

WISENET

NETWORK CAMERA

User Manual

PNM-9000VQ
SLA-2M2400Q/2M2800Q/2M3600Q/
2M6000Q/5M3700Q/5M4600Q/5M7000Q



Network Camera

User Manual

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

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

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

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

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth. (Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
7. Do not block any ventilation openings, Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/ accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lighting storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from / PoE , 0.6A. (PNM-9000VQ)
16. This Lens module has to be connected with equipment, which supplied by a power supply unit marked "Class 2" or "LPS". (SLA-2M2400Q/2M2800Q/2M3600Q/2M6000Q/5M3700Q/5M4600Q/5M7000Q)
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.



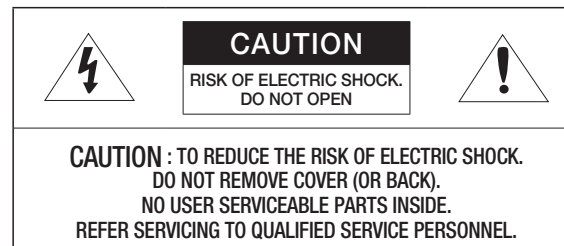
WARNING

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.

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.

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PRODUCT FEATURES

- **Lens options according to focal length**
You can select the lens you want and attach it to the camera.
- **4-way Camera**
Each of the four camera lenses monitors a different direction.
- **Dustproof/Waterproof**
The dust-resistant/water-resistant design protects the product from rain and dust when installed outdoors. (IP66)
- **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.
- **ONVIF Compliance**
This product supports ONVIF Profile S.
For more information, refer to www.onvif.org.



RECOMMENDED PC SPECIFICATIONS










- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
 - Supported OS : MS Windows, Mac OS X
 - **Plug-in free web viewer**
Supported web browsers : Google Chrome, MS Edge, Mozilla Firefox (Windows 64bit only), Apple Safari (Mac OS X only)
- ※ Please see the appendix for detailed information on verified OS and browsers.
Some functions may be restricted even in supported browsers.




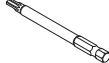


RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS

- 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-9000VQ)

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
	L Wrench	1	Used to remove and replace the dome cover
	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)

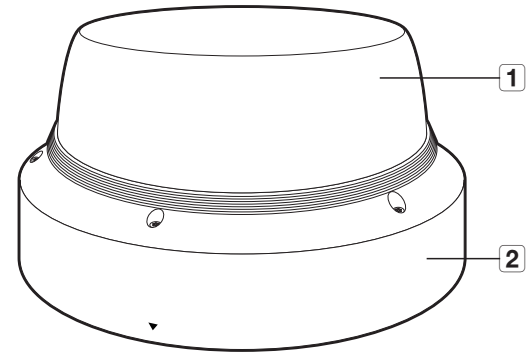
Appearance	Item Name	Quantity	Description
	Machine Screws	4	Used for assembling the dome case when installing the product on the pipe, wall mount, etc. or blocking a hole.
	Cap Installer	1	Used to connect the RJ45 cable.
	Card-type moisture absorbent	1	Attached when installed.
	Drill bit	1	Used for dome cover disassembly, assembly and camera installation.
	Cable bush	1	Used to connect the LAN cable with a diameter of $\varnothing 7\sim 8.5$.
	Ferrite Core	1	Used to block the high-frequency component(s) contained in the power supply and the signal end from being radiated to the outside <ul style="list-style-type: none"> It is recommended to wind it 2 times around the power cable and the LAN cable before use.

WHAT'S INCLUDED (LENS MODULE -OPTIONAL)

Appearance	Item Name	Quantity	Description	Model Name
	Lens module	1	Mounted to PNM-9000VQ	SLA-2M2400Q
		1		SLA-2M2800Q
		1		SLA-2M3600Q
		1		SLA-2M6000Q
		1		SLA-5M3700Q
		1		SLA-5M4600Q
		1		SLA-5M7000Q

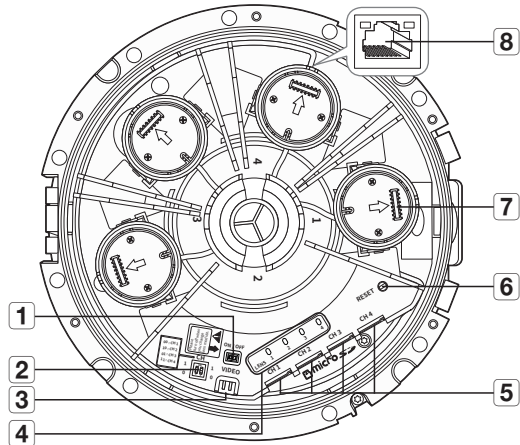
AT A GLANCE (PNM-9000VQ)

Appearance



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

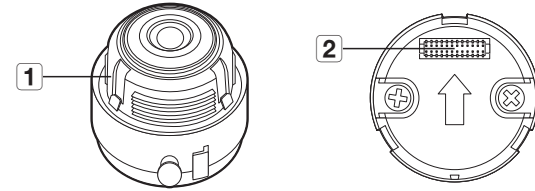
Components



Item	Description
1 Power On/Off switch	Switch used to turn the product On/off. I Use it only to replace your lens module.
2 DIP switch for changing the channel	Change the DIP switches to specify the channel you want to use to view the installation video.
3 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.
4 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)
5 Micro SD Memory Card Compartment	Compartment for the Micro SD memory card.
6 Reset Button	The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. I If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the IP Installer program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.
7 Lens module mounting portion	This is the terminal to mount the lens module.
8 PoE+ Connection Terminal	The terminal connects power and network through the PoE+ cable.

AT A GLANCE (LENS MODULE)

Appearance



Item	Description
1 Lens module	This is a lens module that records video.
2 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.

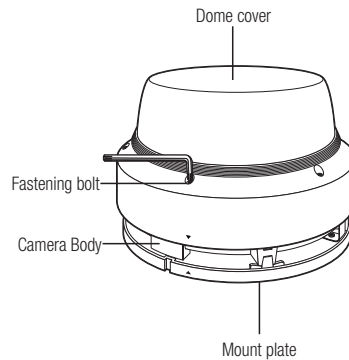
Precautions before installation

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

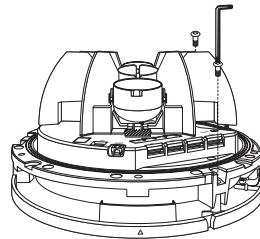
- Select an installation site that can hold at least 5 times the camera's weight.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside personal belongings from the site, just in case.
- If the 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

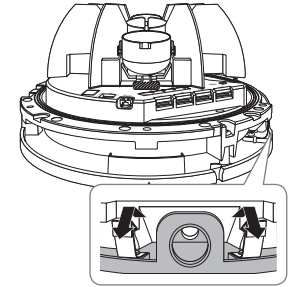
1. Remove the dome cover by loosening the fastening bolt of the dome cover. This can be done by turning it counterclockwise using the Allen key or drill bit provided.



2. Loosen the fastening screw on the camera body.

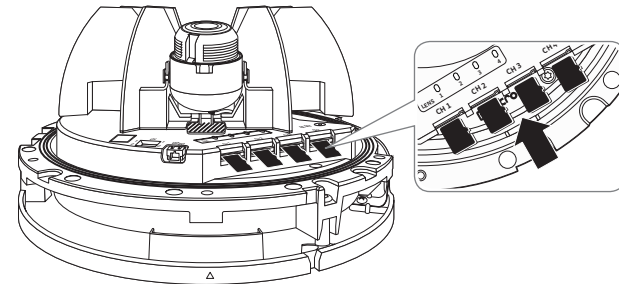


3. Remove the camera body and mounting plate by pulling the plate spring, as shown in the figure.



Inserting a Micro SD Memory Card

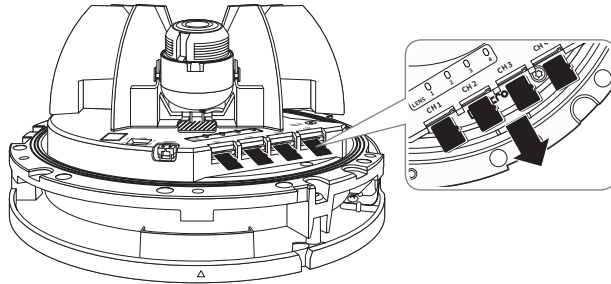
1. Remove the dome cover of the camera.
2. Insert a Micro SD card in the arrow direction shown in the figure.



- ! Disconnect the power cable from the camera before inserting the Micro SD memory card.
- Do not forcefully insert it in the reverse direction. It might damage your Micro SD memory card and your product.
- 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.

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.

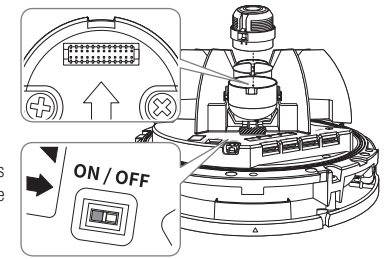


- ! You should save an SD card for each channel.
- Please note that if you firmly push and release the Micro SD memory card when it is ejected, it may pop out.
- Before removing the Micro SD memory card, in <Storage>, set the device to <Off> and press the [Apply] button and turn the camera off.
- If 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.

Mounting lens module

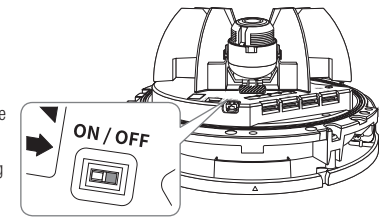
1. Align and fasten the connector of the lens module with the connector of the camera body.

- ! Install the lens module while power is not connected (PoE+).
- Check if the power switch is "OFF" before installing the lens module.
- 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.
3. Connect power to the product (PoE+).

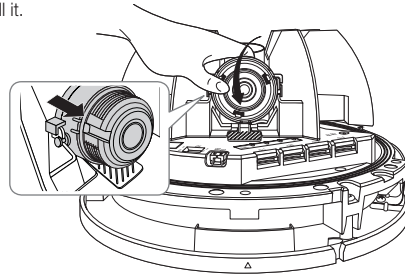
- ! If you want to replace the lens module while connecting power to the product (PoE+), turn the power switch "OFF", replace the lens module, and then turn the power switch "ON".
- Be careful not to use any tool with a sharp point when handling the switch since it might be damaged.
- Be careful not to forcefully handle the switch since it might be damaged.



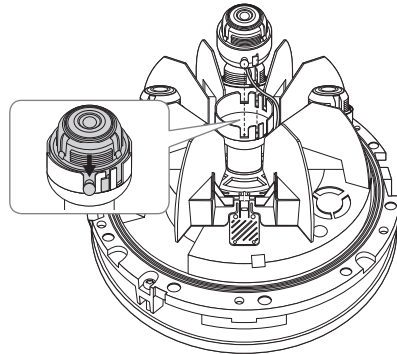
How to install using the perpendicular falling method

You can move the lens for only one channel to see the video after installing it in the direct-lit manner. In this case, the lens direction of the moved channel can be tilted up to 90 degrees.

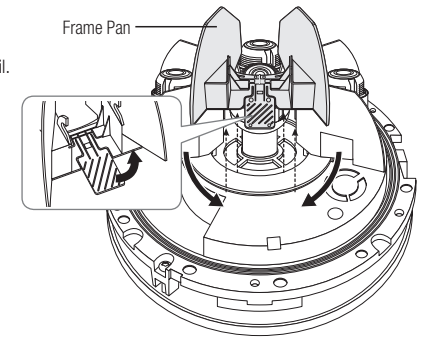
1. Tilt the lens module part forward-facing and then pull it.



2. Align the groove with the center of the rotating part.



3. Lift the part with diagonal lines to release the frame pan.
4. Move the three channel lenses along the bottom rail.

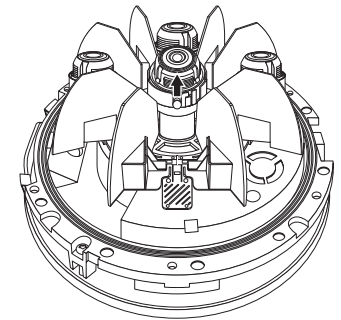


How to install using the tilting method

You can move the lenses of CH1 - CH4 along the bottom rail to view videos by installing them using the tilting method.

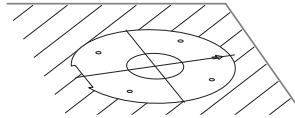
In this case, the orientation of the lens cannot be tilted by 90 degrees.

1. Mount the frame pan.
2. Remove the direct-lit lens from the rotation center.
3. Move the four channel lenses along the bottom rail.

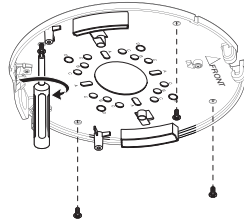


Installation on a ceiling or wall

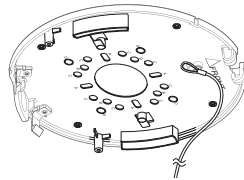
1. Use the provided template to drill holes for installation (diameter 6 mm and minimum depth 45mm) and insert the supplied plastic anchors to the end.



2. Align the holes of the mount plate for installation with the holes inserted with plastic anchors, and fasten the tapping screws.



3. Connect the safety cable.



4. Mount the camera body to the mount plate.
■ Mount it to fit the hinges as shown in the image.

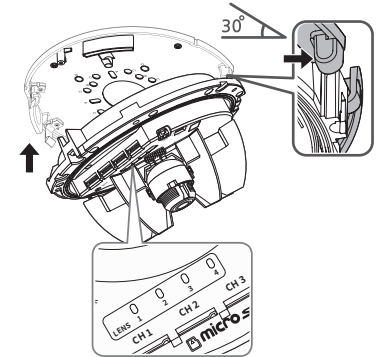
5. Connect the terminal inside camera with the required cable.

! ■ 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 in the pin spring.

7. Adjust the lens to the desired direction by referring to "Adjusting the monitoring direction for the camera". (Page 17)

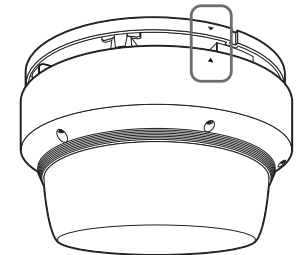
■ If you tilt the lens, you may need to adjust the lens as this may block the screen.



8. Assemble the dome cover.

■ Align the arrows when assembling the dome cover.

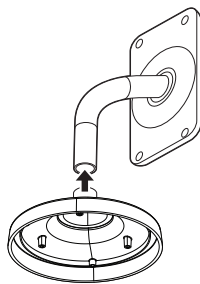
■ To ensure there are no issues with waterproofing, tighten the fastening bolts tightly using the Allen key or drill bit.



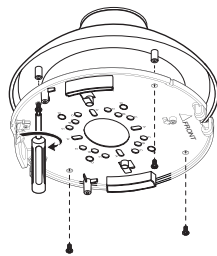
Attaching to the unbundled adapter

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

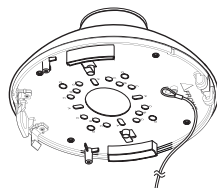
1. Install the hanging mount to the wall mount adapter.
 - Wall mount adapters and hanging mounts are sold separately.



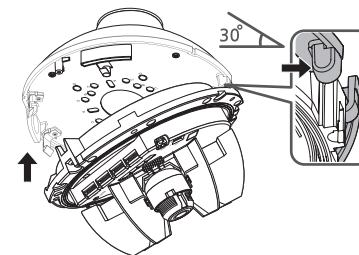
2. Connect the mounting plate and the hanging mount.



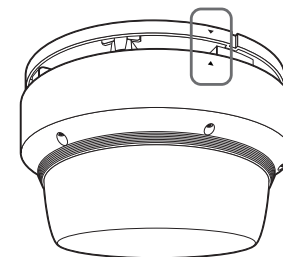
3. Connect the safety cable.



4. Mount the camera body to the mount plate.
 - Mount it to fit the hinges as shown in the image.
5. Connect the terminal inside camera with the required cable.
6. Push in the pin spring.
7. Adjust the lens to the desired direction by referring to "Adjusting the monitoring direction for the camera". (Page 17)
 - If you tilt the lens, you may need to adjust the lens as this may block the screen.



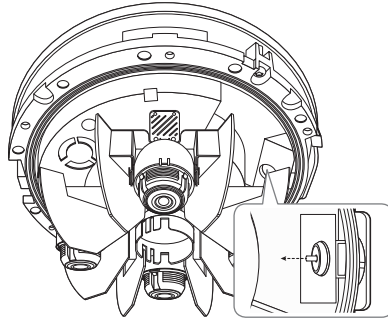
8. Assemble the dome cover.
 - Align the arrows when assembling the dome cover.
 - To ensure there are no issues with waterproofing, tighten the fastening bolts tightly using the Allen key or drill bit.



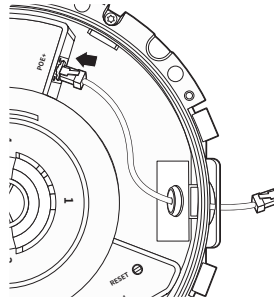
Method 1. Connecting the LAN cable

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

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

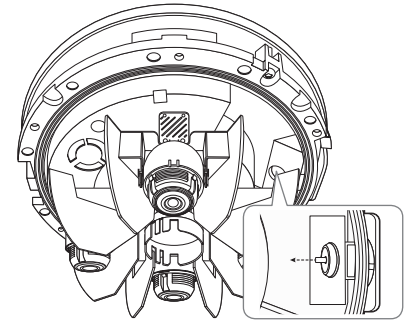


3. Insert the LAN cable through the hole appeared after removing the projected part in step 2 above.
4. Remove the sheath with a cable cutter, and align the cables.
5. Connect the LAN cable with a LAN connector, and insert it into the LAN tool.
6. Connect the finished cable to the Ethernet port.

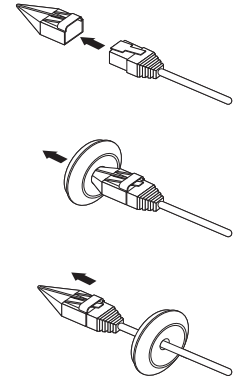


Method 2. Connecting the LAN cable

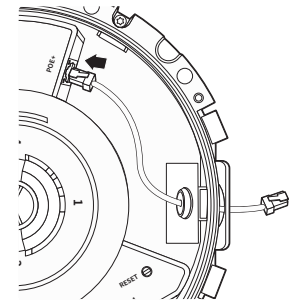
1. Remove the dome cover and the case.
2. Pull out the long projected part of the rubber plug on the bottom and remove it as shown in the figure.
3. Pull the rubber cover over the hole to remove it.



4. Use the Cap Installer to allow the RJ45 cable to pass through.



5. Insert the rubber stopper again and connect the LAN cable to the Ethernet terminal.




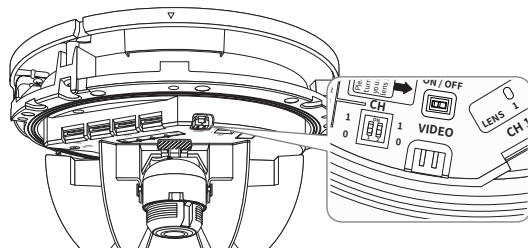
How to set up channels to monitor for installation

The camera body has a channel DIP switch, as shown in the figure.

You can change the channel of the camera using the channel DIP switches.

CH1	CH2	CH3	CH4
00	01	10	11

-  ■ If a DIP switch is not fully On/Off, the product may malfunction. After installation, check the DIP switches at the back.
- Be careful, as you will risk damaging a DIP switch if you manipulate it using a sharp tool.
- Be careful, as a DIP switch may be damaged if you operate it with excessive force.




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.

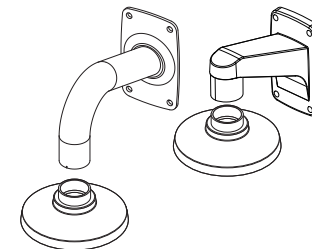


-  ■ If the cable jacket is not waterproofed properly, then it can directly cause leakage. Make sure to protect the cable with a dense layer of taping.
- Waterproof butyl tape is made of butyl rubber that can be stretched to twice its normal length.

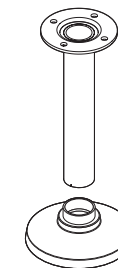
Optional Accessories for Installation

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

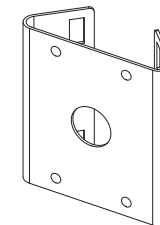
1. WALL MOUNT ADAPTOR(SBP-300WM/SBP-300WM1)/HANGING MOUNT(SBP-276HM)
This adaptor is used when installing the dome camera onto a wall.



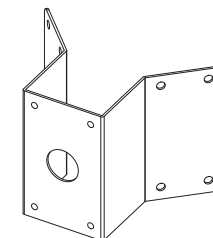
2. CEILING MOUNT ADAPTOR(SBP-300CM)/HANGING MOUNT(SBP-276HM)
This adaptor is used when installing the dome camera on a concrete ceiling.



3. The POLE MOUNT ADAPTOR(SBP-300PM) is the adapter to be used when installing the WALL MOUNT ADAPTOR (SBP-300WM or SBP-300WM1) on an 80mm or larger column.

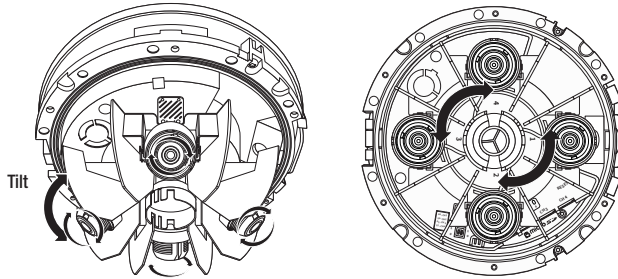


4. CORNER MOUNT ADAPTOR (SBP-300KM)
This is an adaptor for WALL MOUNT ADAPTOR (SBP-300WM or SBP-300WM1) installation on the corner of wall joint.



Adjusting the monitoring direction for the camera

Moving the camera module (Pan)



Adjusting the monitoring direction

You can adjust the camera direction only when the camera is fixed on the ceiling. The act of moving the camera module is called "Pan"; adjusting its angle "Tilt"; rotating the lens along the axis "Rotate".

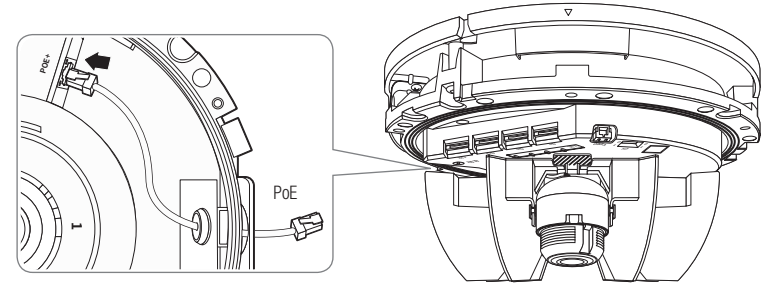
- The rotation angle of Pan is -90° to $+90^{\circ}$ for each module.
- The rotation angle of Rotation is -180° to $+180^{\circ}$.
- The rotation angle of Tilt varies for each lens. See the detailed specs. (Page 27)

- !** The image can be covered up by the camera case depending on the angle.
- Do not pan over the specified rotation angle. It might damage the cable leading to a product malfunction.

Methods of adjustment

1. After installing the camera in consideration of the direction to monitor, adjust the Pan angle along the bottom rail.
2. Adjust the horizontal angle so that the image does not appear to be reversed during rotation.
3. Adjust the tilt angle so that it points in the direction to be monitored.

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+ device with the PoE terminal of the camera.

- !** Connect and use a PoE+-enabled router.
- Use a PoE+ device that complies with the IEEE802.3at standard.

Network Cable Specification

Item	Contents	Remark
Connector	RJ45 (10/100/1000BASE-T)	
Ethernet	10/100/1000BASE-T	To operate with 1000BASE-T, a cable of UTP-6 or higher should be used for the Giga hub.
Cable	UTP Category 6	
Max Distance	100M	DC Resistance $\leq 0.188 \Omega/m$
PoE+ Support	IEEE 802.3at	

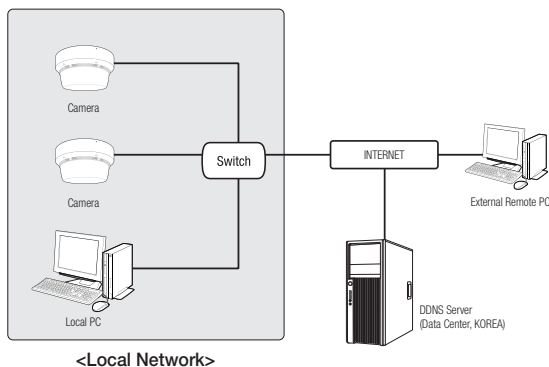
network connection and setup

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

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

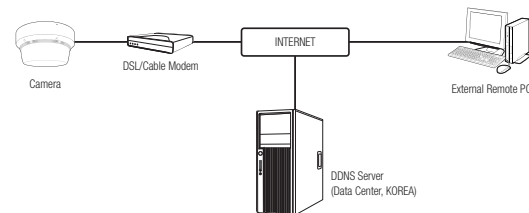
Connecting to the camera from a local PC in the LAN

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 19)

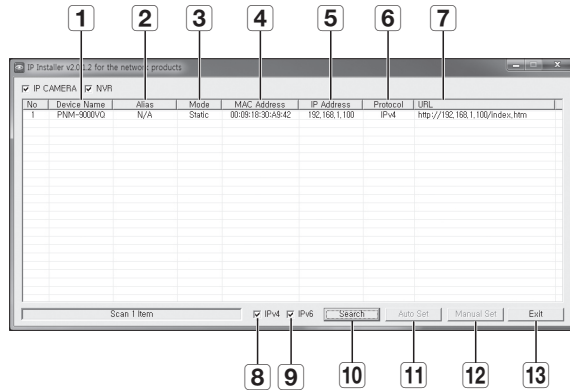
CONNECTING THE CAMERA DIRECTLY TO A DHCP BASED DSL/CABLE MODEM



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

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

- For the IP installer, use only the installer version provided in the installation CD or use the latest one if available. You can download the latest version from the Hanwha Techwin web site.
- 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.hanwha-security.com>) under the menu <Technical Guides> - <Online Tool>.

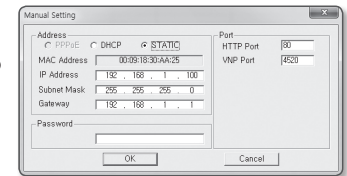
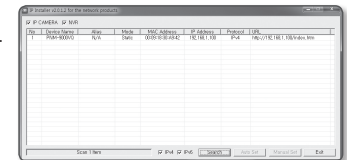
STATIC IP SETUP

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.

- 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

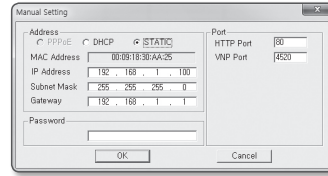
For setting <IP Address>, <Subnet Mask>, and <Gateway>, contact your network administrator.

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

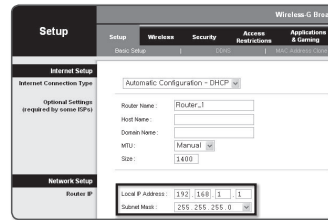
- IP Address : Enter an address falling in the IP range provided by the Broadband Router.

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 21)



If the Broadband Router has more than one camera connected

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

ex)

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

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

Auto Network Setup

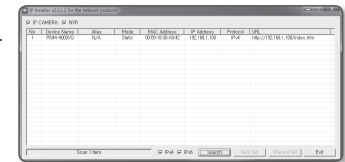
Run <IP Installer_v2.XX.exe> to display the camera search list.

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

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

1. Select a camera in the search list.

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



2. Click [Auto Set].

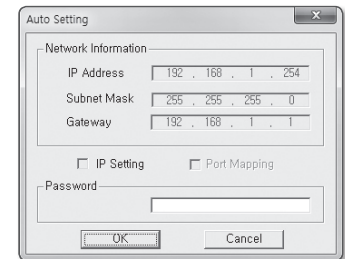
The Auto Setting dialog appears.

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

3. Enter the password.

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

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



4. Click [OK].

Auto network setup will be completed.

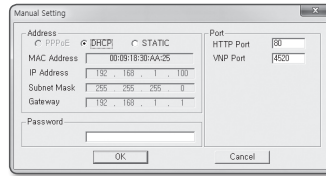
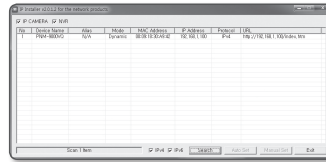
DYNAMIC IP SETUP

Dynamic IP Environment Setup

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

Checking the Dynamic IP

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

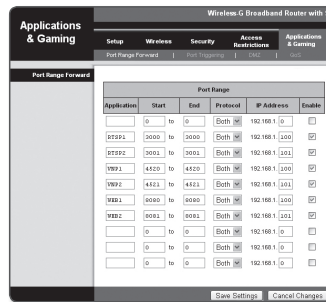


PORT RANGE FORWARD (PORT MAPPING) SETUP

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

Manual Port Range Forwarding

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



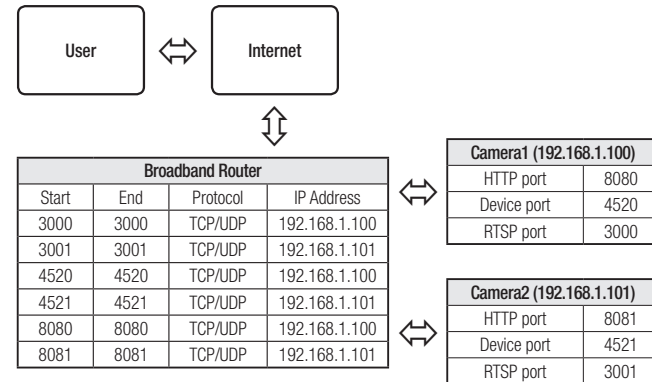
3. When done, click **[Save Settings]**.
Your settings will be saved.

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

Setting up Port Range Forward for several network cameras

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

When Camera1 and Camera2 are connected to a router :

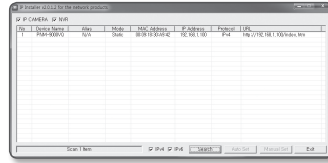


- ☑ Port forwarding can be done without additional router setup if the router supports the UPnP (Universal Plug and Play) function.
After connecting the network camera, select the checkbox from the menu <Quick connect> in <Wisenet DDNS> in "Settings -> Network -> DDNS".

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

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

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



CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

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

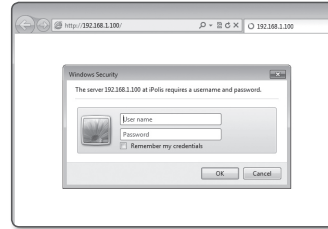
1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
ex) <http://ddns.hanwha-security.com/ID>

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

CONNECTING TO THE CAMERA

Normally, you would

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



If the HTTP port is other than 80

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

Using URL

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



- Network connection is disabled in the LAN only environment.

Connecting via UPnP

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

Connecting via Bonjour

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

To check the DDNS address

If the camera is connected directly to 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.

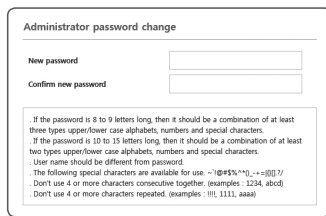
To register your device to the <DDNS> server, visit <http://ddns.hanwha-security.com> and register your device first, and then set the Web Viewer's <Network> - <DDNS> to <Wisenet DDNS>, as well as providing <Product ID> that had been used for DDNS registration.

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

LOGIN

Whenever you access the camera, the login window appears.

Enter the User ID and password to access the camera.

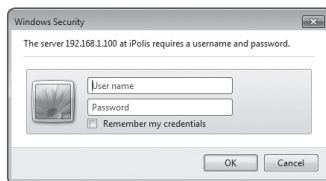
1. Enter “**admin**” in the <User name> input box.
The administrator ID, “**admin**”, is fixed and can not be changed.

2. Enter the password in the <Password> input field.

3. Click **[OK]**.

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

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



Windows Security

The server 192.168.1.100 at iPolis requires a username and password.

User name

Password

Remember my credentials

OK Cancel

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-9000VQ)

	Items	Description
Video	Imaging Device	(See the optional lens)
	Total Pixels	(See the optional lens)
	Effective Pixels	(See the optional lens)
	Scanning System	(See the optional lens)
	Min. Illumination	(See the optional lens)
	S / N Ratio	(See the optional lens)
	Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation
Operational	Camera Title	Off / On (Displayed up to 85 characters) - WW : English/Numeric/Special Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
	Day & Night	Auto (Electrical) / Color / B/W / Schedule
	Backlight Compensation	Off / BLC / HLC(Masking/Dimming) / WDR
	Contrast Enhancement	SSDR (Off / On)
	Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)
	Digital Image Stabilization	Off / On
	Defog	Auto / Manual / Off
	Motion Detection	Off/ On (8ea, 8point Polygonal zones)
	Privacy Masking	Off / On (32ea, polygonal zones) - Color : Gray, Green, Red, Blue, Black, White - Mosaic
	Gain Control	Off / Low / Middle / High
	White Balance	ATW / AWC / Manual / Indoor / Outdoor (included Mercury & Sodium)

	Items	Description	
Operational	Contrast	level adjustment	
	LDC	On/Off (5 levels with Min/Max)	
	Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)	
	Digital Zoom	24X	
	Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway : 90°/270°	
	Video Analytics	Tampering, Loitering, Directional Detection, Fog Detection, Virtual Line, Enter/Exit, Appear / Disappear, Face Detection, Motion Detection, Defocus Detection	
	Alarm Triggers	Motion Detection, Video Analytics, Network Disconnect	
	Alarm events	<ul style="list-style-type: none"> File upload via FTP, E-Mail Notification via E-Mail Local storage(SD/SDHC/SDXC) recording at Event Triggers 	
	Pixel Counter	Support	
	Network	Ethernet	RJ-45 (10/100/1000BASE-T)
		Video Compression Format	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High Motion JPEG
Resolution		5MP : 2560x1920, 2560x1440, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 320x240 2MP : 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240	
Max. Framerate		H.265/H.264 : 2M Max. 60fps, 5M 30fps at all resolutions Motion JPEG : Max. 30fps	
Smart Codec		Manual mode(Area-based : 5ea)	
WiseStream II		Support	

	Items	Description
Network	Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
	Bitrate Control Method	H.264/H.265 : CBR or VBR Motion JPEG : VBR
	Streaming Capability	Multiple Streaming (Up to 10 Profiles)
	IP	IPv4, IPv6
	Protocol	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
	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP)
	Streaming Method	Unicast / Multicast
	Max. User Access	20 users at Unicast Mode
	Edge Storage	SD/SDHC/SDXC 4slot (Each CH) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. Local PC for Instant Recording
	Application Programming Interface	ONVIF Profile S SUNAPI(HTTP API)
	Webpage Language	English, Korean, French, German, Spanish, Italian, Chinese, Russian, Japanese, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
	Web Viewer	Supported OS : Windows 7 / 8 / 10, MAC OS X 10.10, 10.11, 10.12 Plug-in free web viewer Supported web browsers : Google Chrome 54, MS Edge 38, Mozilla Firefox 49 (Windows 64bit only), Apple Safari 9 (Mac OS X only)
	Central Management Software	SmartViewer, SSM

	Items	Description
Environmental	Operating Temperature / Humidity	-40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH
	Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH
	Ingress Protection	IP66
	Vandal Resistance	IK10
Electrical	Input Voltage / Current	PoE+(IEEE802.3at)
	Power Consumption	25.5W(PoE+)
Mechanical	Color / Material	Ivory/Metal
	Dimension (ØxH)	Ø253 x H130mm
	Weight	3.0 kg
Optional Lens	SLA-2M2400Q	1/2.8" 2MP, 2.4mm, H:135.4'/V:71.2'/ D:161.6"
	SLA-2M2800Q	1/2.8" 2MP, 2.8mm, H:107.4'/V:62.2'/ D:122.0"
	SLA-2M3600Q	1/2.8" 2MP, 3.6mm, H:94.8'/V:49.3'/ D:114.3"
	SLA-2M6000Q	1/2.8" 2MP, 6.0mm, H:50.4'/V:28.8'/ D:58.1"
	SLA-5M3700Q	1/1.8" 5MP, 3.7mm, H:97.5'/V:71.9'/ D:126.2"
	SLA-5M4600Q	1/1.8" 5MP, 4.6mm, H:77.9'/V:57.9'/ D:98.7"
	SLA-5M7000Q	1/1.8" 5MP, 7.0mm, H:50.7'/V:37.8'/ D:63.8"

SPECIFICATION (LENS MODULE)

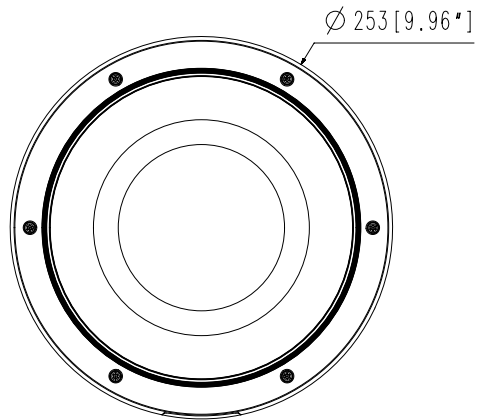
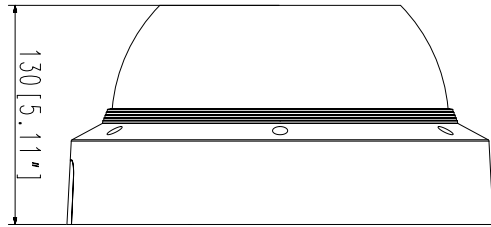
Items	Description			
	SLA-2M2400Q	SLA-2M2800Q	SLA-2M3600Q	SLA-2M6000Q
	Video			
Imaging Device	1/2.8" 2M CMOS			
Total Pixels	1945(H) x 1109(V) 2.16M			
Effective Pixels	1945(H) x 1097(V) 2.13M			
Scanning System	Progressive Scan			
Min. Illumination	Color : 0.055Lux(F2.0, 1/30sec, 30IRE) B/W : 0.055Lux(F2.0, 1/30sec, 30IRE)			
S / N Ratio	50dB			
Wide Dynamic Range	150dB			
Day & Night	Electrical			
Lens				
Focal Length (Zoom Ratio)	2.4mm	2.8mm	3.6mm	6mm
Max. Aperture Ratio	F2.0			
Angular Field of View	H:135.4°, V:71.2°, D:161.6°	H:107.4°, V:62.2°, D:122.0°	H:94.8°, V:49.3°, D:114.3°	H:50.4°, V:28.8°, D:58.1°
Lens Type	Fixed focal			
Mount Type	M12 Lens module with main unit			
Pan/Tilt/Rotate				
Pan/Tilt/Rotate Range	-90°~+90° / 62° / -180°~+180°	-90°~+90° / 40°~89° / -180°~+180°	-90°~+90° / 37°~89° / -180°~+180°	-90°~+90° / 30°~89° / -180°~+180°
Mechanical				
Color / Material	Black / plastic			
Dimension	Ø35.5 x H35.9mm			
Weight	30g			

Items	Description		
	SLA-5M3700Q	SLA-5M4600Q	SLA-5M7000Q
Video			
Imaging Device	1/1.8" 5M CMOS		
Total Pixels	3096(H) x 2094(V)		
Effective Pixels	2616(H) x 1976(V)		
Scanning System	Progressive Scan		
Min. Illumination	Color : 0.16Lux(F1.6, 1/30sec, 30IRE) B/W : 0.16Lux(F1.6, 1/30sec, 30IRE)		
S / N Ratio	50dB		
Wide Dynamic Range	120dB		
Day & Night	Electrical		
Lens			
Focal Length (Zoom Ratio)	3.7mm	4.6mm	7mm
Max. Aperture Ratio	F1.6		
Angular Field of View	H:97.5°, V:71.9°, D:126.2°	H:77.9°, V:57.9°, D:98.7°	H:50.7°, V:37.8°, D:63.8°
Lens Type	Fixed focal		
Mount Type	M12 Lens module with main unit		
Pan/Tilt/Rotate			
Pan/Tilt/Rotate Range	-90°~+90° / 59°~66° / -180°~+180°	-90°~+90° / 50°~80° / -180°~+180°	-90°~+90° / 40°~89° / -180°~+180°
Mechanical			
Color / Material	Black / plastic		
Dimension	Ø35.5 x H35.9mm		
Weight	35g		

PRODUCT OVERVIEW

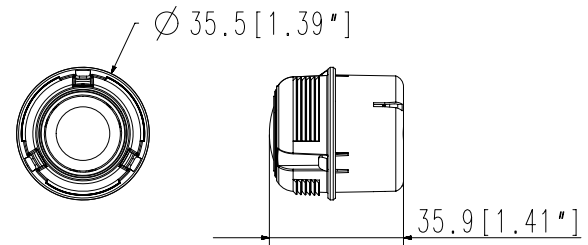
PNM-9000VQ

Unit : mm (inch)



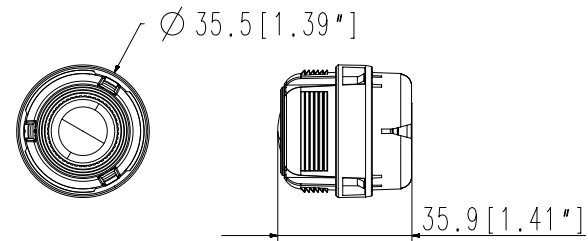
SLA-2M SERIES

Unit : mm (inch)



SLA-5M SERIES

Unit : mm (inch)



TROUBLESHOOTING

PROBLEM	SOLUTION
No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS.	<ul style="list-style-type: none"> On the authentication popup window prompted when initially accessing https, click "View Authentication Certificate" and select the "Always trust when connecting to the designated webviewer IP" check box. If the webviewer continues failing to display a video after you select "Next" on the message window below, press the command key + Q to exit the Safari browser, access again and follow the procedures stated above.
I can't access the camera from a web browser.	<ul style="list-style-type: none"> Check to make sure that the camera's Network settings are appropriate. Check to make sure that all network cables have been connected properly. If connected using DHCP, verify that the camera is able to acquire dynamic IP addresses without any problem. If the camera is connected to a Broadband Router, verify that port forwarding is properly configured.
Viewer got disconnected during monitoring.	<ul style="list-style-type: none"> Connected Viewers become disconnected upon any change to camera or network configurations. Check all network connections.
The camera connected to the network is not detected in the IP installer program.	<ul style="list-style-type: none"> Turn off the firewall settings on your PC and then search the camera again.

PROBLEM	SOLUTION
Images overlap.	<ul style="list-style-type: none"> Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap.
No image appears.	<ul style="list-style-type: none"> If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to. Check whether the lens module is operating normally.
<Motion detection> of <Analytics> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred.	<ul style="list-style-type: none"> Verify the settings in the following sequence: <ol style="list-style-type: none"> Check <Data & Time> settings. The <Motion detection> should be set to <Enable>. Check if the <E-mail> option of <Event setup> menu is checked to use.
Cannot record into the Micro SD memory card.	<ul style="list-style-type: none"> Check if the memory card is defective.
Micro SD memory card is inserted but the camera does not operate properly.	<ul style="list-style-type: none"> Check if the memory card is inserted in the proper direction. Operation of memory card that is formatted by other devices is not guaranteed with this camera unit Format the memory card again in <Setup> → <Event> → <Storage> menu.

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GPL SW

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

LGPL SW

Component Name	License	URL
glibc	LGPL 2.0	
inetutils	LGPL 3.0	
neon-0.29.6	LGPL 2.0	http://www.webdav.org/neon/

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Version 2, June 1991

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- Version 1.1

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It appears that the arithmetic coding option of the JPEG spec is covered by patents owned by IBM, AT&T, and Mitsubishi. Hence arithmetic coding cannot legally be used without obtaining one or more licenses. For this reason, support for arithmetic coding has been removed from the free JPEG software. (Since arithmetic coding provides only a marginal gain over the unpatented Huffman mode, it is unlikely that very many implementations will support it.) So far as we are aware, there are no patent restrictions on the remaining code.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

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established by T-Engine Forum
on January 23, 2004
revised on June 17, 2004
revised on December 21, 2006
revised on March 24, 2009

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

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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.
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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.
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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.

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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.

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

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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.

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

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

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

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

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

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

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

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

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

Article 6. Distribution and Registration of the Ported Source Code

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

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

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

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

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

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

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

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

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

Article 7. Use for Other Purpose

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

Article 8. Limited Warranty

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

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iperf performance test

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

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