

NETWORK THERMAL CAMERA

User Manual

TNM-C4940TD
TNM-C4950TD
TNM-C4952TD
TNM-C4960TD
TNM-C4962TD
TNM-C4940TDR
TNM-C4942TDR

Network Thermal 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" or "PS2" and rated from 12 Vdc, 1.8A / PoE(53 Vdc), 0.48A.(TNM-C4940TD/TNM-C4940TDR/TNM-C4942TDR)
16. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" or "PS2" and rated from 12 Vdc, 1.63A / PoE(53 Vdc), 0.45A.(TNM-C4950TD/TNM-C4952TD/TNM-C4960TD/ TNM-C4962TD)
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.
23. This device has been verified using STP cable. The use of appropriate GND grounding and STP cable is recommended to effectively protect your product and property from transient voltage, thunderstroke, communication interruption.
24. Whenever there is a change in the ambient temperature or a specific interval is reached, the thermal video in use will temporarily freeze for about 1-2 seconds. This phenomenon is a normal operation for calibrating the thermal video.
25. When the initial power is applied, the thermal imaging screen will require about 30 minutes for stabilizing as it is being continuously calibrated.
26. The operating temperature of the product is -40°C to +60°C (-40°F ~ +140°F).

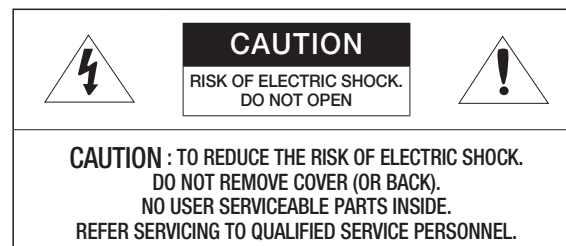
WARNING

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

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

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

CAUTION



EXPLANATION OF GRAPHICAL SYMBOLS



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



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

Class I construction

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

Battery

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

The battery cannot be replaced.

Disconnection Device

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

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

CAUTION

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

ATTENTION

IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.

METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

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

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

The Micro USB port on the product is intended for initial setup only and should not be used for any other purpose.

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

Before connecting the Power Terminal Block, you need to unplug the power plug from the outlet first.

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 802.3.at shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1 or PS2 as defined in UL62368-1.

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 burn.

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

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.

We do not guarantee the quality of third-party products (e.g. lenses, accessories) that you separately purchase.

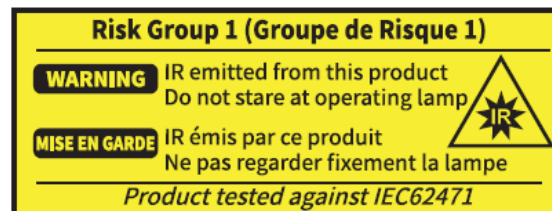
In particular installation environments, there might be interference in radio communications. When interference of electromagnetic waves occurs between the product and radio communication device, it is recommended to keep a certain distance between the two or change the direction of the receiving antenna.

WARNING

To prevent damage which may caused by IR LED, don't stare at operating lamp.

For below models only.

TNM-C4940TD/TNM-C4940TDR/TNM-C4942TDR



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RECOMMENDED PC SPECIFICATIONS

- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
- RAM : 8G or higher
- Recommended browser: Chrome
- Supported browsers: Chrome, Safari, Firefox, MS Edge(chromium based)
- Supported OS : Windows, Mac, Linux, Android, iOS, Chrome
- Verification environment
 - Windows 10: chrome Latest version, Firefox Latest version, MS edge Latest version
 - Mac latest version and version being supported
 - ref.) <https://en.wikipedia.org/wiki/MacOS>

※ The video play performance of the web viewer depends on the performance of the user's CPU and GPU.

RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS

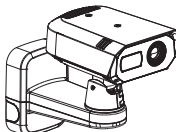
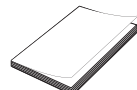
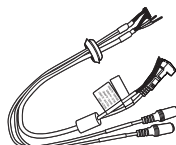
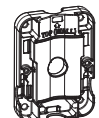
- Recommended capacity : 16GB to 256GB (MLC type recommended)
- Recommended Manufacturers / Product Type :
 - SanDisk / High Endurance, MAX ENDURANCE
 - Western Digital / Purple QD101
 - Transcend / High Endurance

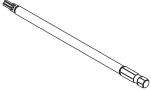
RECOMMENDED NAS SPECIFICATIONS

- Recommended capacity : 200GB or higher
- For this camera, you are recommended to use a NAS with the following manufacturer's specs.
Recommended products : QNAP NAS, Synology NAS

WHAT'S INCLUDED

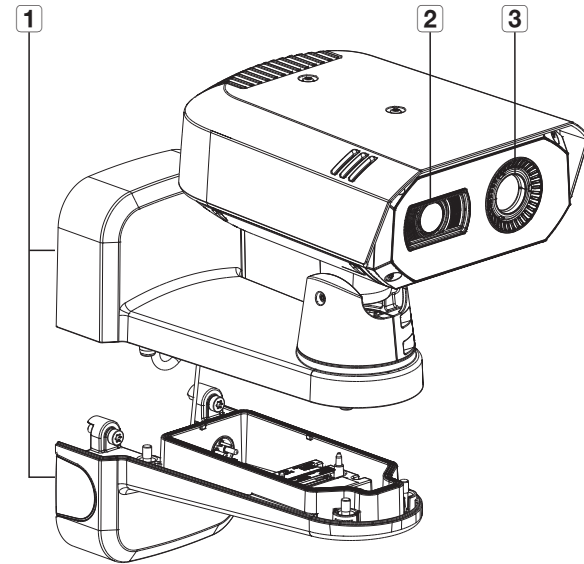
Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

Appearance	Item Name	Quantity	Description
	Camera	1	
	Quick Guide (Optional)	1	
	Power Terminal Block	1	Used when the power line is connected to the power socket
	Torx L wrench	1	Used to open the micro SD slot cover
	Power (DC 12 V)/Audio/Alarm cable	1	Used for DC 12V power input, Audio In/Out and Alarm function
	Mount plate	1	Used when installing a camera to a wall or pillar

Appearance	Item Name	Quantity	Description
	Cable bushing	1	Extra cable bushing for network cable installation
	Cap Installer	1	Used to connect the RJ45 cable via a cable bushing to the PoE+ port
	Screwdriver bit	1	Used when assembling or disassembling a wall mount
	Anchor bolt	4	Used when fixing a mount plate to a wall

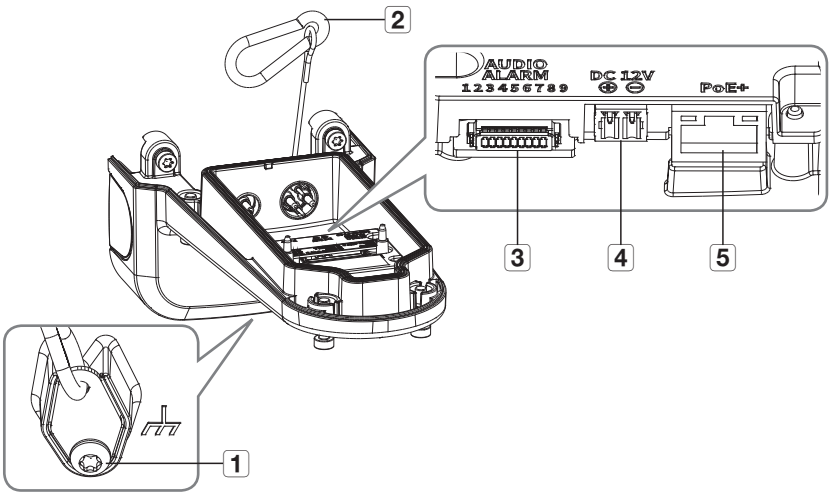
AT A GLANCE

Appearance



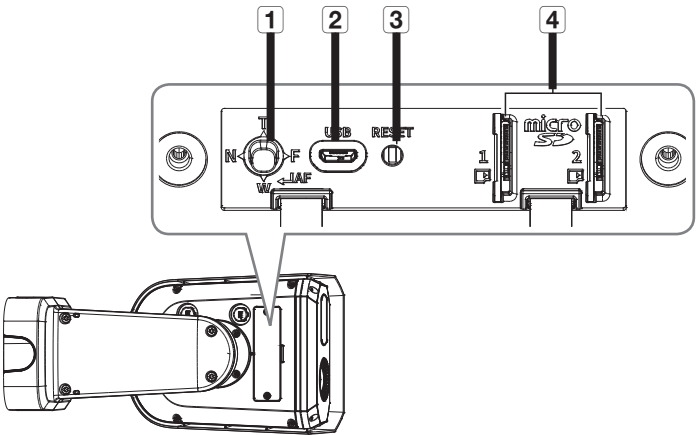
Item	Description
1 Wall mount	Used when installing a camera on a wall or pillar. There is also a socket in its lower part for external connections, such as to a network cable.
2 Visible lens	Used when shooting scenes which are visible to the human eye.
3 Thermal lens	Used to shoot a scene after detecting and measuring infrared rays emitted from the subject.

Internal composition (lower part of the mount)



Item	Description
1 GND Terminal	Used to discharge a lighting or a surge current outside in order to protect a camera from it safely.
2 Safety wire	Cable to prevent accidents when installing cameras by connecting it to the upper part of the mount.
3 Audio/Alarm port	Plug in the audio and alarm cables to use an external alarm device, microphone and speaker.
4 Power port (DC 12V)	Plug in two power cables with the included power terminal block. Only for DC 12V.
5 PoE+ port	Plug in a PoE+ or network cable for power and network connection.

Internal composition (camera bottom)



Item	Description
1 Zoom/Focus Control Button	T Zoom in (Tele)
	W Zoom out (Wide)
	N Focus on a near object (Near)
	F Focus on a far object (Far)
	AF Press this button for automatic focus control.
2 MICRO USB port	Port to connect the WiFi dongle. You can check the installation video through the application installed on a smartphone. Refer to "Connect to WiFi dongle" on page 15. ■ Wifi dongle and OTG adapter are sold separately.
3 Reset Button	Used to restore all camera settings to the factory default. Press and hold for about 5 seconds and it reboots the system and restores the factory default. ❗ If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the Device Manager program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.
4 Micro SD card slot	Slot for inserting a Micro SD card. Two Micro SD cards are available.

INSTALLATION



- This camera is waterproof and in compliance with the IP67 spec, but the jack connected to the external cable is not. You are recommended to install this product below the edge of eaves to prevent the cable from being externally exposed.

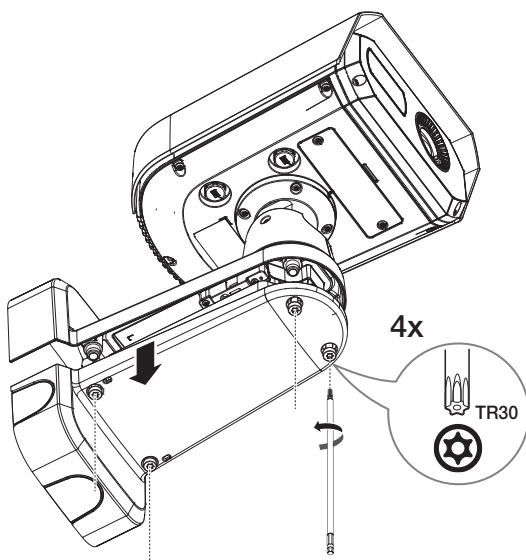
Precautions before installation

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

- 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 away from the installation site.
And put aside personal belongings from the site, just in case.
- If the product is forcibly installed with excessive force, it may malfunction and damage the camera.
Forcing assembly using non-standard tools may damage the product.

Disassembling

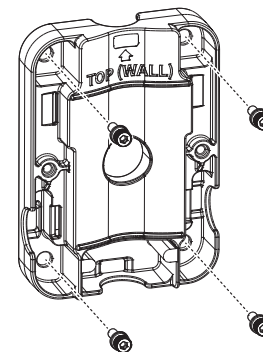
1. Separate it by loosening the fastening bolt at the bottom of the wall mount by turning it counterclockwise using the supplied screwdriver bit.



Installation (mount plate)

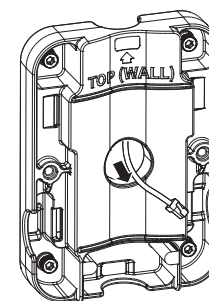
[If installing on a wall]

- 1-1. Install the mount plate on the wall using the four provided anchor bolts.



- When installing the camera on a wall, place the mount plate on the wall, drill a hole after marking the screw hole's location, then insert the anchor bolt for installation.
- During installation, the side where 'TOP (POLE)' is engraved should face the wall. Also, install the product so that the arrow in front, where 'TOP (WALL)' is engraved, faces the top, as shown in the figure.

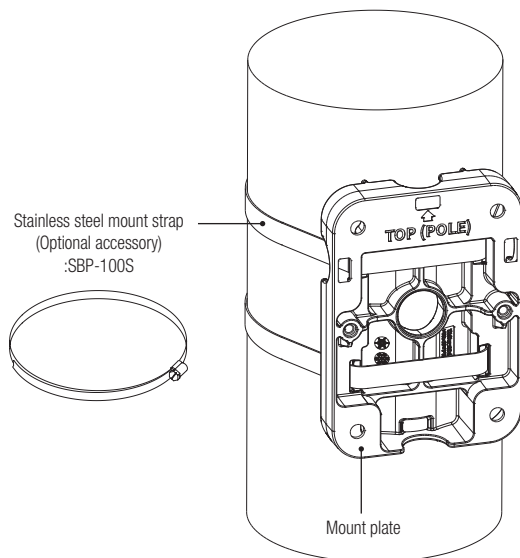
- 1-2. Take out the necessary cables from among the network/power/audio/alarm cables through the hole on the mount plate.



- This product can be connected to a 0.75" PF pipe depending on the installation conditions. There are three directions that the pipe can be inserted from.

[If installing it on a pillar]

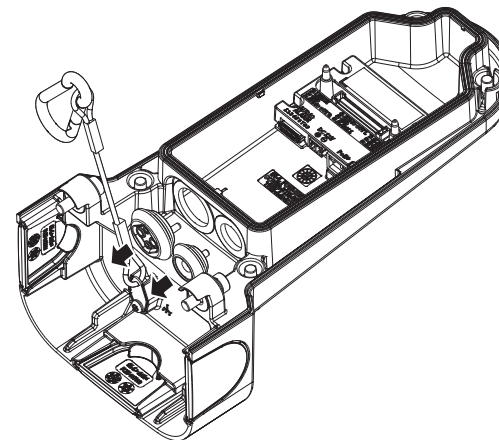
- 1-1. Select the pillar for installation, and check the height for where you want to install the camera.
- 1-2. Install the mount plate using a stainless steel mount strap (not supplied).



- During installation, the side where 'TOP (WALL)' is engraved should face the wall. Also, install the product so that the arrow in front, where 'TOP (POLE)' is engraved, faces the top, as shown in the figure.
- When installing the camera on a pillar, connect it to the cable using the groove at the bottom of the mount plate.

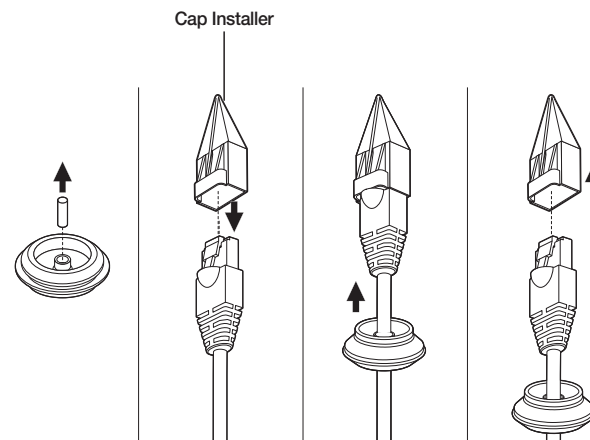
Installation (installing cables)

2. Remove all the cable bushings at the lower part of the wall mount.

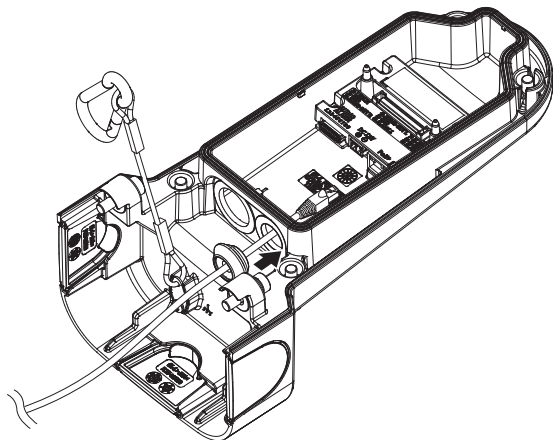


[Installation of the network cable] (IP66)

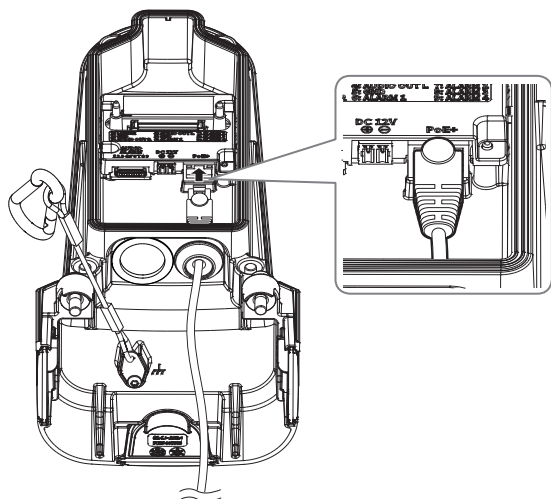
- 3-1. Take off the extruded part of the center hole at the cable bushing.
- 3-2. Pass a RJ45 cable through the hole of the cable bushing with the provided cap installer.



3-3. Connect the cable bushing with the network cable inserted into the lower part of the wall mount as shown in the figure.

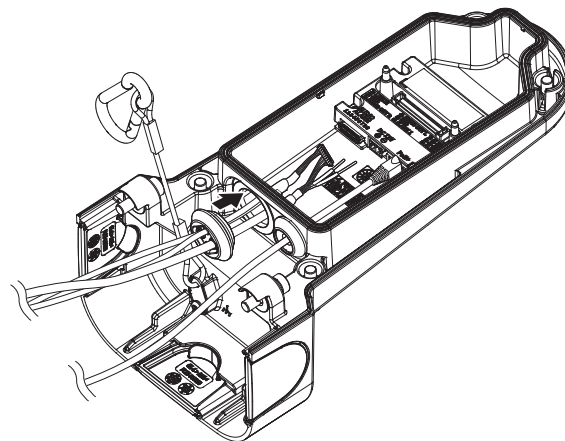


3-4. Connect the network cable's connector to the PoE+ connection terminal.

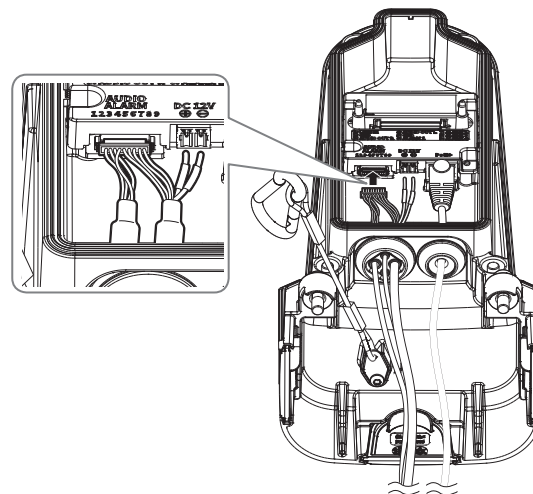


[Installation of the Power(DC 12V)/Audio/Alarm cable]

4-1. Insert the cable bushings of the provided power/audio/alarm cables to the lower part of the mount, as shown in the figure.

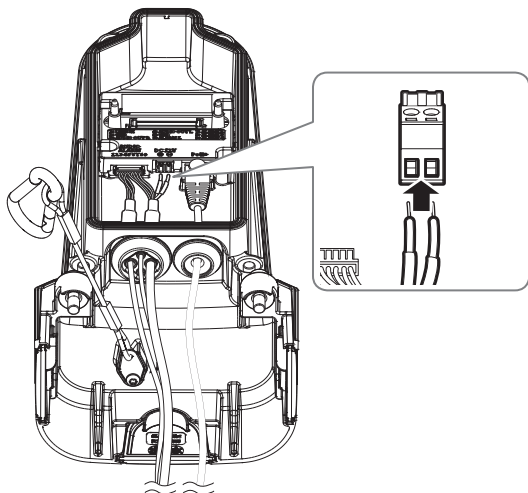


4-2. Connect the connector of the audio/alarm cables to the Audio/Alarm port.



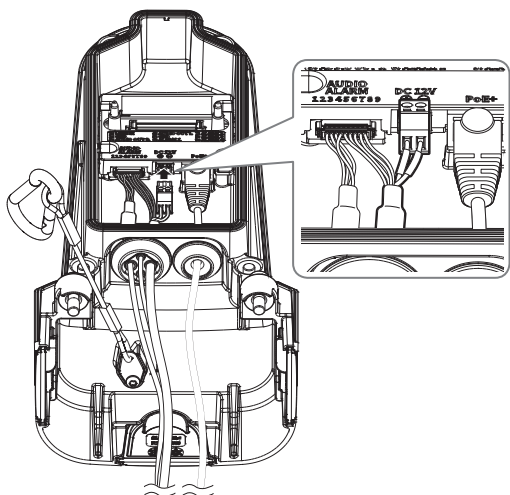
(When connecting the DC 12V power cable)

4-3. Connect the provided power cable block to the power line.



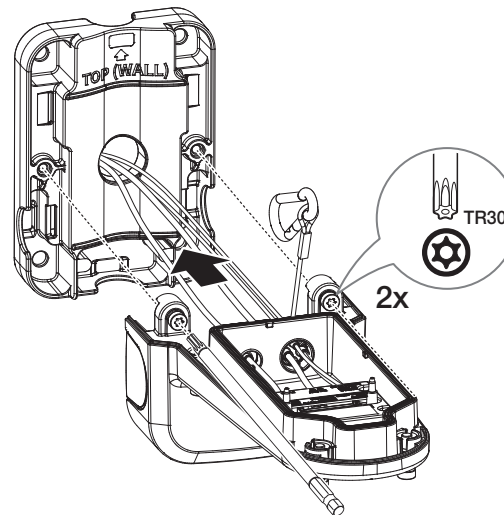
! ■ When connecting the power line to the power terminal block, paying attention to the polarity by referring to the imprint when connecting it.

4-4. Insert the power terminal block into the power input terminal (DC 12V).

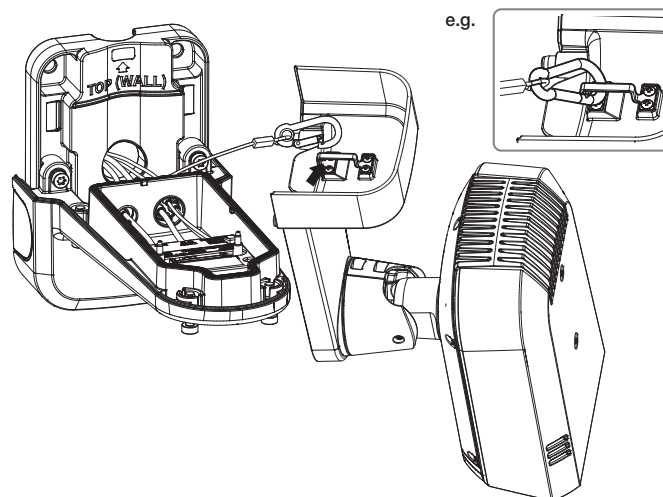


Installation (wall mount)

5. Attach the lower part of the wall mount to the mount plate using a screwdriver bit.

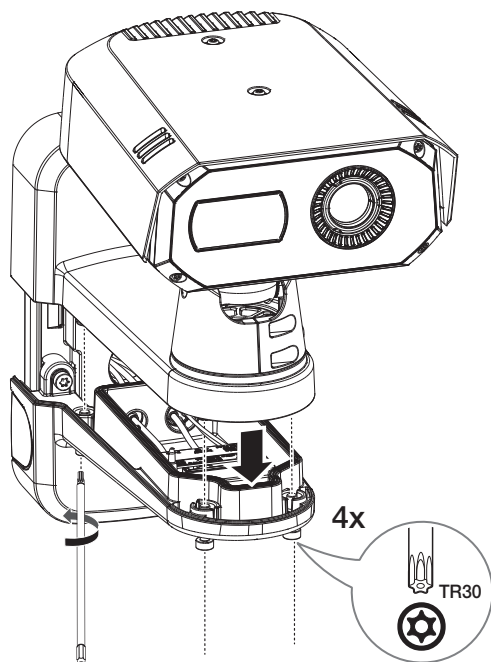


6. Connect the safety cable at the bottom of the mount to the hook at the top of the mount.



7. Attach the camera to the lower part of the mount using a screwdriver bit.

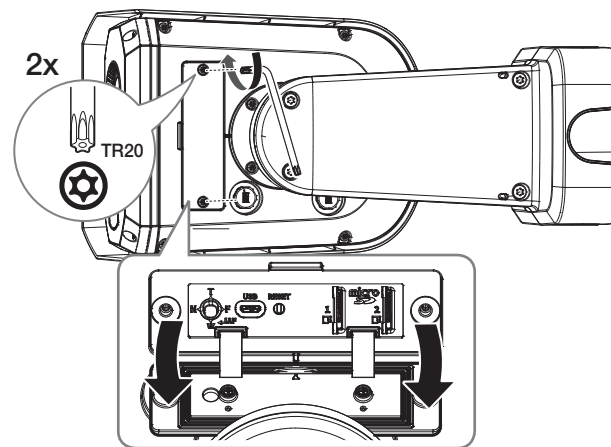
- ! ■ Make sure to tighten the screws firmly so that there is no problem with waterproofing.



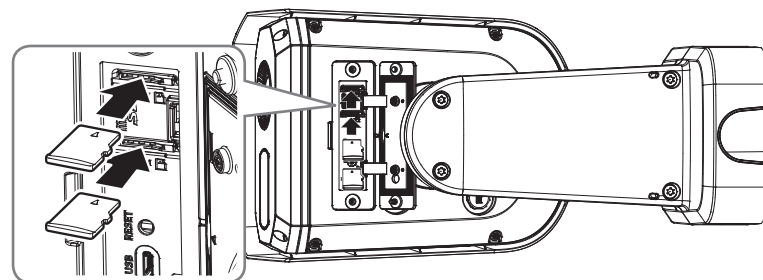
INSERTING/REMOVING A MICRO SD CARD

Inserting a Micro SD card

1. Turn two screws counterclockwise with the provided Torx L wrench to open the cover at the bottom of the camera.



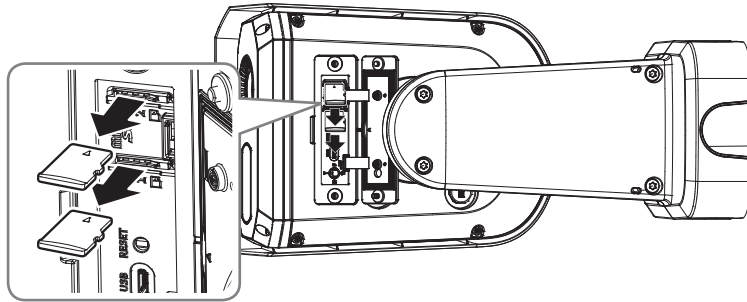
2. Insert a Micro SD card in the direction of the arrow.



- ! ■ The Micro SD card should be inserted before installing the camera and inputting power source.
- Do not insert it forcedly in the reverse direction. It might cause your Micro SD card and your product damaged.
- It is not recommended to remove or insert a Micro SD card in rainy or humid weather.
- When installing/removing the Micro SD card, make sure you put the product body on a flat ground before working on it in order to prevent accidents due to loss or drop of any parts.

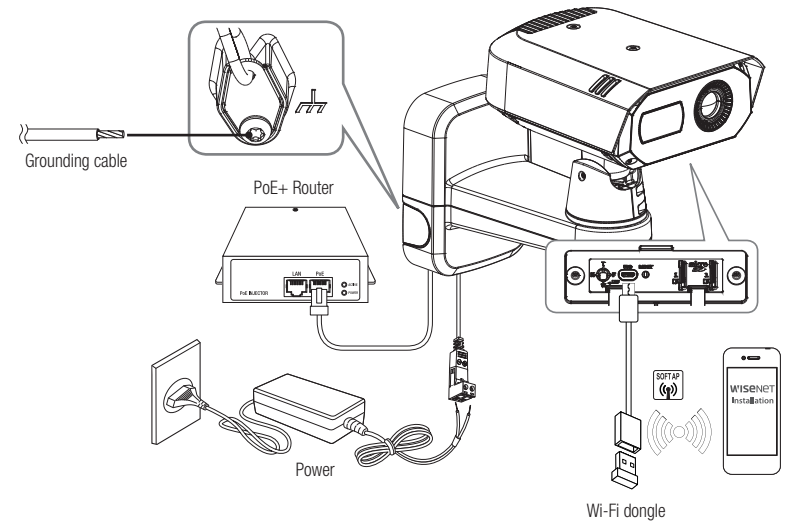
Removing a Micro SD card

Gently press down the exposed end of the Micro SD card to eject it from the slot.



- Before removing the Micro SD card, in **<Setup (⚙)>** **<Event>** **<Storage>**, set the device to **<Off>** and press the **[Apply]** button and turn the camera off.
- If the micro SD card is removed or the power is turned off while data is being saved to the micro SD card, the data may be lost or corrupted.

CONNECTING WITH OTHER DEVICE



- The Micro USB port is used to connect a Wi-Fi dongle to communicate a smartphone installed the applications.
- Smartphone videos which use the WiFi dongle output **<CH1: Visible>** or **<CH2: Thermal>** video of the camera. These videos are intended to provide convenience for camera installation and are not suitable for surveillance.
- Whenever there is a change in the ambient temperature or a specific interval is reached, the thermal video in use will temporarily freeze for about 1-2 seconds. This phenomenon is a normal operation for calibrating the thermal video.

Ethernet Connection

Connect the Ethernet cable to the local network or to the Internet.

Connect to WiFi dongle

Camera Setup

1. Connect an OTG adapter (5-pin) and a WiFi dongle to the micro USB port.

Smartphone Setup

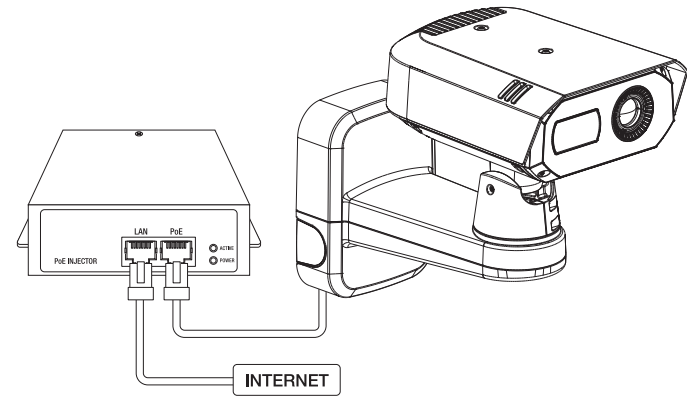
1. Install the Wisenet Installation application.
2. Select the camera SSID after turning on the WiFi.
3. Run the Wisenet Installation application.
4. When you log in to the camera, the video will be displayed.
5. You can adjust angle of view while watching the video on the smartphone.

Recommended dongle manufacturer and its model name

Manufacturer	Model
NETIS	WF2123 n300
EDIMAX	EW-7811Un V2(New ver.)
IP Time	N100mini
IP Time	N150L
TP-LINK	TL-WN823N V1
TP-LINK	TL-WN725N
ASUS	USB-N13
ASUS	USB-N10 NANO
NETGEAR	WNA3100M
IODATA	WN-G150UMW
IODATA	WN-S150UM
TOTOLINK	N300UM

Powering and networking

Connect a PoE+ device to the PoE+ port on the lower part of the mount on the camera.



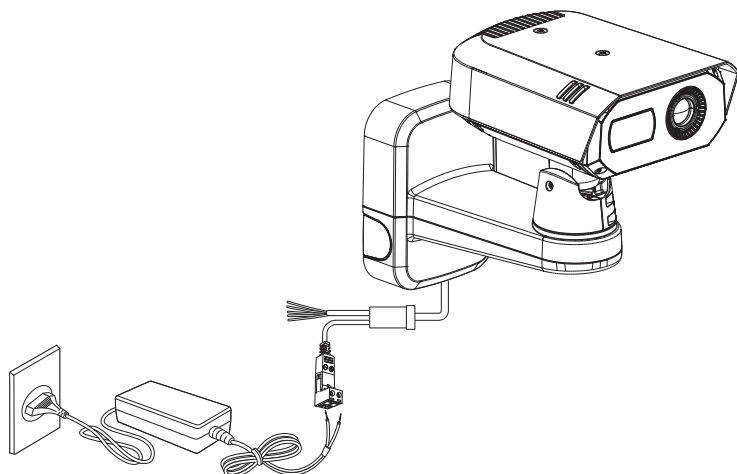
- Connect to a router capable of PoE+ and use it.
- Use a device that supports the IEEE 802.3at standard.
- If you connect a router capable of PoE+ to the PoE+ port, you can use the camera without a separate power source (DC 12V).

Network Cable Specification

Item	Contents	Remark
Connector	RJ45(10/100/1000BASE-T)	
Ethernet	10/100/1000BASE-T	To operate it with 1000BASE-T, it is necessary to use a Category 6 or higher cable on the hub for appliances.
Cable	Category 5e or higher	
Max Distance	100 m	DC Resistance ≤ 0.125 Ω/m
PoE+ Support	IEEE 802.3at	

Power Supply

Connect the + , - line of the power adapter to the power terminal block connected the power port of the camera using a screwdriver.



- When PoE+ and DC 12V power are turned on at the same time, the device power is supplied simultaneously from both of them.
 - If you connect a router capable of PoE+ to the PoE+ port, you can use the camera without a separate power source (DC 12V).
 - It is recommended to use the only one power source among PoE+ and DC 12V for the device.
- Be careful not to reverse the polarity when connecting DC power cables.
- When the initial power is applied, the thermal imaging screen will require about 30 minutes for stabilizing as it is being continuously calibrated.
- If you want to connect an external device, you must turn it off before doing it.
- Before connecting a power plug to an outlet, connect the power cable to the camera and adapter first.

Power Cable Specification

In case of DC 12V Input:

(TNM-C4940TD/TNM-C4940TDR/TNM-C4942TDR)

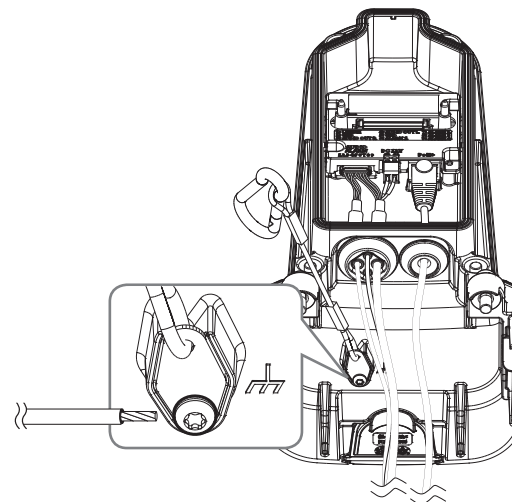
Wire Type (AWG)	#18	#16
Cable Length (Max.)	11m	18m

(TNM-C4950TD/TNM-C4952TD/TNM-C4960TD/TNM-C4962TD)

Wire Type (AWG)	#18	#16
Cable Length (Max.)	13m	20m

Grounding the Camera

Connect the ground wire to the safety cable's fixing screw on the lower part of the mount.

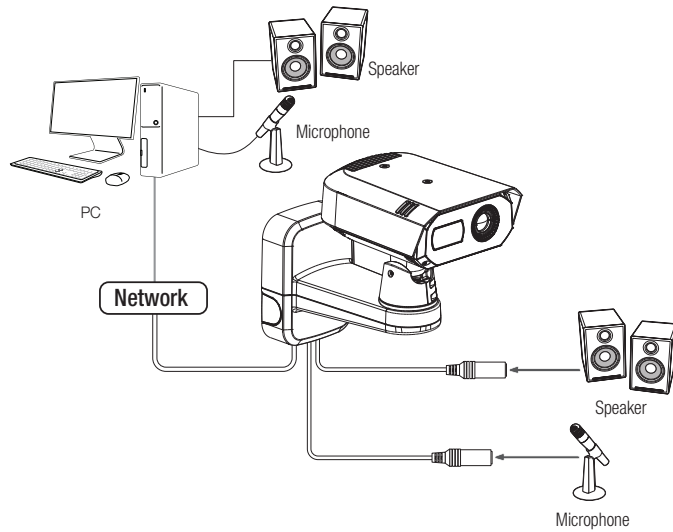


- Grounding serves to protect the camera from lighting surge.
- Before connecting a grounding wire, make sure to turn off the power of the camera.

Recommended Grounding Cable

- Length : Less than 3M
- Gauge : 18 AWG or bigger
Ex) UL1007 AWG 18/16, UL1015 AWG18/16/14/12

Connecting to Audio Input/Output



1. Connect the MIC terminal of the camera to a microphone or LINE OUT port of the amplifier where a microphone is connected.
2. Connect the SPEAKER terminal of the camera to a speaker or LINE IN port of the amplifier where a speaker is connected.
3. Check the specifications for audio input.

• Audio Codec

- Audio In : G.711 PCM (Bit Rate: 64kbps / Sampling Frequency: 8kHz), G.726 ADPCM (Bit Rate: 16Kbps, 24Kbps, 32Kbps, 40Kbps / Sampling Frequency: 8kHz), AAC (Bit Rate: 48Kbps / Sampling Frequency: 16kHz)
- Audio Out : G.711 PCM (Bit Rate: 64kbps / Sampling Frequency: 8kHz)

• Full duplex Audio

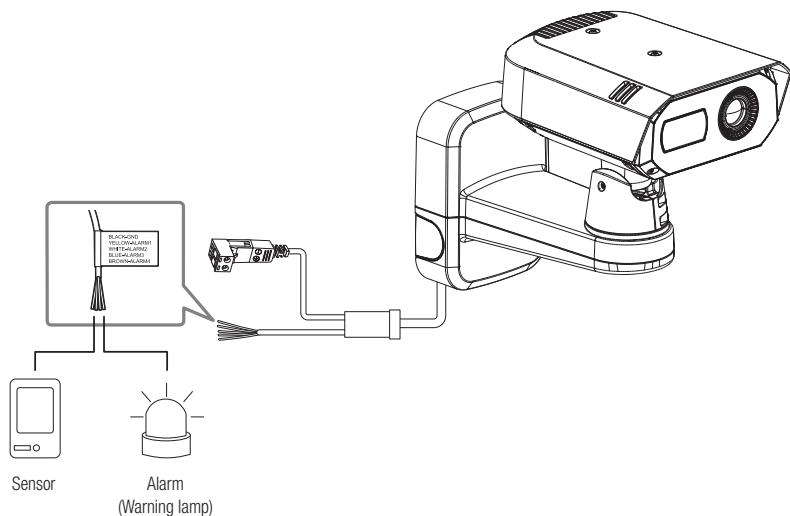
- **Audio in** : Selectable (microphone/Line-in), Supported voltage: 2.5VDC (4mA), Input impedance: 2K Ohm
- **Audio out** : Line-out (3.5mm mono jack), Maximum output: 1Vrms, Line out impedance : 600Ω



- In the case you access the web viewer and select an external microphone as the audio input sources in <Video & Audio> - <Audio setup>, the following specifications are recommended:
 - Frequency range: 40-16,000 Hz
 - Impedance: 1,500 Ω
 - Sensitivity: -40±3 dB (7.1-14.1 mV)
- In the following cases, sound classification performance may deteriorate or malfunction.
 - The case of sound like a machine gun sound, not a single shot gunshot.
 - The case that the noise is too loud, so target sound source is not distinguishable.
 - The case that two or more different sound sources are input at the same time.
 - The case that sound classification is applied using noise canceling function in a quiet condition.
 - The case of applauding, screaming, etc., at a close distance from the camera (within 1 meter)
 - The case that a sound source such as an airplane sound or a siren sound, which is not in a sound classification category, is suddenly loud.
 - The case that an external microphone does not meet the recommended specifications.

Connecting to the I/O device

Connect the Alarm I/O cable to the corresponding port of the port box.



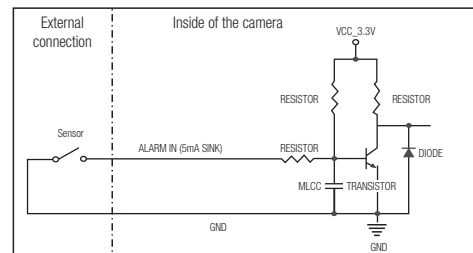
- ALARM 1~4 : These ports can be used as alarm input or output ports. If used as input ports, alarm input or day/night sensors can be connect to them. If used as output ports, alarm output signals can be connect to them.
※ The setting of each alarm input/output port can be changed at the Web Viewer setting menu.
- GND : Common ground for alarm in/output signal.

- ! ■ If devices (e.g., flashing light and siren) that exceed the voltage and current specifications are connected by using the open collector method, it may cause malfunction.
Refer to the "Alarm Out Wiring Diagram" when connecting devices such as a warning lamp or a siren.

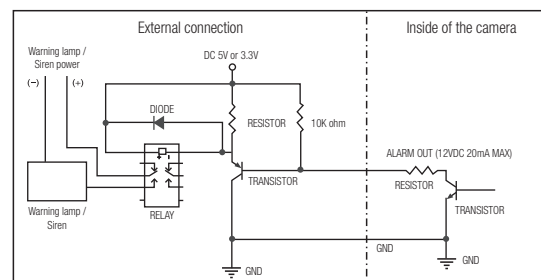
Connecting to an external sensor

One of the signal lines (2 wires) of various sensors is connected to the [ALARM 1~4 (where the corresponding terminal is set as input)] terminal, and the other connected to the [GND] terminal.

Alarm In Wiring Diagram



Alarm Out Wiring Diagram



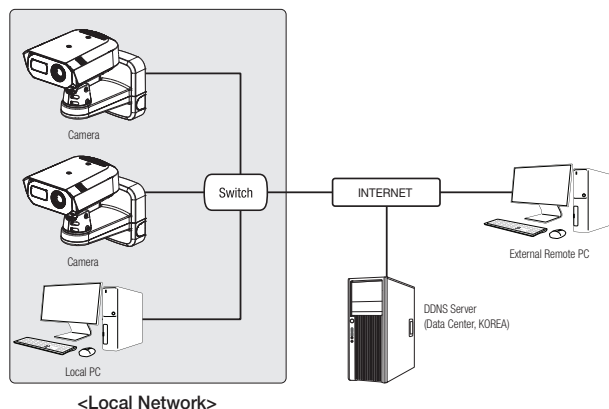
network connection and setup

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

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORK

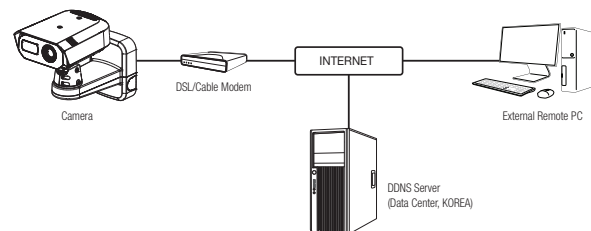
Connecting to the camera from a local PC in the LAN

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, contact your network administrator.
- By factory default, the IP address will be assigned from the DHCP server automatically. If there is no DHCP server available, the IP address will be set to 192.168.1.100. To change the IP address, use the Device Manager. For how to use the device manager, refer to "USING DEVICE MANAGER". (Page 20)

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



1. Connect the user PC directly with the network camera.
2. The IP address of the camera can be changed by the Device Manager so that a user can access it on the web browser through the Internet.
3. Access the Web Viewer of the camera using an Internet browser.
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, refer to the online help of Web Viewer.

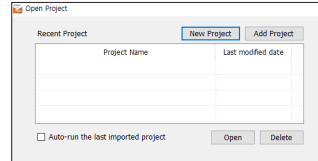
USING DEVICE MANAGER



- Device manager program can be downloaded from <Support>-<Tool> menu at Hanwha Vision website (<https://www.HanwhaVision.com>).
- More instructions of Device Manager can be found at <Help> menu of the main page.

SETTING UP PROJECTS

You can save and import cameras for each project.
To create a new project, set the project name and a password.
You need to enter a password to run the created project.



AUTOMATICALLY SEARCHING CAMERA

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

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

CONFIGURING IP ADDRESS

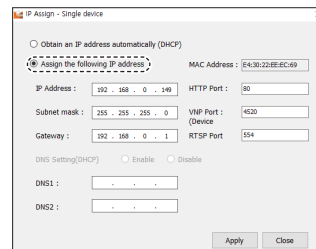
If you want to change camera network setting, <Login OK> sign must be displayed at <Status>. Click <Credential> at the main page to log in.

Configuring Static IP

Manually insert and configure IP address & port information.

When setting one camera

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



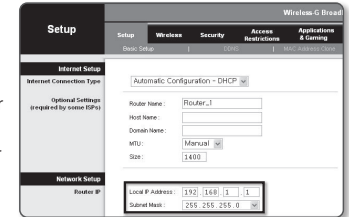
If not using a Broadband Router

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

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

If using a Broadband Router

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



- The settings may differ depending on the connected Broadband Router model.
For more information, refer to the user manual of the applicable router.
- For more information about port forwarding of the broadband router, refer to "Port Range Forward (Port Mapping) Setup". (Page 22)

If the Broadband Router has more than one camera connected

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

ex)

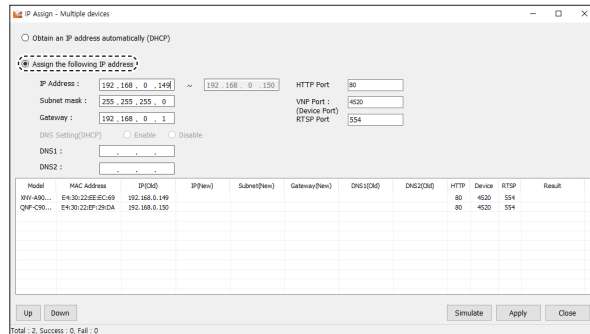
Category		Camera #1	Camera #2
IP related settings	IP Address	192.168.1.100	192.168.1.101
	Subnet Mask	255.255.255.0	255.255.255.0
	Gateway	192.168.1.1	192.168.1.1
Port related settings	HTTP Port	8080	8081
	RTSP Port	554	555



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

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

When setting multiple cameras



1. Click the camera from the list that you want the change the IP setting.
2. Click <IP Assign> at the main page of device manager.
3. Select <Assign the following IP address>.
4. Enter the initial address of the IP address range to be assigned.
5. Click the [Simulate] button to check the IP address to be assigned for each equipment.
 - You can edit each address by double-clicking the IP address item.
6. Click the [Apply] button to start IP assignment.
7. Check the <Result> item for the success of IP assignment.

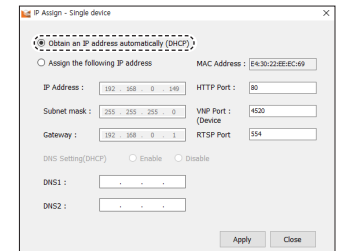
Configuring Dynamic IP

Receive IP address from DHCP

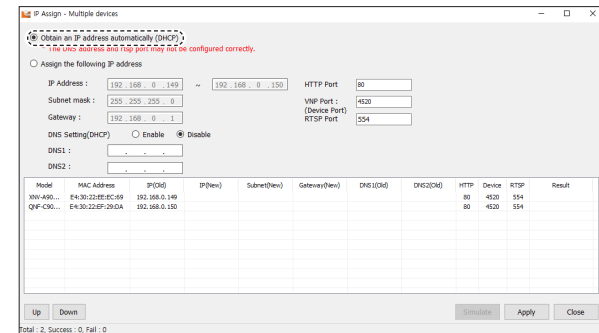
- Example of the Dynamic IP environment
 - If a Broadband Router, with cameras connected, is assigned an IP address by the DHCP server
 - If connecting the camera directly to modem using the DHCP protocols
 - If IPs are assigned by the internal DHCP server via the LAN

When setting one camera

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



When setting multiple cameras



1. Click the camera from the list that you want to change the IP setting.
2. Click <IP Assign> at the main page of device manager.
3. Select <Obtain an IP address automatically (DHCP)>.
4. Click the [Apply] button to start IP assignment.
5. Check the <Result> item for the success of IP assignment.

MANUALLY REGISTERING CAMERA

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

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

AUTOMATICALLY CONFIGURING IP

1. Click the camera from the list that you want to automatically configure the IP.
2. Click < + > at the main page of device manager.
 - Equipment Setting menu appears.
3. At the menu, click <Auto IP Configure>.
4. To use the <UPnP> or <Bonjour> protocol, select <Enable> and click the [Apply] button.

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.

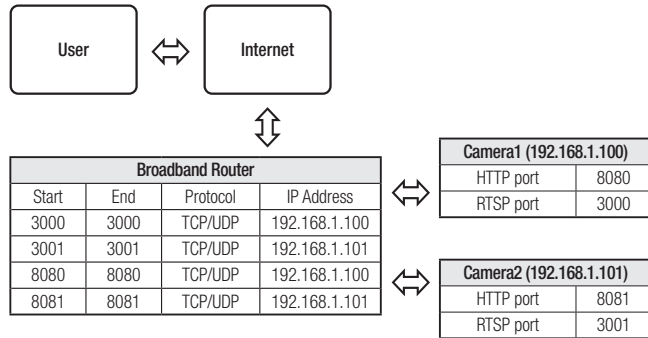


- Port forwarding setting is an example of setting CISCO IP router.
- The settings may differ depending on the connected Broadband Router model.
For more information, refer to the user manual of the applicable router.

Setting up Port Range Forward for several network cameras

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

When Camera1 and Camera2 are connected to a router :



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

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

1. Run device manager.
It will scan for connected cameras and display them as a list.
2. Select the desired project, then click the [Open] button.
3. Entering the password will display the list of cameras in the project.
4. Double-click a camera to access.
The Internet browser starts and connects to the camera.

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

CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

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

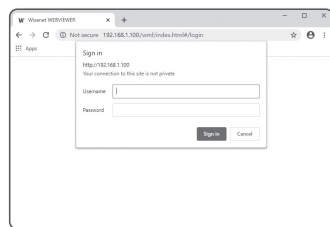
1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
ex) <http://ddns.hanwha-security.com/ID>

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

CONNECTING TO THE CAMERA

Normally, you would

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



If the HTTP port is not 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 to support 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 to support 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 use the UPnP or Bonjour protocol, refer to "Automatically configuring IP".

To check the DDNS address

If the camera is connected directly to the DHCP cable modem, DSL modem, the IP address of your network will be changed each time you try to connect to the ISP (Internet Service Provider) server. In this 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 <DDNS>, as well as providing <Product ID> that had been used for DDNS registration.

PASSWORD SETTING

When you access a camera for the first time, you must register its login password.



- For a new password with 8 to 9 digits, you must use at least 3 of the following: uppercase/lowercase letters, numbers and special characters. For a password with 10 to 15 digits, you must use at least 2 types of those mentioned.
 - Special characters that are allowed.:
~!@#\$\$%^&*()_+=[]\|;:'" <>.,?/
- Space is not allowed for password.
- For higher security, you are not recommended to repeat the same characters or consecutive keyboard inputs for your passwords.
- Be sure to remember the password you set, as you will need to reset the product by pressing the [RESET] button if you lose your password.

The dialog box is titled "Administrator password change". It contains two input fields: "New password" and "Confirm new password". Below these fields is a list of password requirements:

- If the password is 8 to 9 characters long, it must include at least 3 of the following character types: English uppercase letters, English lowercase letters, numbers, and special characters.
- If the password is 10 characters or longer, it must include at least 2 of the following character types: English uppercase letters, English lowercase letters, numbers, and special characters.
- ID may not be used as password. The password and ID cannot be identical.
- The following special characters can be used: ~!@#\$(%^&*()-+=[]\|;:'" <>.,?/
- You may not use more than 4 consecutive characters (example: 1234, abcd, etc.)
- You may not use the same character 4 or more times consecutively (example: 999, 1111, aaaa, etc.)

At the bottom right of the dialog box is an "Apply" button.

LOGIN

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

- Enter "admin" in the <User name> input box.
The administrator's ID, "admin," can be changed in the Web Viewer.
- Enter the password in the <Password> input field.
- Click [Sign in].
If you log in successfully, you can see 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.



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

The dialog box is titled "Sign in". It shows the URL "http://192.168.1.100" and a warning: "Your connection to this site is not private". Below this are two input fields: "Username" and "Password". At the bottom right are two buttons: "Sign in" and "Cancel".

CAMERA WEB VIEWER SETUP

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

TROUBLESHOOTING

PROBLEM	SOLUTION
When an Windows 10 user accesses the web viewer through Chrome or Firefox, the sound volume of microphone changes periodically.	This is what happens when microphone driver has been set to Realtek driver. Install the High Definition Audio device (Windows Default Driver) or the third party driver as the microphone driver.
What are the specifications for WAVE files necessary to play audio at the time of an event?	- Sampling rate of 48,000 KHz or less is recommended. - For bits per sample (bps), up to 8/16 bit is recommended. - Only PCM encoding format is supported.
No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS.	- On the authentication popup window prompted when initially accessing https, click "View Authentication Certificate" and select the "Always trust when connecting to the designated webviewer IP" check box. - If the webviewer continues failing to display a video after you select "Next" on the message window below, press the command key + Q to exit the Safari browser, access again and follow the procedures stated above.
I can't access the camera from a web browser.	- Check to make sure that the camera's Network settings are appropriate. - Check to make sure that all network cables have been connected properly. - If connected using DHCP, verify that the camera is able to acquire dynamic IP addresses without any problem. - If the camera is connected to a Broadband Router, verify that port forwarding is properly configured.
Viewer got disconnected during monitoring.	- Connected Viewers become disconnected upon any change to camera or network configurations. - Check all network connections.
The camera connected to the network is not detected in the Device Manager program.	Turn off the firewall settings on your PC and then search the camera again.
Images overlap.	Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap.
No image appears.	If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN where the camera is connected.
Voice is not recorded even though audio input settings are configured.	You must enable the <Audio In> check box in <Basic> - <Video Profile>.

PROBLEM	SOLUTION
<Motion detection> of <Analytics> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred.	- Verify the settings in the following sequence: - 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.
No signal is found at the Alarm Output port even when an intelligent video analysis event is generated.	Check alarm output port settings.
Cannot record into the Micro SD card.	Check if the Micro SD card is defective.
Micro SD card is inserted but the camera does not operate properly.	- Check if the Micro SD card is inserted in the proper direction. Operation of any Micro SD card that is formatted by other devices is not guaranteed with this camera unit. - Format the Micro SD card again in <Setup> → <Event> → <Storage> menu.
Cannot record in the NAS.	Confirm that the information registered in the NAS is correct.
It reports that NAS setting has failed.	- Confirm that the IP address of the NAS is valid. - Confirm that the ID/password of the NAS is valid. - Confirm that you can access the folder designated as the default folder using the ID of the NAS. - Confirm that the NAS SMB/CIFS items are unchecked. - Confirm that the NAS IP address and the camera IP address are in the same format. ex) The NAS & camera subnet mask initial value is 255.255.255.0. If the IP address is 192.168.20.32 then the NAS IP address should be in the range of 192.168.20.1~192.168.20.255. - Check whether you tried to access as another user without formatting the default folder saved or used. - Confirm that you used recommended NAS equipment.
At the hybrid color palette mode, a color palette appears out of setting range.	- You should consider that the setting range of the hybrid color palette needs some margin within its accuracy range. - The hybrid palette is affected by some factors such as a low emissive object, ambient emissive sources and low temperature variation, etc. It may cause its operation to malfunction. - It is recommended that it should not be used to the screen with low temperature variation and the region of interest should be set with objects of temperature difference in a screen.
Some noises might be visible on the screen.	Considered the nature of thermal camera, the time for stabilization is necessary after powering it on. During this time, some noises might be visible on the screen, but they will normally disappear after about 30 minutes. This time could be increased depending on the characteristics of the detector.



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 Vision 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 Vision'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.

