

**WISENET**

# **NETWORK CAMERA**

User Manual

PNM-9000VD  
SLA-5M3700D/SLA-5M4600D/SLA-5M7000D



# 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 supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from / PoE(48V), 0.27A. (PNM-9000VD)
16. This Lens module has to be connected with equipment, which supplied by a power supply unit marked "Class 2" or "LPS". (SLA-5M3700D/5M4600D/5M7000D)
17. This product is intended to be supplied by isolation power.
18. 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.
19. 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.
20. 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.
21. 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.
22. Installing or using the product in water can cause serious damage to the product.



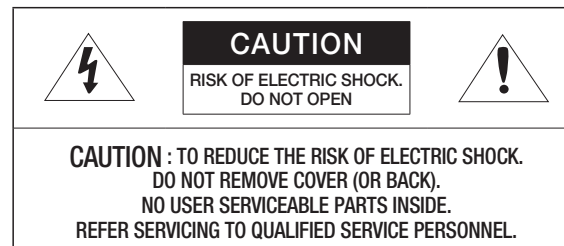
## WARNING

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

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

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

## CAUTION



## EXPLANATION OF GRAPHICAL SYMBOLS



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



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

## Class I construction

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

## Battery

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

## Disconnection Device

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

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

## CAUTION

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

## ATTENTION

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

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

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

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

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

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

**The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802-3af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1.**

**Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102. As such, associated Ethernet wiring shall be limited to inside the building.**

Please read the following recommended safety precautions carefully.

- Do not place this apparatus on an uneven surface.
- Do not install on a surface where it is exposed to direct sunlight, near heating equipment or heavy cold area.
- Do not place this apparatus near conductive material.
- Do not attempt to service this apparatus yourself.
- Do not place a glass of water on the product.
- Do not install near any magnetic sources.
- Do not block any ventilation openings.
- Do not place heavy items on the product.
- Please wear protective gloves when installing/removing the camera.  
The high temperature of the product surface may cause a burn.

User's Manual is a guidance book for how to use the products.

The meaning of the symbols are shown below.

- Reference : In case of providing information for helping of product's usages
  - Notice : If there's any possibility to occur any damages for the goods and human caused by not following the instruction
- ※ Please read this manual for the safety before using of goods and keep it in the safe place.

# CONTENTS

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<b>OVERVIEW</b>  3	3	Important Safety Instructions
	6	Product Features
	6	Recommended PC Specifications
	6	Recommended Micro SD/SDHC/SDXC Memory Card Specifications
	7	What's Included (PNM-9000VD)
	7	What's Included (Lens module -optional)
	8	At a Glance (PNM-9000VD)
	9	At a Glance (Lens module)

<b>INSTALLATION &amp; CONNECTION</b>  10	10	Installation
	12	How to install LAN cable for different installation locations
	13	Inserting/Removing a Micro SD Memory Card
	14	Connecting with other Device

<b>NETWORK CONNECTION AND SETUP</b>  15	15	Connecting the Camera Directly to Local Area Networking
	15	Connecting the Camera Directly to a DHCP Based DSL/Cable Modem
	16	Buttons used in IP Installer
	16	Static IP Setup
	18	Dynamic IP Setup
	18	Port Range Forward (Port Mapping) Setup
	19	Connecting to the Camera from a Shared Local PC
19	Connecting to the Camera from a Remote PC via the Internet	

<b>WEB VIEWER</b>  20	20	Connecting to the Camera
	21	Password setting
	21	Login
	21	Camera Web Viewer Setup

<b>APPENDIX</b>  22	22	Specification (PNM-9000VD)
	23	Specification (Lens module)
	24	Product Overview
	25	Troubleshooting
	26	Open Source Announcement

## PRODUCT FEATURES

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- **Lens options according to focal length**  
You can select the lens you want and attach it to the camera.
- **Dustproof/Waterproof (IP66)**  
The dustproof and waterproof design makes you feel at ease when installing the product outdoors or exposing it to rain.
- **Multi-Streaming**  
This network camera can display videos in different resolutions and qualities simultaneously using different CODECs.
- **Web Browser-based Monitoring**  
Using the Internet web browser to display the image in a local network environment.
- **Alarm**  
When an event occurs, related videos are sent to the user's registered e-mail and FTP server or stored on the Micro SD memory card.
- **Tampering Detection**  
Detects 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.
- **Fog detection**  
Detects fog that is heavier than the detection level.
- **Face Detection**  
Detects faces in the specified area from the camera's video input.
- **IVA (Intelligent Video Analysis) function**  
Detects a motion or situation that meets the configured event rules.
- **Auto Detection of Disconnected Network**  
Detects network disconnection before triggering an event.
- **ONVIF Compliance**  
This product supports ONVIF Profile S.  
For more information, refer to [www.onvif.org](http://www.onvif.org).

## RECOMMENDED PC SPECIFICATIONS

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- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
- Supported OS : Windows 7, 8.1, 10, Mac OS X 10.12, 10.13, 10.14
- Recommended Browser: Google Chrome
- Supported web browsers : MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)

## RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS












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

- Recommended capacity : 16GB to 256GB (MLC type)
- The following types of memory cards from the following manufacturers are recommended for this camera.
  - Manufacturer : SanDisk, Transcend
  - Product family : High endurance
- It is recommended to use a memory card of 16GB or more that conforms to the UHS-3 class (MLC type) specification.






## WHAT'S INCLUDED (PNM-9000VD)

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

Appearance	Item Name	Quantity	Description
	Camera	1	
	Instruction book, installer S/W CD	1	
	Quick Guide (Optional)	1	
	Warranty card (Optional)	1	
	Cable for the testing monitor	1	Used to test the camera connection to a portable display device
	Template	1	Product installation guide
	Star-shaped wrench	1	To remove/fix the cover top
	Tapping Screw	4	Used for installation on the wall or ceiling
	Plastic Anchor	4	For fixing a screw, Inserted in a hole (reinforced anchoring force)
	Machine Screws	4	Used for assembling the dome case when installing the product on the pipe, wall mount, etc. or blocking a hole.
	Cable bush	2	Used to connect the LAN cable with a diameter of $\varnothing 7\sim 8.5$ .

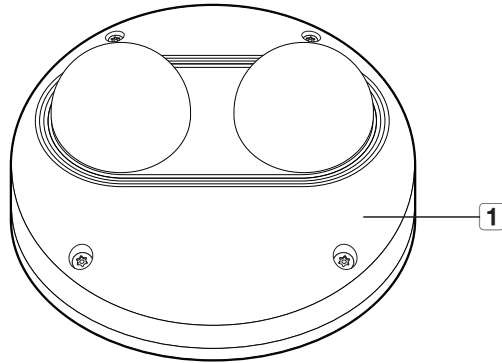
Appearance	Item Name	Quantity	Description
	Cap Installer	1	Used to connect the RJ45 cable.
	Card-type moisture absorbent	1	Attached when installed.

## WHAT'S INCLUDED (LENS MODULE -OPTIONAL)

Appearance	Item Name	Quantity	Description	Model Name
	Lens module	1	Mounted to PNM-9000VD	SLA-5M3700D
		1		SLA-5M4600D
		1		SLA-5M7000D

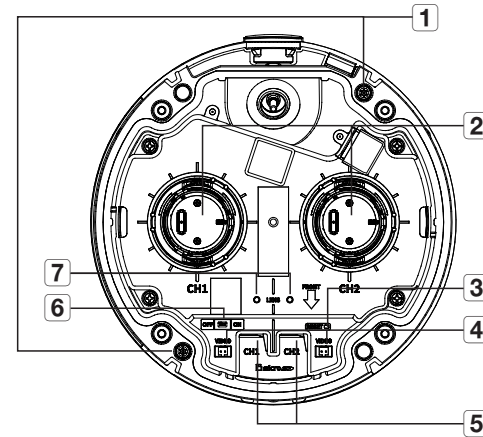
AT A GLANCE (PNM-9000VD)

Appearance



Item	Description
<b>1</b> Cover top	Case cover used to protect the lens and the main unit.

Inside



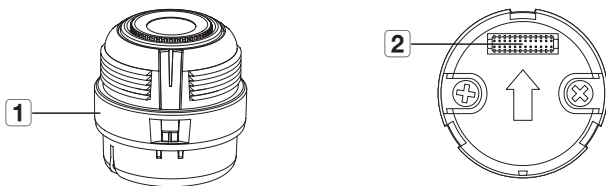
Item	Description
<b>1</b> Camera fixing screws	Screws that fix the camera body to the mounting plate.
<b>2</b> Lens module mounting portion	This is the terminal to mount the lens module.
<b>3</b> Reset Button	The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. <b>!</b> If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the IP Installer program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.
<b>4</b> 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.
<b>5</b> Micro SD Memory Card Compartment	Compartment for the Micro SD memory card.
<b>6</b> Power On/Off switch	Switch used to turn the product On/off. <b>!</b> Use it only to replace your lens module.
<b>7</b> Lens module indication light (normal: green, abnormal: red)	If the lens module is attached correctly, the green LED will illuminate and then turn off after approximately 40 seconds. (to prevent undesirable reflections)



## AT A GLANCE (LENS MODULE)

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### Appearance



Item	Description
<b>1</b> Lens module	This is a lens module that records video.
<b>2</b> Camera connector	This is a terminal to connect with the camera.

## INSTALLATION

- ! This camera is waterproof and in compliance with the IP66 spec, but the jack connected to the external cable is not. You are recommended to install this product below the edge of eaves to prevent the cable from being externally exposed.

### Precautions before installation

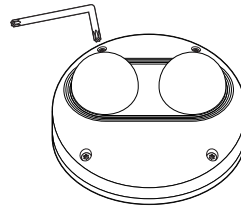
Ensure you read out the following instructions before installing the camera:

- Select an installation site that can hold at least 5 times 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.
- If the product is installed with excessive force, it may cause damage to the camera due to malfunction. Forcing assembly using non-compliant tools may damage the product.
- Do not remove the lens module while the power is on.

### Disassembling

Remove the cover top by unscrewing the four screws in a counterclockwise direction using the supplied star-shaped wrench.

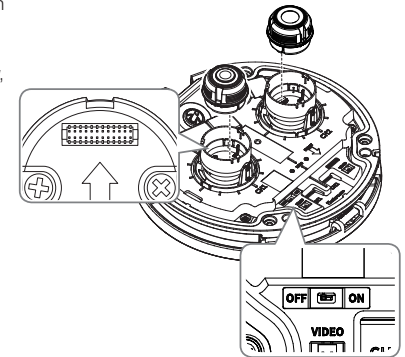
- Note that it is not necessary to loosen the screws completely.



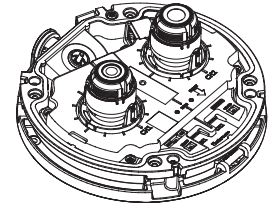
### Mounting lens module

1. Align and fasten the connector of the lens module with the connector of the camera body.

- ! You are recommended to avoid touching the lens separately, as it is shipped from the factory with the focus adjusted during the manufacturing inspection.

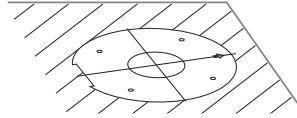


2. Complete the lens mounting process.

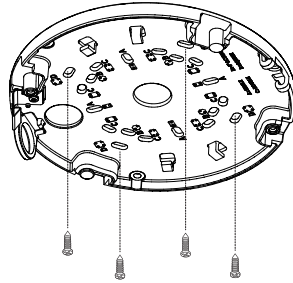


## Installation on a ceiling or wall

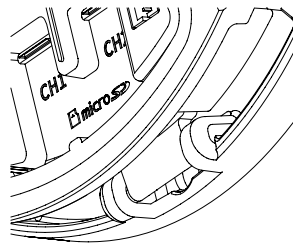
1. Use the provided template to drill holes for installation (diameter 6 mm and minimum depth 45mm) and insert the supplied plastic anchors to the end.



2. Align the mounting hole of the camera with the hole where the plastic anchor is inserted, then tighten the tapping screw.

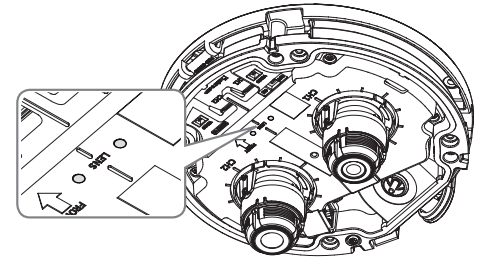


3. Mount the camera body to the mount plate.
  - Mount it to fit the hinges as shown in the image.

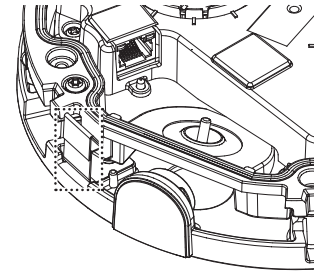


4. Connect a cable to the camera. Be careful not to damage the cable. It should be trimmed up.

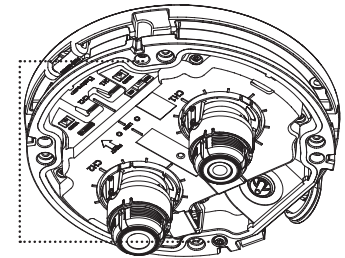
5. If the lens module is not attached correctly, the lens module status light will illuminate red, as shown in the figure. If this occurs, turn off the power switch and reattach the lens module. If attached normally, it will illuminate green and then turn off after approximately 40 seconds.



6. Push it until it clicks into the fixing bracket as shown in the figure.



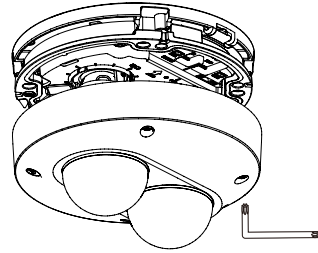
7. Use the camera fixing screws to fix the camera body to the mounting plate.



8. Cover the cover top and turn the screw clockwise using a star-shaped wrench to secure the cover.



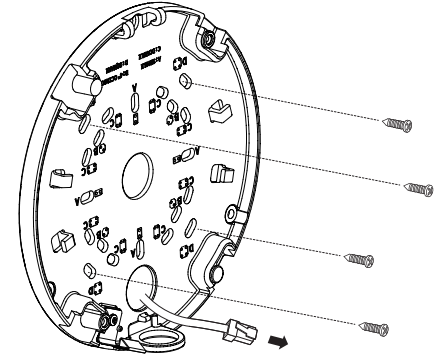
- If you do not tighten the screws completely when fixing the cover, it may cause waterproofing problems. (P66)



## HOW TO INSTALL LAN CABLE FOR DIFFERENT INSTALLATION LOCATIONS

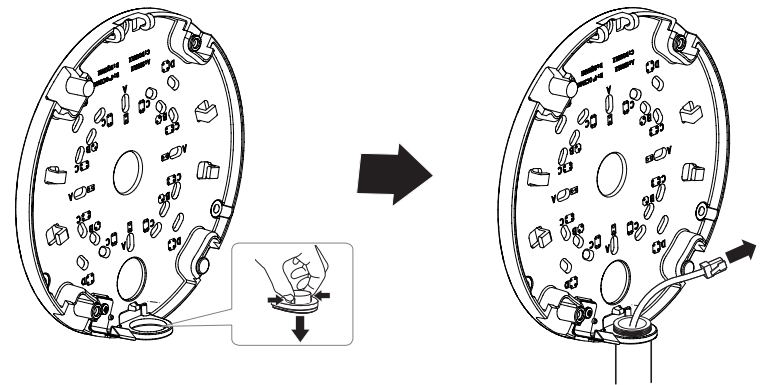
### Directly installing on wall/ceiling

1. Pull the LAN cable out of the hole of the mounting plate.



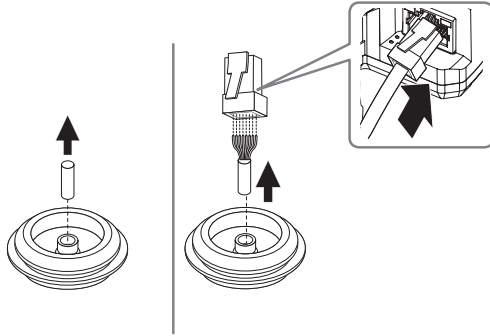
### Installing using pipe

1. Separate the pipe cover of the mount plate by pressing its sides.
2. Place the pipe on the mount plate.
3. Pull the LAN cable out of the hole of the mounting plate.



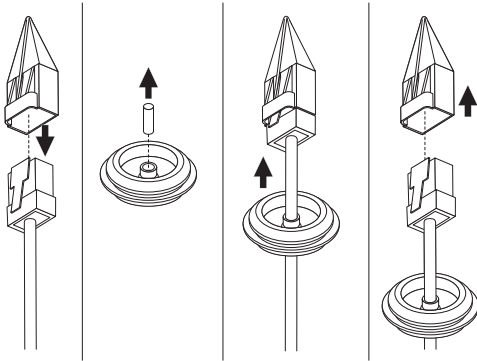
### Method 1. Connecting the LAN cable

1. Pull off the extruded parts of the bush to be used.
2. Route the LAN cable through the hole of the bush and connect to the LAN connector.



### Method 2. Connecting the LAN cable

1. Pull off the extruded part of the bush provided.  
Use the cap installer to pass through the RJ45 cable.

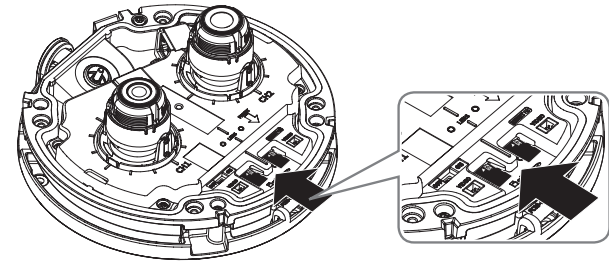


## INSERTING/REMOVING A MICRO SD MEMORY CARD

- ! ■ 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

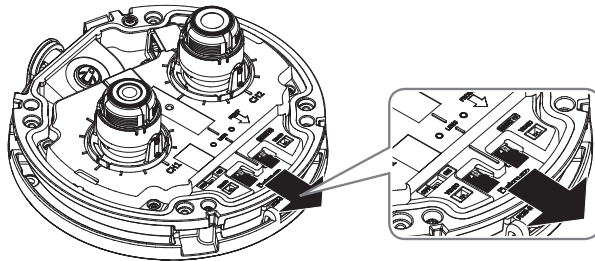
1. Separate the cover top of the camera.
2. Insert a Micro SD card in the arrow direction shown in the figure.



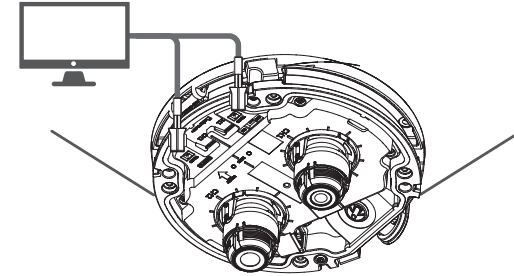
## Removing a Micro SD Memory Card

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

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



## CONNECTING WITH OTHER DEVICE



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

### Powering and networking

Connect the PoE terminal of the camera to the PoE device.

- ! 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

Item	Contents	Remark
Connector	RJ45 (10/100BASE-T)	
Ethernet	10/100BASE-T	
Cable	UTP Category 5e	
Max Distance	100M	DC Resistance ≤ 0.0938 Ω/m
PoE Support	IEEE 802.3af	

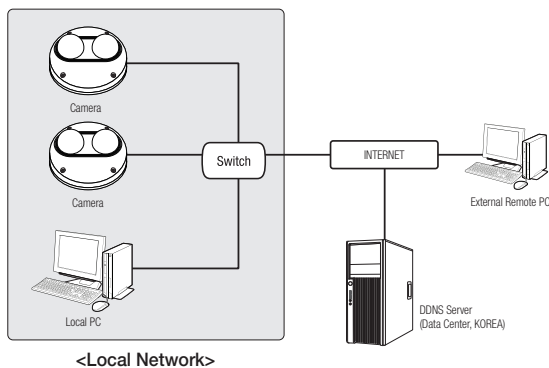
# network connection and setup

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

## CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

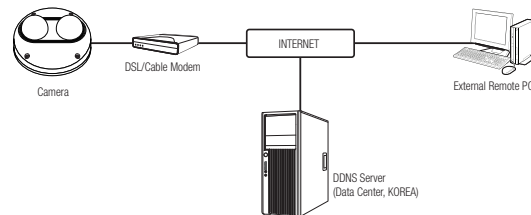
### Connecting to the camera from a local PC in the LAN

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



- A remote PC in an external Internet out of the LAN network may not be able to connect to the camera installed in the intranet if the port-forwarding is not properly set or a firewall is set. In this case, to resolve the problem, contact your network administrator.
- In the IP installer, you can use the initial password, "4321" to set IP Address, Subnet Mask, Gateway, HTTP Port, VNP Port, IP type. After changing the network interface, for better security, access the web viewer and change the password.
- By factory default, the IP address will be assigned from the DHCP server automatically. If there is no DHCP server available, the IP address will be set to 192.168.1.100. To change the IP address, use the IP Installer. For further details on IP Installer use, refer to "Static IP Setup". (Page 16)

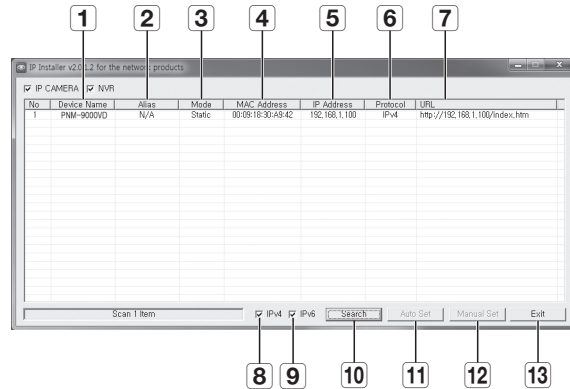
## CONNECTING THE CAMERA DIRECTLY TO A DHCP BASED DSL/CABLE MODEM



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

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

## BUTTONS USED IN IP INSTALLER



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

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

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

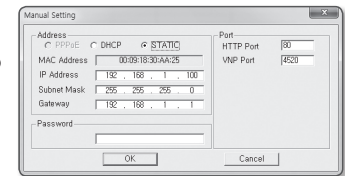
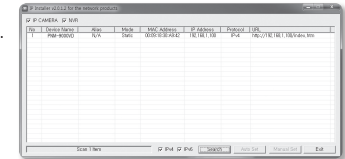
## STATIC IP SETUP

### Manual Network Setup

Run <IP Installer\_v2.XX.exe> to display the camera search list.  
At the initial startup, both [Auto Set] and [Manual Set] will be grayed out.

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

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



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



### If not using a Broadband Router

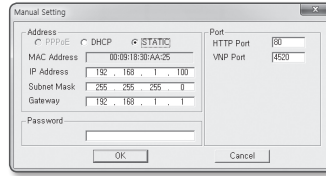
For setting <IP Address>, <Subnet Mask>, and <Gateway>, contact your network administrator.

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

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

#### 5. Enter the password.

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



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

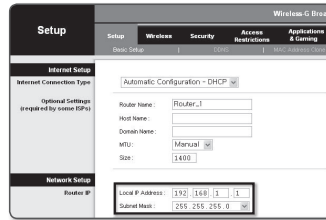
#### 6. Click [OK].

Manual network setup will be completed.

### If using a Broadband Router

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

- The settings may differ depending on the connected Broadband Router model.  
For more information, refer to the user manual of the applicable router.
- For more information about port forwarding of the broadband router, refer to “Port Range Forward (Port Mapping) Setup”. (Page 18)



### If the Broadband Router has more than one camera connected

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

	Category	Camera #1	Camera #2
IP related settings	IP Address	192.168.1.100	192.168.1.101
	Subnet Mask	255.255.255.0	255.255.255.0
	Gateway	192.168.1.1	192.168.1.1
Port related settings	HTTP Port	8080	8081
	VNP Port	4520	4521

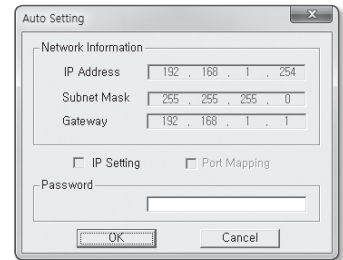
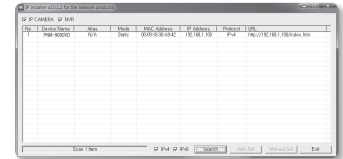
- If the <HTTP Port> is set other than 80, you must provide the <Port> number in the address bar of the Internet browser before you can access the camera.  
ex) http://IP address : HTTP Port  
http://192.168.1.100:8080

### Auto Network Setup

Run <IP Installer\_v2.XX.exe> to display the camera search list.  
At the initial startup, both [Auto Set] and [Manual Set] will be grayed out.

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

1. Select a camera in the search list.  
Check the MAC address of the camera on the camera's label. Both the [Auto Set] and [Manual Set] buttons will be activated.
2. Click [Auto Set].  
The Auto Setting dialog appears.  
The <IP Address>, <Subnet Mask>, and <Gateway> will be set automatically.
3. Enter the password.  
Enter the password of “admin” account, which was used to access the camera.
4. Click [OK].  
Auto network setup will be completed.



- 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.

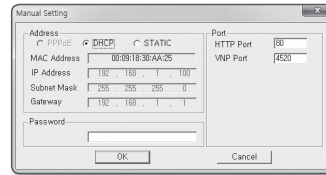
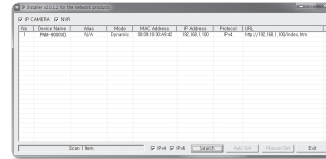
## DYNAMIC IP SETUP

### Dynamic IP Environment Setup

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

### Checking the Dynamic IP

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

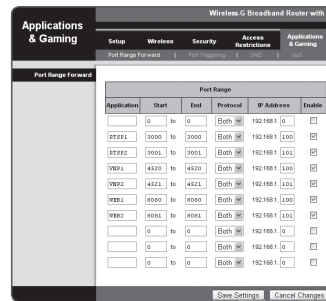


## PORT RANGE FORWARD (PORT MAPPING) SETUP

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

### Manual Port Range Forwarding

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



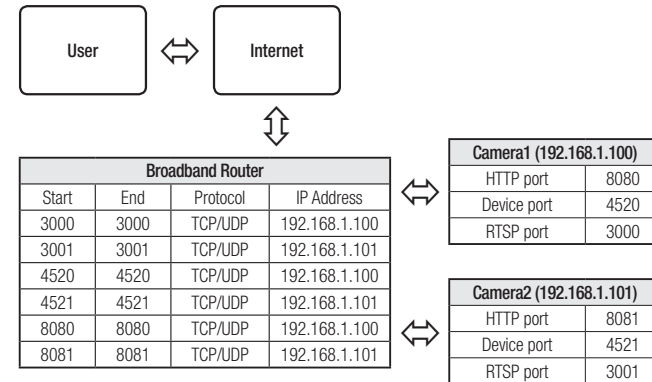
3. When done, click **[Save Settings]**.  
Your settings will be saved.

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

### Setting up Port Range Forward for several network cameras


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

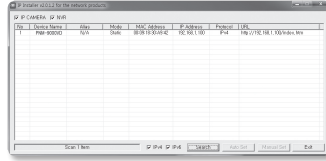
When Camera1 and Camera2 are connected to a router :



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

## CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

1. Run the IP Installer.  
It will scan for connected cameras and display them as a list.
  2. Double-click a camera to access.  
The Internet browser starts and connects to the camera.
-  ■ Access to the camera can also be gained by typing the camera's IP address in the address bar of the Internet browser.



## CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

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

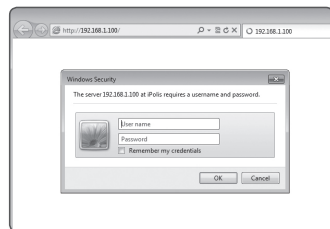
1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.  
ex) 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

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

## CONNECTING TO THE CAMERA

### Normally, you would

1. Launch the Internet browser.
2. Type the IP address of the camera in the address bar.
  - ex) • IP address (IPv4) : 192.168.1.100 → <http://192.168.1.100>
  - the Login dialog should appear.
  - IP address (IPv6) : 2001:230:abcd:ffff:0000:0000:ffff:1111 → [http://\[2001:230:abcd:ffff:0000:0000:ffff:1111\]](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 a DHCP-based cable modem or DSL modem, the IP address will change each time it tries to connect to the ISP (the company you subscribed to). If this is the case, you will not be informed of the IP address changed by DDNS.

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

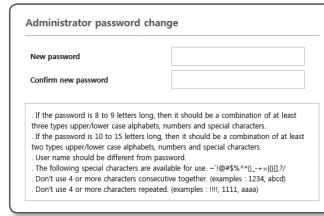
To register your device to the <DDNS> server, visit <http://ddns.hanwha-security.com> and register your device first, and then set the Web Viewer's <Network> - <DDNS> to <Wisenet DDNS>, as well as providing <Product ID> that had been used for DDNS registration.

## PASSWORD SETTING

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

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

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



Administrator password change

New password

Confirm new password

. If the password is 8 to 9 letters long, then it should be a combination of at least three types uppercase/lower case alphabets, numbers and special characters.  
. If the password is 10 to 15 letters long, then it should be a combination of at least two types uppercase/lower case alphabets, numbers and special characters.  
. User name should be different from password.  
. The following special characters are available for use. ~ ! @ # \$ % ^ \* ( ) \_ - + = | [ ] , . ? /  
. Don't use 4 or more characters consecutive together. (examples : 1234, abcd)  
. Don't use 4 or more characters repeated. (examples : iii, 1111, aaaa)

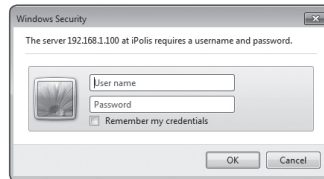
## LOGIN

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

1. Enter “**admin**” in the <User name> input box.  
The administrator ID, “**admin**”, is fixed and can not be changed.
2. Enter the password in the <Password> input field.
3. Click [OK].

If you have logged in successfully, you will the Live Viewer screen.

- When you access the camera web viewer, pay special attention to the security by checking whether the image data is encrypted.
- If you check the “**Remember my credentials**” option when your input is done, in future you will be logged in automatically without being prompted to enter the login information.
- You will experience the best video quality if the screen size is 100%. Reducing the ratio may cut the image on the borders.



Windows Security

The server 192.168.1.100 at ipolis requires a username and password.

User name

Password

Remember my credentials

OK Cancel

## 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 (PNM-9000VD)**

Items		Description
<b>Video</b>	<b>Video Out</b>	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation
<b>Operational</b>	<b>Camera Title</b>	Displayed up to 85 characters : Each CH - W/W : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
	<b>Day &amp; Night</b>	Auto (Electrical) / Color / B/W / Schedule
	<b>Backlight Compensation</b>	Off, BLC, HLC(Masking/Dimming), WDR
	<b>Wide Dynamic Range</b>	120dB
	<b>Digital Noise Reduction</b>	SSNRV (2D+3D Noise Filter) (Off / On)
	<b>Digital Image Stabilization</b>	Off / On
	<b>Defog</b>	Auto / Manual / Off
	<b>Motion Detection</b>	Off / On (8ea, 8point polygonal zones)
	<b>Privacy Masking</b>	Off / On (32ea, polygonal zones) - Color : Grey/Green/Red/Blue/Black/White - Mosaic
	<b>Gain Control</b>	Off / Low / Middle / High
	<b>White Balance</b>	ATW / AWC / Manual / Indoor / Outdoor (included Mercury & Sodium)
	<b>LDC</b>	Off / On (5level with Min/Max)
	<b>Electronic Shutter Speed</b>	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
	<b>Video Rotation</b>	Flip (On/Off) Mirror (On/Off) Hallway view (0°/90°/270°)

Items		Description
<b>Operational</b>	<b>Analytics</b>	Defocus detection, Directional detection, Fog detection, Face detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line
	<b>Alarm Triggers</b>	Motion Detection, Video Analytics, Network Disconnect
	<b>Alarm Events</b>	<ul style="list-style-type: none"> <li>• File upload via FTP, E-Mail</li> <li>• Notification via E-Mail</li> <li>• Local storage (SD/SDHC/SDXC) recording at Event Triggers</li> </ul>
<b>Network</b>	<b>Ethernet</b>	RJ-45 (10/100BASE-T)
	<b>Video Compression</b>	H.265/H.264 : Main/Baseline/High, MJPEG
	<b>Resolution</b>	2560x1920, 2560x1440, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
	<b>Max. Framerate</b>	H.265/H.264: Max. 30fps/25fps (60Hz/50Hz) MJPEG : Max. 30fps/25fps (60Hz/50Hz)
	<b>Smart Codec</b>	Manual (5ea area), WiseStreamII
	<b>Video Quality Adjustment</b>	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
	<b>Bitrate Control</b>	H.264/H.265 : CBR or VBR MJPEG : VBR
	<b>Streaming</b>	Unicast (20 users) / Multicast Multiple streaming (Up to 10 profiles)
	<b>Protocol</b>	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, PIM-SM, UPnP, Bonjour, LLDP

Items	Description
Network	<b>Security</b> HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP)
	<b>Edge Storage</b> SD/SDHC/SDXC 2slot (Each CH) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. Local PC for Instant Recording
	<b>Application Programming Interface</b> ONVIF Profile S SUNAPI (HTTP API)
	<b>Webpage Language</b> English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
	<b>Web Viewer</b> 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)
	<b>Environmental</b>
<b>Operating Temperature / Humidity</b> -40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH	
<b>Storage Temperature / Humidity</b> -50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH	
<b>Certification</b> IP66, IK10	
<b>Electrical</b>	
<b>Input Voltage</b> PoE(IEEE802.3af, Class3)	
<b>Power Consumption</b> Max. 12.95W Typical 10.8W	
<b>Mechanical</b>	
<b>Color / Material</b> White / Aluminum	
<b>RAL Code</b> RAL9003	
<b>Product dimensions / weight</b> Ø197.6x84mm (7.78x3.31"), 1250g (2.76 lb)	

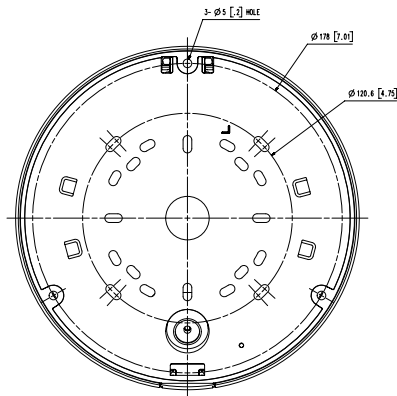
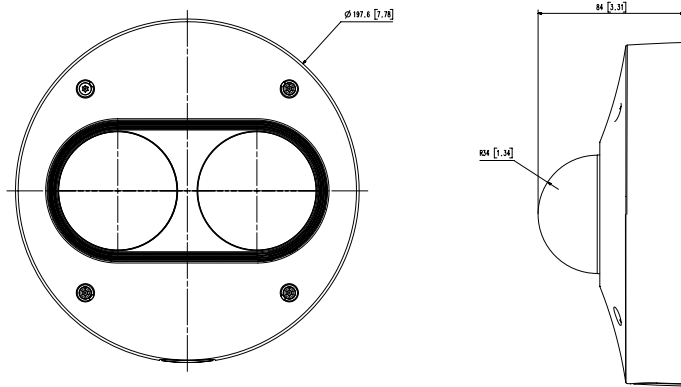
## SPECIFICATION (LENS MODULE)

Items	Description			
	SLA-5M3700D	SLA-5M4600D	SLA-5M7000D	
Video	<b>Imaging Device</b>	1/1.8" 5M CMOS		
	<b>Effective Pixels</b>	2616(H) x 1976(V)		
	<b>Min. Illumination</b>	Color : 0.16Lux(F1.6, 1/30sec, 30IRE) B/W : 0.16Lux(F1.6, 1/30sec, 30IRE)		
Lens	<b>Focal Length (Zoom Ratio)</b>	3.7mm fixed focal	4.6mm fixed focal	7.0mm fixed focal
	<b>Max. Aperture Ratio</b>	F1.6		
	<b>Angular Field of View</b>	H:95.8°, V:70°, D:123.6°	H: 76.1°, V: 56.8°, D: 96.8°	H: 49.5°, V: 36.9°, D: 62.2°
	<b>Lens Type</b>	Fixed focal		
	<b>Mount Type</b>	M12 Lens module with main unit		
<b>Pan / Tilt / Rotate</b>	<b>Pan / Tilt / Rotate Range</b>	-90° ~ +90° / +36° ~ +73° / -180° ~ +180°	-90° ~ +90° / +21° ~ +85° / -180° ~ +180°	-90° ~ +90° / +12° ~ +93° / -180° ~ +180°
Operational	<b>Wide Dynamic Range</b>	120dB		
	<b>Day &amp; Night</b>	Auto(Electrical)		
Mechanical	<b>Color / Material</b>	Black / plastic		
	<b>Product dimensions / Weight</b>	Ø35.5x35.9mm(1.40x1.41") / 35g(0.08 lb)		

PRODUCT OVERVIEW

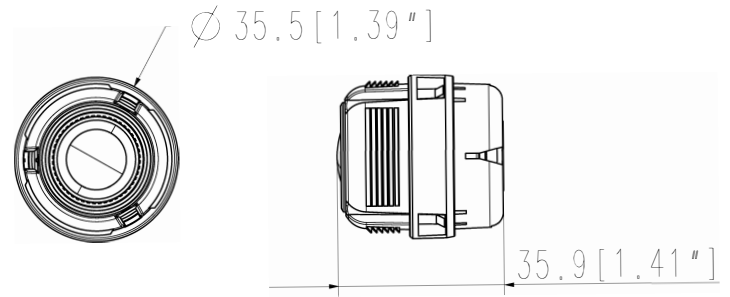
PNM-9000VD

Unit : mm [inch]



Lens Module

Unit : mm [inch]





## TROUBLESHOOTING

PROBLEM	SOLUTION
No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS.	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>
I can't access the camera from a web browser.	<ul style="list-style-type: none"> <li>Check to make sure that the camera's Network settings are appropriate.</li> <li>Check to make sure that all network cables have been connected properly.</li> <li>If connected using DHCP, verify that the camera is able to acquire dynamic IP addresses without any problem.</li> <li>If the camera is connected to a Broadband Router, verify that port forwarding is properly configured.</li> </ul>
Viewer got disconnected during monitoring.	<ul style="list-style-type: none"> <li>Connected Viewers become disconnected upon any change to camera or network configurations.</li> <li>Check all network connections.</li> </ul>
The camera connected to the network is not detected in the IP installer program.	<ul style="list-style-type: none"> <li>Turn off the firewall settings on your PC and then search the camera again.</li> </ul>
Images overlap.	<ul style="list-style-type: none"> <li>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.</li> </ul>
No image appears.	<ul style="list-style-type: none"> <li>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.</li> <li>Check whether the lens module is operating normally.</li> </ul>

PROBLEM	SOLUTION
<MD / VA> of <Event> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred.	<ul style="list-style-type: none"> <li>Verify the settings in the following sequence:               <ol style="list-style-type: none"> <li>Check &lt;Data &amp; Time&gt; settings.</li> <li>The &lt;MD / VA&gt; should be set to &lt;Enable&gt;.</li> <li>Check if the &lt;E-mail&gt; option of &lt;Event setup&gt; menu is checked to use.</li> </ol> </li> </ul>
Can I define event rules even when I don't use <MD / VA>?	<ul style="list-style-type: none"> <li>Yes, it can be. You can set rules for events despite of the intelligent video analysis setting.</li> </ul>
Cannot record into the Micro SD memory card.	<ul style="list-style-type: none"> <li>Check if the memory card is defective.</li> </ul>
Micro SD memory card is inserted but the camera does not operate properly.	<ul style="list-style-type: none"> <li>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</li> <li>Format the memory card again in &lt;Setup&gt; → &lt;Event&gt; → &lt;Storage&gt; menu.</li> </ul>

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Component Name	License	URL
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iproute2-4.3.0	GPL 2.0	
iptables-1.4.21	GPL 2.0	<a href="http://ftp.netfilter.org/pub/iptables">http://ftp.netfilter.org/pub/iptables</a>
ethtool-4.2	GPL 2.0	
mtd-1.5.2	GPL 2.0	<a href="ftp://ftp.infradead.org/pub/mtd-utils">ftp://ftp.infradead.org/pub/mtd-utils</a>
mi-diag-2.11	GPL 2.0	
rp-pppoe-3.11	GPL 2.0	<a href="http://www.roaringpenguin.com/pppoe/">http://www.roaringpenguin.com/pppoe/</a>
wpa_supplicant-2.5	GPL 2.0	
bash-4.3.30	GPL 3.0	
zeroconf	GPL 2.0	

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Component Name	License	URL
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inetutils	LGPL 3.0	
neon-0.29.6	LGPL 2.0	<a href="http://www.webdav.org/neon/">http://www.webdav.org/neon/</a>

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2. "Source Code" means a source program, including related comments and documentations, for the T-Kernel and the Ported Source Code defined in Article 2.8 which is registered with T-Engine Forum.
3. "Hardware-dependent Part" means the part of the Source Code which depends on hardware and needs to be changed when the Source Code is ported and operated on the target hardware, and is designated and separated as such part.
4. "Compiler-dependent Part" means the part of the Source Code which depends on compiler and needs to be changed when the Source Code is ported and operated on the target hardware, and is designated and separated as such part.
5. "Header File" means the part of the Source Code which contains definitions necessary to develop application programs.
6. "T-Engine Hardware" means the hardware which is manufactured in accordance with the T-Engine Hardware specifications or the  $\mu$ T-Engine Hardware specifications issued by T-Engine Forum, and registered with T-Engine Forum.
7. "Similar Hardware to T-Engine Hardware" means any hardware (including software which emulates hardware) other than that defined in Article 2.6 above, on which the T-Kernel can be operated.
8. "Ported Source Code" means a source program produced from the Source Code by modifying only its Hardware-dependent Part and/or Compiler-dependent Part to enable it to be operated on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware. The Ported Source Code which is registered with T-Engine Forum shall be included in the Source Code.
9. "Modified Source Code" means a source program modified from the Source Code for the purpose of improving its performance, increasing or decreasing its function, and the like. The Ported Source Code shall not be included in the Modified Source Code.
10. "Binary Code" means an executable code form which is created by compiling programs, which include all or part of the Source Code or the Modified Source Code.
11. "Derivative Work" means the Modified Source Code or the Binary Code.
12. "Embedded Product" means any product which operates with executable code form of the Source Code, the Modified Source Code or the Binary Code loaded on its hardware.
13. "End User" means a consumer who uses the Embedded Product.
14. "System Developer" means any person who develops the Embedded Product by itself or has a third party develop the same, and provides, whether with or without payment, the End User with the Embedded Product.
15. "Distributor of Modification" means any person who produces the Modified Source Code and, whether with or without payment, distributes the same to any third party.

**16.** "Patch for Modification" means a difference, program, system, or the like in order to create the Modified Source Code from the Source Code or the Binary Code thereof.

**17.** "Vicarious Execution of Patch Processing" means vicarious execution service to create the Modified Source Code applying the Patch for Modification to the Source Code or the Binary Code thereof.

**18.** "Source Code User" means a person who uses the Source Code.

**19.** "Distribution" means any of the following acts:

1. to transmit a work to a large number of specific persons through the Internet communication, broadcasting, and the like;
2. to transmit a work to the general public through the Internet communication, broadcasting, and the like automatically in response to a request from the public; and
3. to distribute a copy of a work to the general public or a large number of specific persons.

#### **Article 3. Copyright**

1. The copyrights of the Source Code shall be owned by Ken Sakamura.

#### **Article 4. License of Source Code**

1. As provided for in this Article, T-Engine Forum shall provide, and grant a license to use, the Source Code free of charge to any person who has taken the necessary procedure for registration as prescribed by T-Engine Forum and agreed to the T-License.

2. The Source Code shall be distributed exclusively by T-Engine Forum. Any person who obtains the Source Code under Article 4.1 above shall not make any re-Distribution of the Source Code.

3. In accordance with the license granted under Article 4.1 above, the Source Code User may perform the following acts:

1. to copy and/or modify the Source Code provided by T-Engine Forum hereunder for its own research, development and the like.
  2. to run the Source Code provided by T-Engine Forum hereunder for its own research, development and the like.
  3. to run the Source Code modified in accordance with the provision of Article 4.3 (1) above for its own research, development and the like.
  4. to distribute the Binary Code created from the Source Code provided by T-Engine Forum hereunder or from the Source Code modified in accordance with the provision of Article 4.3 (1) above.
4. In accordance with the license granted under Article 4.1 above, the System Developer may perform the following acts:

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

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

#### **Article 5. Distribution of Modified Source Code**

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

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

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

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

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

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

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

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

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

#### **Article 6. Distribution and Registration of the Ported Source Code**

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

Source Code on the T-Engine Hardware or the Similar Hardware to T-Engine Hardware:

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

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

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

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

1. The member shall confirm that the object hardware is the T-Engine Hardware or the Similar Hardware to T-Engine Hardware.
2. The member shall provide T-Engine Forum with a complete set of operational environment for the object hardware and T-Kernel free of charge when requesting the distribution.
3. The member shall submit test results of the Ported Source Code to T-Engine Forum when requesting the distribution.

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

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

#### **Article 7. Use for Other Purpose**

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

#### **Article 8. Limited Warranty**

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

2. Neither T-Engine Forum nor the copyright holder of the Source Code warrants that the Source Code will fit for any particular purpose of the Source Code User.

3. Neither T-Engine Forum nor the copyright holder of the Source Code warrants that the Source Code does not infringe any third party's industrial property rights. In no event shall T-Engine Forum and the copyright holder of the Source Code be liable for any dispute which may arise between the Source Code User and a third party in connection with the third party's industrial property rights.

#### **Article 9. Indemnity**

1. Neither T-Engine Forum nor the copyright holder of the Source Code shall be liable for any damages (including, but not limited to, damages resulting from loss of profit, business interruption, loss of business information or any other pecuniary damage) arising out of use or impossibility of use of the Source Code, even if T-Engine Forum and the copyright holder have been informed of the possibility of such damages.

#### **Article 10. Breach of Agreement**

1. In case that T-Engine Forum considers that this License Agreement is breached or that the popularization of T-Kernel is obstructed, T-Engine Forum shall take measures to correct such breach or such obstruction, take measures on the ground of copyright infringement, or take any other necessary measures against the breaching person or the obstructing person, regardless of whether or not the said person is a member of T-Engine Forum.

2. In case of breach of this License Agreement by a member of T-Engine Forum, T-Engine Forum may take appropriate measures against the member; for example, the member is disqualified from membership, depending on what kind of breach has been committed by it.

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

#### **Article 11. Governing Law and Language**

1. This License Agreement shall be governed by and interpreted under the laws of Japan.

2. This License Agreement is executed in both Japanese text and English text provided that the Japanese text shall govern the interpretation and performance of this License Agreement.

### **Apache License 2.0**

Component	Name License	URL
mDNSResponder_bonjour	Apache License 2.0	<a href="http://www.apache.org/licenses/LICENSE-2.0">http://www.apache.org/licenses/LICENSE-2.0</a>

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Component Name	License	URL
bzip2-1.0.6	Bzip2	<a href="http://www.bzip.org/">http://www.bzip.org/</a>

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Julian Seward, [jseward@bzip.org](mailto:jseward@bzip.org)

bzip2/libbzip2 version 1.0.5 of 10 December 2007

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Component Name	License
iperf-2.0.5	University of Illinois / NCSA Open Source

iperf performance test

Mark Gates

Ajay Tirumala

Jim Ferguson

Jon Dugan

Feng Qin

Kevin Gibbs

John Estabrook

National Laboratory for Applied Network Research

National Center for Supercomputing Applications

University of Illinois at Urbana-Champaign

<http://www.ncsa.uiuc.edu>

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Component Name	License	URL
php-5.2.17	PHP 3.01	<a href="http://www.php.net/distributions">http://www.php.net/distributions</a>

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Component Name	License	URL
zlib-1.2.8	zlib / libpng	<a href="http://zlib.net/">http://zlib.net/</a>

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Jean-loup Gailly Mark Adler

[jloup@gzip.org](mailto:jloup@gzip.org) [madler@alummi.caltech.edu](mailto:madler@alummi.caltech.edu)

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).



Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



Hanwha Techwin cares for the environment at all product manufacturing stages, and is taking measures to provide customers with more environmentally friendly products.

The Eco mark represents Hanwha Techwin's devotion to creating environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.



### Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.



### Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

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**Head Office**

6, Pangyo-ro 319 beon-gil, Bundang-gu, Seongnam-si,  
Gyeonggi-do, 463-400 Rep. of KOREA  
Tel : +82.70.7147.8753 Fax : +82.31.8018.3740  
[www.hanwha-security.com](http://www.hanwha-security.com)

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**Hanwha Techwin America**

500 Frank W. Burr Blvd. Suite 43 Teaneck, NJ 07666  
Toll Free +1.877.213.1222 Direct +1.201.325.6920  
Fax +1.201.373.0124  
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**Hanwha Techwin Europe**

Heriot House, Heriot Road, Chertsey, Surrey, KT16 9DT, United Kingdom  
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