Network Camera
User Manual

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

- The initial administrator ID is “admin” and the password should be set when logging in for the first time.
  - Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.
  - Please, take note that it’s a user’s responsibility for the security and any other problems caused by mismanaging a password.
IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth. (Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is intended to be a Listed Power Supply Unit marked “Class2” or “LPS” and rated from PoE(48V), 0.16A.
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.

**WARNING**
To Prevent damage which may caused by IR LED, don’t stare at operating lamp.
For below models only.
QNE-8011R
QNE-8021R

<table>
<thead>
<tr>
<th>Risk Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING IR emitted from this product.</td>
</tr>
<tr>
<td>Do not stare at operating lamp.</td>
</tr>
<tr>
<td>Product tested against IEC 62471</td>
</tr>
</tbody>
</table>
PRODUCT FEATURES

- Dustproof/Waterproof (IP67)
  The dust-resistant/water-resistant design protects the product from rain and dust if it is installed outdoors.
- 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 5 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, 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 tempering 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.
- Auto Detection of Disconnected Network
  Detects network disconnection before triggering an event.
- 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
- 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 – 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.

<table>
<thead>
<tr>
<th>Recommended products</th>
<th>Available sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>QNAP NAS</td>
<td>A maximum of 16 cameras can access simultaneously.</td>
</tr>
<tr>
<td>Synology NAS</td>
<td>A maximum of 16 cameras can access simultaneously.</td>
</tr>
</tbody>
</table>

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.)

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Item Name</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Camera</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quick Guide (Optional)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Warranty card (Optional)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Template</td>
<td>1</td>
<td>Product installation guide</td>
</tr>
<tr>
<td></td>
<td>L Wrench</td>
<td>1</td>
<td>Used to open the micro SD slot cover</td>
</tr>
<tr>
<td></td>
<td>RJ45 waterproof accessory</td>
<td>1</td>
<td>Used to install in humid places</td>
</tr>
</tbody>
</table>

Optional Accessories for Installation

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

<table>
<thead>
<tr>
<th>Model name</th>
<th>Back Box</th>
<th>Wall Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>QNE-8011R/8021R</td>
<td>SBV-125BW</td>
<td>SBP-125WMW</td>
</tr>
</tbody>
</table>
AT A GLANCE

Appearance

1. Head: A part that contains the lens and the internal body.
2. Middle Cover: A cover placed over to fix its position after the head direction has been adjusted.

Components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Reset Button</td>
</tr>
<tr>
<td>2.</td>
<td>Micro SD Memory Card Compartment</td>
</tr>
<tr>
<td>3.</td>
<td>Inside Cover</td>
</tr>
<tr>
<td>4.</td>
<td>PoE Connector</td>
</tr>
</tbody>
</table>
This camera is waterproof and in compliance with the IP67 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.

Disassembling
1. Hold the camera body with both hands as illustrated and use thumbs to rotate the groove of the base anticlockwise to unlock the middle cover.

2. Remove the middle cover by lifting it.

Installation
1. Consider the direction to be monitored, attach the template, and drill holes by following the template.
   - Set the < mark printed on the template to face the direction of camera monitoring.

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

3. Using 2 tapping screws, fix the camera at 2 holes drilled with a template.

4. Remove all protective films from the camera windows.

5. Unfasten the inner cover bracket until loose.

6. Adjust the lens in a desired direction by referring to the “Adjusting the monitoring direction for the camera” section. (page 11)

7. After adjusting the angle, fasten the screws clockwise to fix the lens.

8. Put the middle cover back and rotate it clockwise until it is firmly in place.
   - Align the insert mark on the camera body and the interlock mark on the middle cover to assemble.
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.
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 effective range of pan is a total of 350 degrees.
  - The effective range of rotation is a total of 360 degrees.
  - The effective range of tilt is a total of 75 degrees.

- **Methods of adjustment**
  After installing the camera in consideration of the direction to monitor, adjust Pan, Rotation, and Tilt angles.

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**INSERTING/REMOVING A MICRO SD MEMORY CARD**

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

**Inserting a Micro SD Memory Card**

1. Remove the middle cover and unfasten screws on the inside cover bracket.
2. Rotate it 90° so that the SD cover faces the front, as shown in the picture.
3. Completely tilt the camera towards the back.
4. Use the L wrench provided as a tool to release the SD cover.
5. Slide in the Micro SD card following the direction shown in the picture.
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.

- Pressing too hard on the Micro SD memory card can cause the card to shoot out uncontrollably from the slot when released.
- 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 the PoE device and camera’s PoE connectors.

- 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.

Network Cable Specification

<table>
<thead>
<tr>
<th>Item</th>
<th>Contents</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td>RJ45</td>
<td></td>
</tr>
<tr>
<td>Ethernet</td>
<td>10/100BASE-T</td>
<td>10/100 Mbps</td>
</tr>
<tr>
<td>Cable</td>
<td>Category 5e</td>
<td></td>
</tr>
<tr>
<td>Max Distance</td>
<td>100M</td>
<td>DC Resistance ≤ 0.125 Ω/m</td>
</tr>
<tr>
<td>PoE Support</td>
<td>IEEE 802.3af</td>
<td></td>
</tr>
</tbody>
</table>

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

 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.
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.

- 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 14)
**BUTTONS USED IN IP INSTALLER**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Device Name</td>
</tr>
<tr>
<td>2</td>
<td>Alias</td>
</tr>
<tr>
<td>3</td>
<td>Mode</td>
</tr>
<tr>
<td>4</td>
<td>MAC(Ethernet) Address</td>
</tr>
<tr>
<td>5</td>
<td>IP Address</td>
</tr>
<tr>
<td>6</td>
<td>Protocol</td>
</tr>
<tr>
<td>7</td>
<td>URL</td>
</tr>
<tr>
<td>8</td>
<td>IPv4</td>
</tr>
<tr>
<td>9</td>
<td>IPv6</td>
</tr>
<tr>
<td>10</td>
<td>Search</td>
</tr>
<tr>
<td>11</td>
<td>Auto Set</td>
</tr>
<tr>
<td>12</td>
<td>Manual Set</td>
</tr>
<tr>
<td>13</td>
<td>Exit</td>
</tr>
</tbody>
</table>

- Use the latest version of the IP installer. You can download the latest version from the Hanwha Techwin web site.
- If the supporting OS is Windows 8.1, it is recommended that you use the Wisenet Device Manager instead of the IP Wisenet. The Wisenet Device Manager Program can be downloaded by visiting the Hanwha Techwin website ([http://www.hanwhasecurity.com](http://www.hanwhasecurity.com)) under the menu <Technical Guides> - <Online Tool>.

**STATIC IP SETUP**

**Manual Network Setup**

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

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

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 [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.

3. 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 16)
7. 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)
   
<table>
<thead>
<tr>
<th>Category</th>
<th>Camera #1</th>
<th>Camera #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address</td>
<td>192.168.1.100</td>
<td>192.168.1.101</td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>255.255.255.0</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>Gateway</td>
<td>192.168.1.1</td>
<td>192.168.1.1</td>
</tr>
<tr>
<td>HTTP Port</td>
<td>8080</td>
<td>8080</td>
</tr>
<tr>
<td>VNP Port</td>
<td>4520</td>
<td>4521</td>
</tr>
</tbody>
</table>
8. 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.
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.
2. For setting the port range forward for a third-party Broadband Router, refer to the user guide of that Broadband Router.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Start Port</th>
<th>End Port</th>
<th>IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP/UDP</td>
<td>3000</td>
<td>3000</td>
<td>192.168.1.100</td>
</tr>
<tr>
<td>TCP/UDP</td>
<td>3001</td>
<td>3001</td>
<td>192.168.1.101</td>
</tr>
<tr>
<td>TCP/UDP</td>
<td>4520</td>
<td>4520</td>
<td>192.168.1.100</td>
</tr>
<tr>
<td>TCP/UDP</td>
<td>4521</td>
<td>4521</td>
<td>192.168.1.101</td>
</tr>
<tr>
<td>TCP/UDP</td>
<td>8080</td>
<td>8080</td>
<td>192.168.1.100</td>
</tr>
<tr>
<td>TCP/UDP</td>
<td>8081</td>
<td>8081</td>
<td>192.168.1.101</td>
</tr>
</tbody>
</table>

**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:

1. When done, click [Save Settings].
2. 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.

- 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.

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)

Using URL

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

! Network connection is disabled in the LAN only environment.

Connecting via UPnP

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

Connecting via Bonjour

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

To check the DDNS address

If the camera is connected directly to the DHCP cable modem, DSL modem, the IP address of your network will be changed each time you try to connect to the ISP (Internet Service Provider) server. If this is the case, you will not be informed of the IP address changed by DDNS.

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

To register your device to the DDNS server, visit http://ddns.hanwha-security.com and register your device first, and then set the Web Viewer's <Network> - <DDNS> to <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.

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.

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.

- You will experience the best video quality if the screen size is 100%. Reducing the ratio may cut the image on the borders.
## SPECIFICATION

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Imaging Device</strong></td>
<td>1/2.8” 5MP CMOS</td>
</tr>
<tr>
<td><strong>Effective Pixels</strong></td>
<td>2592(H) x 1944(V)</td>
</tr>
<tr>
<td><strong>Min. Illumination</strong></td>
<td>Color: 0.15Lux(F2.0, 1/30sec) BW: 0Lux(IR LED on)</td>
</tr>
<tr>
<td></td>
<td>Color: 0.15Lux(F1.6, 1/30sec) BW: 0Lux(IR LED on)</td>
</tr>
<tr>
<td><strong>Focal Length (Zoom Ratio)</strong></td>
<td>2.8mm fixed focal</td>
</tr>
<tr>
<td><strong>Max. Aperture Ratio</strong></td>
<td>F2.0</td>
</tr>
<tr>
<td></td>
<td>F1.6</td>
</tr>
<tr>
<td><strong>Angular Field of View</strong></td>
<td>H: 104.4°/V: 76.7°/D: 136.1°</td>
</tr>
<tr>
<td></td>
<td>H: 80.1°/V: 58.0°/D: 105.8°</td>
</tr>
<tr>
<td><strong>Pan / Tilt /Rotate</strong></td>
<td>0˚~350˚ / 0˚~75˚ / 0˚~360˚</td>
</tr>
<tr>
<td><strong>IR Viewable Length</strong></td>
<td>20m(65.62ft)</td>
</tr>
<tr>
<td></td>
<td>25m(82.02ft)</td>
</tr>
<tr>
<td><strong>Camera Title</strong></td>
<td>Displayed up to 85 characters</td>
</tr>
<tr>
<td><strong>Day &amp; Night</strong></td>
<td>Auto(ICR)</td>
</tr>
<tr>
<td><strong>Backlight Compensation</strong></td>
<td>BLC, WDR, SSDR</td>
</tr>
<tr>
<td><strong>Wide Dynamic Range</strong></td>
<td>120dB</td>
</tr>
<tr>
<td><strong>Digital Noise Reduction</strong></td>
<td>SSNR</td>
</tr>
<tr>
<td><strong>Motion Detection</strong></td>
<td>4ea, polygonal zones</td>
</tr>
<tr>
<td><strong>Privacy Masking</strong></td>
<td>6ea, rectangular zones</td>
</tr>
<tr>
<td><strong>Gain Control</strong></td>
<td>Support</td>
</tr>
<tr>
<td><strong>White Balance</strong></td>
<td>ATW / AWC / Manual / Indoor / Outdoor</td>
</tr>
<tr>
<td><strong>LDC</strong></td>
<td>Support</td>
</tr>
<tr>
<td><strong>Electronic Shutter Speed</strong></td>
<td>Minimum / Maximum / Anti flicker (1/5~1/12,000 sec)</td>
</tr>
<tr>
<td><strong>Video Rotation</strong></td>
<td>Flip / Mirror / Hallway view (90°/270°)</td>
</tr>
<tr>
<td><strong>Analytics</strong></td>
<td>Defocus detection, Directional detection, Motion detection, Enter/Exit, Tampering, Virtual line</td>
</tr>
<tr>
<td><strong>Alarm Triggers</strong></td>
<td>Analytics, Network disconnect</td>
</tr>
<tr>
<td><strong>Alarm events</strong></td>
<td>• File upload via FTP, E-Mail</td>
</tr>
<tr>
<td></td>
<td>• Notification via E-Mail</td>
</tr>
<tr>
<td></td>
<td>• SD/SDHC/SDXC or NAS recording at event triggers</td>
</tr>
</tbody>
</table>

### Video Compression Format
- H.265/H.264: Main/High, MJPEG
- MJPEG: Max. 15fps/12fps(60Hz/50Hz)

### Network
- RJ-45 (10/100BASE-T)
- IPv4, IPv6, TCP/IP, UDP/IP, RPTP/IP, 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

### 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, Hungarian, Greek

### Web Viewer
- Supported OS: Windows 7, 8, 10, Mac OS X 10.12, 10.13, 10.14
- Recommended Browser: Google Chrome
- Supported Browsers: MS Explorer11, MS Edge, Mozilla Firefox(Windows 64bit only), Apple Safari(Mac OS X only)

### Memory
- 512MB RAM, 256MB Flash
## APPENDIX

<table>
<thead>
<tr>
<th>Items</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Operating Temperature / Humidity | -30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH  
* Start up should be done at above -20°C |
<p>| Storage Temperature / Humidity | -30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH |
| Certification                | IP67, IK10                                                                  |
| <strong>Electrical</strong>               |                                                                             |
| Input Voltage                | PoE(IEEE802.3af, Class3)                                                    |
| Power Consumption            | PoE: Max 7.4 W, Typical 5.5 W                                              |
| <strong>Mechanical</strong>               |                                                                             |
| Color / Material             | White / Aluminum                                                           |
| RAL Code                     | RAL9003                                                                     |
| Product dimensions / weight  | Ø125 x 87.35 mm(Ø4.9 x 3.44&quot;), 645 g                                       |</p>
<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
</tr>
</thead>
</table>
| No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS. | • On the authentication popup window prompted when initially accessing https, click "View Authentication Certificate" and select the "Always trust when connecting to the designated webviewer IP" check box.  
• If the webviewer continues failing to display a video after you select "Next" on the message window below, press the command key + Q to exit the Safari browser, access again and follow the procedures stated above. |
| I can’t access the camera from a web browser. | • Check to make sure that the camera’s Network settings are appropriate.  
• Check to make sure that all network cables have been connected properly.  
• If connected using DHCP, verify that the camera is able to acquire dynamic IP addresses without any problem.  
• If the camera is connected to a Broadband Router, verify that port forwarding is properly configured. |
| Viewer got disconnected during monitoring. | • Connected Viewers become disconnected upon any change to camera or network configurations.  
• Check all network connections. |
| No video is displayed when I newly access the webviewer or connect streaming to the client. | • The maximum number of profiles available is 3.  
The connection may be lost if you use 4 or more of profiles.  
Example) If you access MJPEG, H264 and H265 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. | • Turn off the firewall settings on your PC and then search the camera again. |
| Images overlap. | • Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap. |
| No image appears. | • If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to.  
• Verify the settings in the following sequence:  
A. Check <Data & Time> settings.  
B. The <Motion detection> should be set to <Enable>.  
C. Check if the <E-mail> option of <Event setup> menu is checked to use. |
| Cannot record into the Micro SD memory card. | • Check if the memory card is defective.  
• 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. |
| Micro SD memory card is inserted but the camera does not operate properly. | • Confirm that the information registered in the NAS is correct.  
• 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.  
• 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, H264 and H265 and then access with a different profile, the connection will be lost. |
| Viewer got disconnected during monitoring. | • Connected Viewers become disconnected upon any change to camera or network configurations.  
• Check all network connections. |
| No video is displayed when I newly access the webviewer or connect streaming to the client. | • The maximum number of profiles available is 3.  
The connection may be lost if you use 4 or more of profiles.  
Example) If you access MJPEG, H264 and H265 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. | • Turn off the firewall settings on your PC and then search the camera again. |
| Images overlap. | • Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap. |
| No image appears. | • If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to.  
• Verify the settings in the following sequence:  
A. Check <Data & Time> settings.  
B. The <Motion detection> should be set to <Enable>.  
C. Check if the <E-mail> option of <Event setup> menu is checked to use. |
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GPL SW

<table>
<thead>
<tr>
<th>Component Name</th>
<th>License</th>
<th>URL</th>
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</thead>
<tbody>
<tr>
<td>Base Kernel</td>
<td>GPL 2.0</td>
<td><a href="http://www.busybox.net/downloads/snapshots">http://www.busybox.net/downloads/snapshots</a></td>
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<tr>
<td>Busybox</td>
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<td>iproute2-2.1</td>
<td>GPL 2.0</td>
<td><a href="http://ltp.netfilter.org/pub/ltp5ables">http://ltp.netfilter.org/pub/ltp5ables</a></td>
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<tr>
<td>iptables-1.4-2</td>
<td>GPL 2.0</td>
<td><a href="http://ltp.netfilter.org/pub/ltp5ables">http://ltp.netfilter.org/pub/ltp5ables</a></td>
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<tr>
<td>ethdist-4.2</td>
<td>GPL 2.0</td>
<td><a href="http://ftp.infradog.org/pub/bsd-utils">http://ftp.infradog.org/pub/bsd-utils</a></td>
</tr>
<tr>
<td>mii-diag-0.11</td>
<td>GPL 2.0</td>
<td><a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a></td>
</tr>
<tr>
<td>ip-pppoe-3.11</td>
<td>GPL 2.0</td>
<td><a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a></td>
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<tr>
<td>wpa_supplicant-2.5</td>
<td>GPL 2.0</td>
<td><a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a></td>
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<tr>
<td>bash-4.3-30</td>
<td>GPL 3.0</td>
<td><a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a></td>
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<tr>
<td>zerocnf</td>
<td>GPL 2.0</td>
<td><a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a></td>
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</table>

LGPL SW

<table>
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<tr>
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</thead>
<tbody>
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<td>LGPL 2.0</td>
<td><a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a></td>
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<tr>
<td>Inetsutils</td>
<td>LGPL 3.0</td>
<td><a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a></td>
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<tr>
<td>neon-0.29.6</td>
<td>LGPL 2.0</td>
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</table>

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