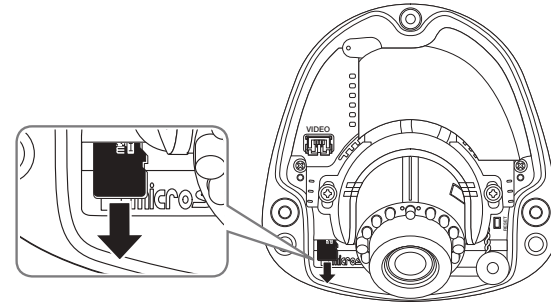
Inserting a Micro SD Memory Card

Push the Micro SD memory card in the direction of the arrow shown in the diagram.



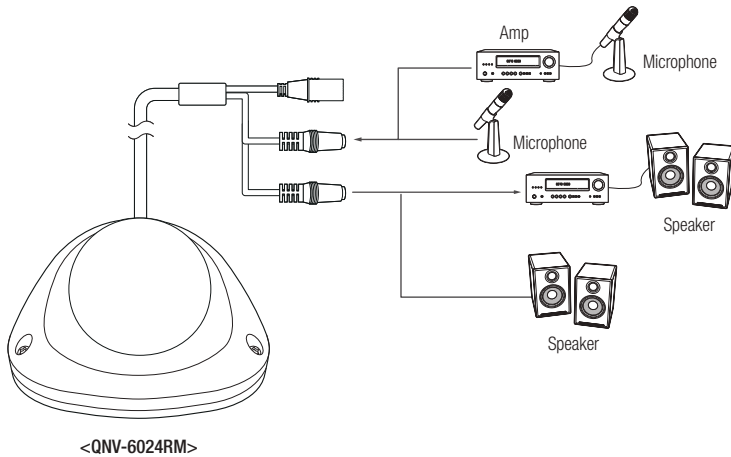
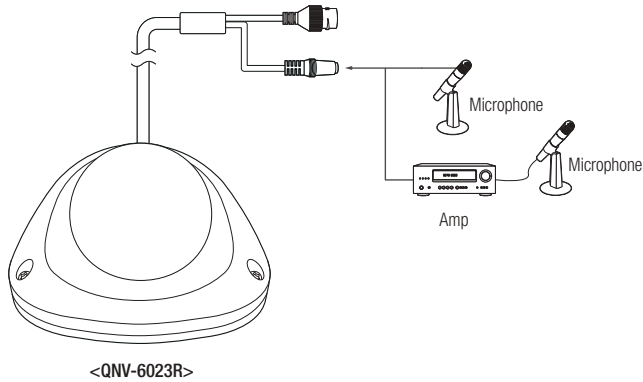
Removing a Micro SD Memory Card

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



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

Connecting to Audio Input/Output



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



- As a microphone is built in, you can use the built-in microphone instead of an external one. (Applicable to QNV-6024RM only)
- In environments with a lot of ambient noise, we recommend using an external microphone.

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

3. Check the specifications for audio input.

• Audio Codec

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

• Full duplex Audio

- **Audio in (QNV-6023R)** : Line-in, Supported voltage: 2.5VDC (4mA), Input impedance: 2K Ohm
- **Audio in (QNV-6024RM)** : Selectable (microphone/Line-in/Built-in microphone), Supported voltage: 2.5VDC (4mA), Input impedance: 2K Ohm
- **Audio out** : Line-out, Maximum output: 1Vrms
- **Line out impedance** : 600Ω

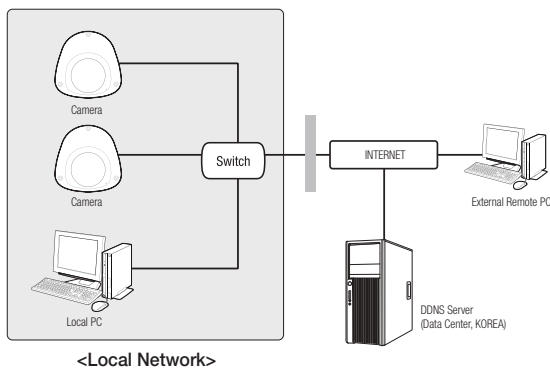
network connection and setup

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

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

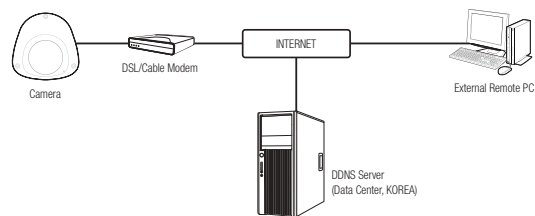
Connecting to the camera from a local PC in the LAN

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.
- By factory default, the IP address will be assigned from the DHCP server automatically. If there is no DHCP server available, the IP address will be set to 192.168.1.100. To change the IP address, use the Device Manager. For further details on Device Manager use, refer to "Using Device Manager". (Page 17)

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



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

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

USING DEVICE MANAGER

- Device manager program can be downloaded from <Technical Guides>-<Online Tool> menu at Hanwha Techwin website (<http://www.hanwha-security.com>).
- More instructions of Device Manager can be found at <Help> menu of the main page.

AUTOMATICALLY SEARCHING CAMERA

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

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

CONFIGURING IP ADDRESS

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

Configuring Static IP

Manually insert and configure IP address & port information.

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



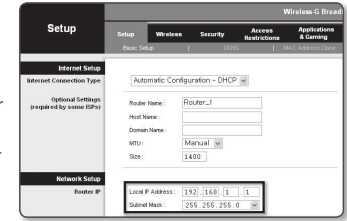
If not using a Broadband Router

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

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

If using a Broadband Router

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



- The settings may differ depending on the connected Broadband Router model. For more information, refer to the user manual of the applicable router.
- For more information about port forwarding of the broadband router, refer to "Port Range Forward (Port Mapping) Setup". (Page 19)

If the Broadband Router has more than one camera connected

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

ex)

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

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

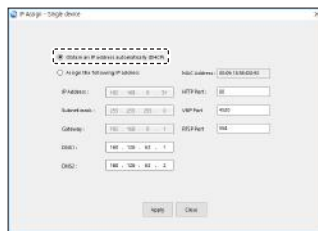
5. Click [Apply] Button.
6. If the success message is displayed, click [OK].

Configuring Dynamic IP

Receive IP address from DHCP

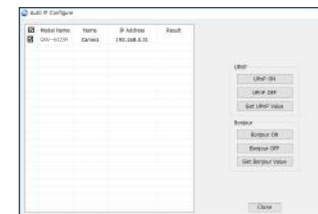
- Example of the Dynamic IP environment
 - If a Broadband Router, with cameras connected, is assigned an IP address by the DHCP server
 - If connecting the camera directly to modem using the DHCP protocols
 - If IPs are assigned by the internal DHCP server via the LAN

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



AUTOMATICALLY CONFIGURING IP

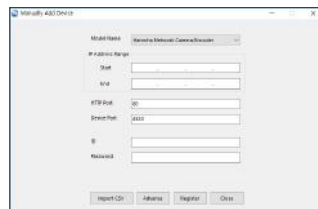
1. Click the camera from the list that you want to automatically configure the IP.
2. Click **<+>** at the main page of device manager.
 - Equipment Setting menu appears.
3. At the menu, click **<Auto IP Configure>**.
4. Click **[Close]** button.



MANUALLY REGISTERING CAMERA

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

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

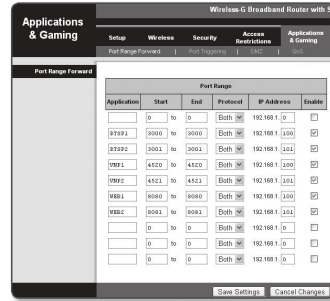


PORT RANGE FORWARD (PORT MAPPING) SETUP

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

Manual Port Range Forwarding

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

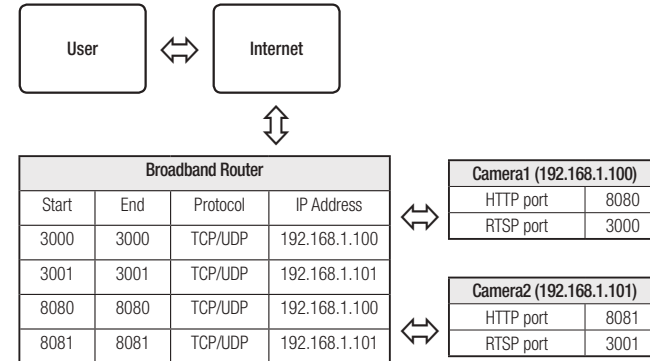


- Port forwarding setting is an example of setting CISCO IP router.
- The settings may differ depending on the connected Broadband Router model.
For more information, refer to the user manual of the applicable router.

Setting up Port Range Forward for several network cameras

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


When Camera1 and Camera2 are connected to a router :



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

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC


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

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

CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

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

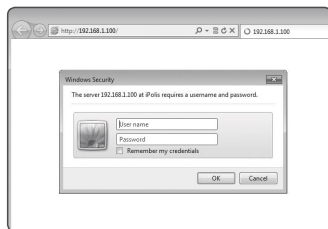
1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
ex) <http://ddns.hanwha-security.com/ID>

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

CONNECTING TO THE CAMERA

Normally, you would

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



If the HTTP port is other than 80

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

Using URL

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



- Network connection is disabled in the LAN only environment.

Connecting via UPnP

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

Connecting via Bonjour

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

To check the DDNS address

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

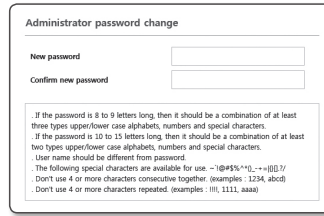
Once you register a dynamic IP-based device with the DDNS server, you can easily check the changed IP when you try to access the device.

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.

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



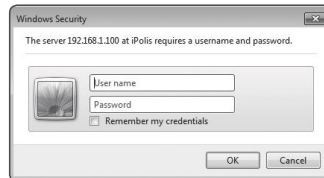
LOGIN

Whenever you access the camera, the login window appears. Enter the User ID and password to access the camera.

1. Enter "admin" in the <User name> input box.
The administrator ID, "admin", is fixed and can not be changed.
2. Enter the password in the <Password> input field.
3. Click **[OK]**.
If you have logged in successfully, you will the Live Viewer screen.

When you access the camera web viewer, pay special attention to the security by checking whether the image data is encrypted.

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



CAMERA WEB VIEWER SETUP

1. Click the **[Setup (⚙️)]** icon.
2. The Settings window appears.
3. You can configure settings for the camera's basic information, video, audio, network, event, analysis, and system over the network.
4. Click **<Help (🔍)>** to view detailed descriptions of each function.

SPECIFICATION

	Items	Description	
		QNV-6023R	QNV-6024RM
Video	Imaging Device	1/2.8" 2M CMOS	
	Effective Pixels	1920(H)x1080(V)	
	Min. Illumination	Color: 0.1Lux(F2.0, 1/30sec) BW: 0Lux(IR LED on)	
	Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation	
Lens	Focal Length (Zoom Ratio)	3.6mm fixed focal	
	Max. Aperture Ratio	F2.0	
	Angular Field of View	H : 94.8°, V : 49.3°, D : 114.3°	
	Min. Object Distance	0.5m	
Pan / Tilt / Rotate	Pan / Tilt / Rotate range	±5°/0-67°/±90°	
	IR Viewable Length	15m(49.21ft)	
Operational	Camera Title	Displayed up to 85 characters	
	Day & Night	Auto (ICR)	
	Backlight Compensation	BLC, WDR, SDR	
	Wide Dynamic Range	120dB	
	Digital Noise Reduction	SSNR	
	Motion Detection	4ea, polygonal zones	
	Privacy Masking	6ea, rectangular zones	
	Gain Control	Low / Middle / High	
	White Balance	ATW / AWC / Manual / Indoor / Outdoor	
	LDC	Support	
	Electronic Shutter Speed	Minimum / Maximum / Anti flicker(1/5~1/12,000sec)	
	Video Rotation	Flip, Mirror, Hallway view(90°/270°)	
	Analytics	Defocus detection, Directional detection, Motion detection, Enter/Exit, Tampering, Virtual line	
	Alarm Triggers	Analytics, Network disconnect	

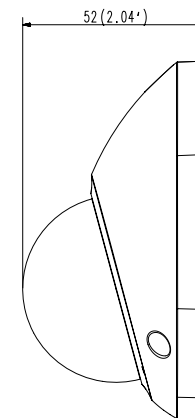
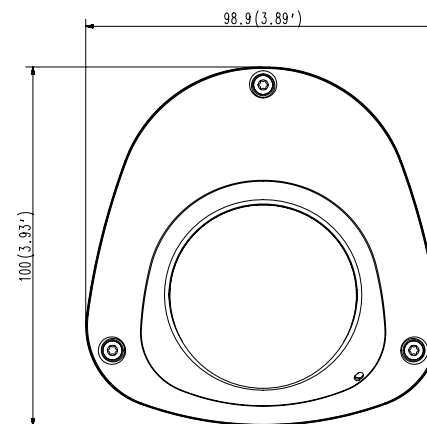
	Items	Description	
		QNV-6023R	QNV-6024RM
Operational	Alarm events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers	
	Audio In	Line-in	Selectable(mic in/line in/built-in mic)
	Audio out	-	Line out, Max.output level: 1Vrms
	Ethernet	RJ-45(10/100BASE-T)	M12 (10/100BASE-T)
Network	Video Compression	H.265/H.264: Main/Baseline/High, MJPEG	
	Resolution	1920x1080, 1280x960, 1280x720, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360	
	Max. Framerate	H.265/H.264: Max.60fps/50fps(60Hz/50Hz) MJPEG: Max.30fps/25fps(60Hz/50Hz)	
	Smart Codec	WiseStream II	
	Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Quality Level control	
	Bitrate Control	H.264/H.265 : CBR or VBR Motion JPEG : VBR	
	Streaming	Unicast(6 users) / Multicast Multiple Streaming (Up to 3 Profiles)	
	Audio Compression	G.711 μ-law /G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps	
	Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP	
	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP)	
	Edge Storage	Micro SD/SDHC/SDXC 1slot 128GB	

Items	Description	
	QNV-6023R	QNV-6024RM
Network	Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
	Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch
	Web Viewer	Supported OS: Windows 7, 8.1, 10, Mac OS X 10.12, 10.13, 10.14 Recommended Browser: Google Chrome Supported Browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
	Memory	512MB RAM, 256MB Flash
Environmental	Operating Temperature / Humidity	-30°C ~ +55°C(-22°F ~ +131°F) / Less than 90% RH
	Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH
	Certification	IP66, IK10, NEMA4X EN55011:2009+A1:2010, EN50581:2012, EN50121-3-2:2015, EN61000-4-2:2009, EN61000-4-3:2006+A2:2010, EN61000-4-4:2012, EN61000-4-5:2014 EN61000-4-6:2009, EN50155:2007
Electrical	Input Voltage	PoE(IEEE802.3af, Class3)
	Power Consumption	PoE: Max 6.7W, typical 5W
Mechanical	Color / Material	Ivory / Aluminum
	Product dimensions / weight	98.9x52.0x100.0mm(3.89x2.05x3.94"), 295g(0.65 lb)

PRODUCT OVERVIEW

QNV-6023R/QNV-6024RM

Unit : mm (inch)



TROUBLESHOOTING

PROBLEM	SOLUTION
When an Windows 10 user accesses the web viewer through Chrome or Firefox, the sound volume of microphone changes periodically.	<ul style="list-style-type: none"> This is what happens when microphone driver has been set to Realtek driver. Install the High Definition Audio device (Windows Default Driver) or the third party driver as the microphone driver.
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.
The camera connected to the network is not detected in the Device Manager program.	<ul style="list-style-type: none"> Turn off the firewall settings on your PC and then search the camera again.
Images overlap.	<ul style="list-style-type: none"> Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap.
No image appears.	<ul style="list-style-type: none"> If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to.
Voice is not recorded even though audio input settings are configured.	<ul style="list-style-type: none"> Select the <Audio Input> checkbox from <Basic> - <Video Profile>.

PROBLEM	SOLUTION
<Motion detection> of <Analytics> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred.	<ul style="list-style-type: none"> Verify the settings in the following sequence: <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.
Cannot record in the NAS.	<ul style="list-style-type: none"> Confirm that the information registered in the NAS is correct.
It reports that NAS setting has failed.	<ul style="list-style-type: none"> Confirm that the IP address of the NAS is valid. Confirm that the ID/password of the NAS is valid. Confirm that you can access the folder designated as the default folder using the ID of the NAS. Confirm that the NAS SMB/CIFS items are unchecked. Confirm that the NAS IP address and the camera IP address are in the same format. ex) The NAS & camera subnet mask initial value is 255.255.255.0. If the IP address is 192.168.20.32 then the NAS IP address should be in the range of 192.168.20.1 ~ 192.168.20.255. Check whether you tried to access as another user without formatting the default folder saved or used. Confirm that you used recommended NAS equipment.

OPEN SOURCE ANNOUNCEMENT

GPL/LGPL software license

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

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

GPL SW

Component Name	License	URL
Base Kernel	GPL 2.0	
Busybox	GPL 2.0	http://www.busybox.net/downloads/snapshots
iproute2-4.3.0	GPL 2.0	
iptables-1.4.21	GPL 2.0	http://ftp.netfilter.org/pub/iptables
ethtool-4.2	GPL 2.0	
mtid-1.5.2	GPL 2.0	ftp://ftp.infradead.org/pub/mtid-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/

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

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- Version 1.1

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

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

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

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

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Article 6. Distribution and Registration of the Ported Source Code

1. The Source Code User and the System Developer may, whether with or without charge, distribute to any third party only the following parts of the Ported

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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.

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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.

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Julian Seward, jseward@bzip.org

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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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