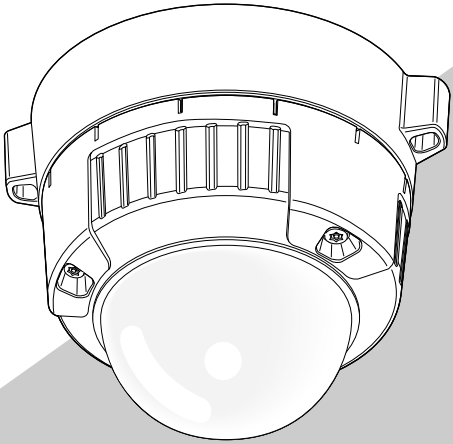
Panasonic

Installation Guide

Network Camera

Model No. WV-NW502S
WV-NW502SK

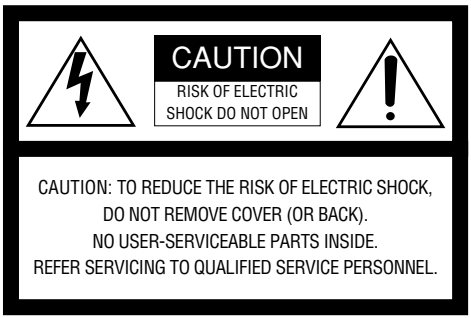


Before attempting to connect or operate this product, please read these instructions carefully and save this manual for future use.

No model number suffix is shown in this manual.

WARNING:

- To prevent fire or electric shock hazard, do not expose this apparatus to rain or moisture.
- The apparatus should not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, should be placed on the apparatus.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- The connections should comply with local electrical code.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "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 appliance.

Power disconnection. Unit with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. Unplug the power cord to disconnect the main power for all units.

For Canada

This Class A digital apparatus complies with Canadian ICES-003.

For U.S.A

NOTE: 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.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

For U.S.A

The serial number of this product may be found on the surface of the unit.
You should note the model number and serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. _____

Serial No. _____

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Important safety instructions

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Clean only with dry cloth.

6) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

7) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

8) 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.

9) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

10) Only use attachments/accessories specified by the manufacturer.

11) 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.

12) Unplug this apparatus during lightning storms or when unused for long periods of time.

Limitation of liability

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THE THIRD PARTY'S RIGHT.
THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE ADDED TO THE INFORMATION HEREIN, AT ANY TIME, FOR THE IMPROVEMENTS OF THIS PUBLICATION AND/OR THE CORRESPONDING PRODUCT (S).

Disclaimer of warranty

IN NO EVENT SHALL Panasonic Corporation BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

(1) ANY DAMAGE AND LOSS, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
(2) PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
(3) UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
(4) INCONVENIENCE OR ANY LOSS ARISING WHEN IMAGES ARE NOT DISPLAYED, DUE TO ANY REASON OR CAUSE INCLUDING ANY FAILURE OR PROBLEM OF THE PRODUCT;
(5) ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
(6) ANY CLAIM OR ACTION FOR DAMAGES, BROUGHT BY ANY PERSON OR ORGANIZATION BEING A PHOTOGENIC SUBJECT, DUE TO VIOLATION OF PRIVACY WITH THE RESULT OF THAT SURVEILLANCE-CAMERA'S PICTURE, INCLUDING SAVED DATA, FOR SOME REASON, BECOMES PUBLIC OR IS USED FOR THE PURPOSE OTHER THAN SURVEILLANCE;
(7) LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE.

Preface

Panasonic WV-NW502 Series cameras (WV-NW502S/WV-NW502SK) are designed to operate using a PC on a network (10BASE-T/100BASE-TX), and can be installed under eaves (sheltered outdoor).
By connecting to a network (LAN) or the Internet, images and audio from the camera can be monitored on a PC via a network.
* The lens is optional for the case of WV-NW502SK.

Note:
- It is necessary to configure the network settings of the PC and its network environment to monitor images from the camera on the PC. It is also necessary to install a web browser on the PC.

Main functions

High resolution (2 048 x 1 536) image
Images with high resolution up to 2 048 x 1 536 (3 megapixel) can be transmitted.

MEGA Super Dynamic
Super-Dynamic compensates brightness on a pixel-to-pixel basis resulting in production of natural images even if a subject has various illumination intensities.

H.264/MPEG-4 and JPEG triple encoding
H.264/MPEG-4 dual stream output and JPEG output can be simultaneously provided.
* Either H.264 or MPEG-4 is selectable.

Auto back focus (ABF) function
ABF (Auto Back Focus) ensures easy installation and stable focus in both color and B/W modes.

Black & white function
Images will be displayed clear even at night since the camera will be automatically switched from the color mode to the black and white mode under low illumination condition.

Power over Ethernet function
When connecting with a PoE (Power over Ethernet) device, power will be supplied by simply connecting a LAN cable. (IEEE802.3af compliant)

Interactive communication with audio
By using the audio output connector and the microphone in connector, receiving audio from the camera on a PC and transmitting audio from the PC to the camera is available.

SDHC/SD memory card function

Images can be recorded on an optional SDHC/SD memory card*1 both automatically (when images fail to transmit using the FTP periodic transmission function) and manually.

The image on the SDHC/SD memory card can be playback on a web browser or downloaded via network.

*1 Recommended SDHC/SD memory card (☞ page 41)

About the user manuals

There are 2 sets of this manual and the Operating Instructions (PDF).

The "Installation Guide" contains descriptions of how to install and connect this camera, and how perform the required network settings.

Refer to the Operating Instructions (PDF) on the provided CD-ROM for descriptions of how to perform the camera settings and how to operate this camera. Adobe® Reader® is required to read PDF.

System requirements for a PC

CPU:	Intel® Core™2 Duo 2.4 GHz or faster recommended
Memory:	512 MB or more (A minimum of 1 GB memory is required when using Microsoft® Windows Vista® .)
Network Interface:	10BASE-T/100BASE-TX 1 port
Audio Interface:	Sound card (when using the audio function)
Monitor:	Image capture size: 1 024 x 768 pixels or more Color: 24-bit True color or better
OS:	Microsoft® Windows Vista® Business SP1 (32-bit) Microsoft® Windows® XP Home Edition SP3 Microsoft® Windows® XP Professional SP3
Web Browser:	Windows® Internet Explorer® 7.0 * Microsoft® Internet Explorer® 6.0 SP3 is required when using Microsoft® Windows® XP Home Edition SP3 or Microsoft® Windows® XP Professional SP3.
Other:	CD-ROM Drive: It is necessary to read the operating instructions and use the software on the provided CD-ROM. DirectX® 9.0c or later Adobe® Reader®: It is necessary to read the operating instructions on the provided CD-ROM.

Important:

- When using a PC that does not meet the above requirements, displaying of images may become slower or the web browser may become inoperable.
- Audio may not be heard if a sound card is not installed on a PC. Audio may be interrupted depending on the network environment.
- Microsoft® Windows® XP Professional 64-bit Edition is not supported.
- When using IPv6 for communication, use Microsoft® Windows Vista® exclusively.

Note:

- Refer to "Notes on Windows Vista®" (PDF) for further information about system requirements for a PC and precautions when using Microsoft® Windows Vista®.

Trademarks and registered trademarks

- Microsoft, Windows, Windows Vista, Internet Explorer, ActiveX and DirectX are either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
- Intel, Pentium and Intel Core are trademarks or registered trademarks of Intel Corporation in the U.S. and other countries.
- Adobe and Reader are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.
- SDHC logo is a trademark.
- Other names of companies and products contained in these operating instructions may be trademarks or registered trademarks of their respective owners.

About copyright and licence

Distributing, copying, disassembling, reverse compiling, reverse engineering, and also exporting in violation of export laws of the software provided with this unit are expressly prohibited.

Network security

As you will use this unit connected to a network, your attention is called to the following security risks.

① Leakage or theft of information through this unit
② Use of this unit for illegal operations by persons with malicious intent
③ Interference with or stoppage of this unit by persons with malicious intent

It is your responsibility to take precautions such as those described below to protect yourself against the above network security risks.

- Use this unit in a network secured by a firewall, etc.
- If this unit is connected to a network that includes PCs, make sure that the system is not infected by computer viruses or other malicious entities (using a regularly updated anti-virus program, anti-spyware program, etc.).
- Protect your network against unauthorized access by restricting users to those who log in with an authorized user name and password.
- Apply measures such as user authentication to protect your network against leakage or theft of information, including image data, authentication information (user names and passwords), alarm mail information, FTP server information and DDNS server information.
- Do not install the camera in locations where the camera or the cables can be destroyed or damaged by persons with malicious intent.

Precautions

Refer installation work to the dealer.
Installation work requires technique and experiences. Failure to observe this may cause fire, electric shock, injury, or damage to the product.
Be sure to contact the dealer for installation, relocation and power supply work.

Stop the operation immediately when something is wrong with this product.
When smoke goes up from this product or the smell of smoke comes from this product, stop the operation immediately and contact your dealer.
Turn the power off immediately and contact qualified service personnel for service.

Do not attempt to disassemble or modify this product.
Failure to observe this may cause fire or electric shock.
Consult the dealer for the repair or inspections.

Do not insert any foreign objects.
This could permanently damage this product.
Turn the power off immediately and contact qualified service personnel for service.

Select an installation area that can support the total weight.
Selecting an inappropriate installation surface may cause the product to fall down or topple over, resulting in injury.
Installation work shall be started after sufficient reinforcement.

Periodic inspections shall be conducted.
Rust on the metal parts or screws may cause a fall of the product resulting in injury or accidents.
Consult the dealer for the inspections.

Do not use this product in an inflammable atmosphere.
Failure to observe this may cause an explosion resulting in injury.

Avoid installing this bracket in the locations where salt damage occurs or corrosive gas is produced.
Otherwise, the mounting portions will deteriorate and accidents such as a fall of this product may occur.

Install this product at a vibration-free place.
Failure to observe this may cause accidents including falling.
Failure to observe this may cause screws and bolts to be loosened resulting in injury due to their falling.

The installation place shall be high enough not to interfere with people or object moving.
Failure to observe this may cause accidents including falling.

Do not strike or give a strong shock to this product.
Failure to observe this may cause injury or fire.

Turn off the power before wiring.
Failure to observe this may cause electric shock. In addition, a short circuit or wrong wiring may cause fire.

The exclusively designed mount bracket shall be used.
Failure to observe this may cause a drop resulting in injury or accidents.
Use the exclusively designed mount bracket for installation.

The screws and bolts shall be tightened to the specified torque.
Failure to observe this may cause a drop resulting in injury or accidents.

Do not rub the edges of metal parts with your hand.
Failure to observe this may cause injury.

Turn the power off when cleaning of this product.
Failure to observe this may cause injury.

[Precautions for use]

This product has no power switch.
When turning off the power, turn off a circuit breaker.

To keep on using with stable performance
Do not use this product in hot and humid conditions for a long time. Failure to observe this causes component degradation resulting in life shortening of this product.
(Recommended operating temperature:
+35 °C {95 °F} or lower)
Do not expose this camera to direct heat sources such as a heater.

Do not touch the dome cover with your bare hands.
A dirty dome cover causes deterioration of picture quality.

Handle this product with care.
Do not abuse this product. Avoid striking, shaking, etc. Failure to observe this may cause trouble. If a strong shock or vibration is applied to the enclosure, it may cause damage or allow water to enter this product.

About the PC monitor
Displaying the same image on a CRT type monitor for a long time may damage the monitor. It is recommended to use a screen-saver.

When an error is detected, this product will restart automatically.
When an error is detected, this product will restart automatically. This product will be inoperable for around 2 minutes after the restart just as when the power is turned on.

Product disposal/transfer
Data saved on the media used with this product may be categorized as "Personal Information".
Therefore, if this product is handled by the third party because of disposal, transfer or repair, extreme care should be required for data handling.

Cleaning this product body
Be sure to turn off the power before cleaning. Failure to observe this may cause injury. Do not use strong abrasive detergent when cleaning this product. Otherwise, it may cause discoloration.
When using a chemical cloth for cleaning, read the caution provided with the chemical cloth product.

When the dirt is hard to remove, use a mild detergent and wipe gently.
When the dirt is hard to remove, use a mild detergent and wipe gently. Then, wipe off the remaining detergent with a dry cloth.

Cleaning the lens
Use a lens cleaning paper (used to clean camera lenses or lenses of spectacles). When using solvent, use an alcohols solvent and do not use a thinner or a glass cleaner.

Transmission interval
Image transmission interval may become slow depending on the network environment, PC performance, shooting subject, access number, etc.

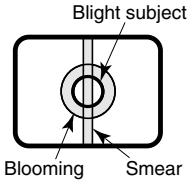
About SDHC/SD memory card
- Before inserting the SDHC/SD memory card, turn off the power of this product first. Otherwise, it may cause malfunction or damage data recorded on the SDHC/SD memory card. Refer to page 25 for descriptions of how to insert/remove an SDHC/SD memory card.
- When using an unformatted SDHC/SD memory card, format it using this product. Recorded data on the SDHC/SD memory card will be deleted when formatted. If an unformatted SDHC/SD memory card or an SDHC/SD memory card formatted with other devices is used, the camera may not work properly or performance deterioration may be caused. Refer to the Operating Instructions (PDF) for how to format an SDHC/SD memory card.

- If another SDHC/SD memory card is used, the camera may not work properly or performance deterioration may be caused.

Code label
The code labels (accessory) are required at inquiry for trouble. Use caution not to lose these labels. It is recommended to paste one of the labels onto the CD-ROM case.

Discoloration on the CCD color filter
When continuously shooting a bright light source such as a spotlight, the color filter of the CCD may have deteriorated and it may cause discoloration. Even when changing the fixed shooting direction after continuously shooting a spotlight for a certain period, the discoloration may remain.

Do not aim the camera at strong light sources.
A light source such as a spot light causes a blooming (light bleeding) or a smear (vertical lines).



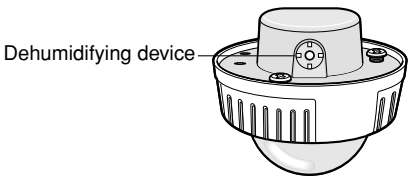
MPEG-4 Visual patent portfolio license
This product is licensed under the MPEG-4 Visual Patent Portfolio License for the personal and non-commercial use of a consumer for (i) Encoding video in compliance with the MPEG-4 Visual Standard ("MPEG-4 video") and/or (ii) Decoding MPEG-4 video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed by MPEG LA to provide MPEG-4 video. No license is granted or shall be implied for any other use. Additional information including that relating to promotional, internal and commercial uses and licensing may be obtained from MPEG LA, LLC.
See http://www.mpegla.com.

AVC patent portfolio license
This product is licensed under the AVC Patent Portfolio License for the personal and non-commercial use of a consumer to (i) Encode video in compliance with the AVC Standard ("AVC video") and/or (ii) Decode AVC video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed to provide AVC video. No license is granted or shall be implied for any other use. Additional information may be obtained from MPEG LA, L.L.C.
See http://www.mpegla.com.

Indication label
Refer to the indication label on the bottom of this product for the equipment classification and power source, etc.

Consumable parts
The following are consumables: Replace them in accordance with their lives. Their lives vary depending on use environment and conditions.
- Cooling fan
  Lifetime: approx. 40 000 hours

About the dehumidifying device
- This product has dehumidifying device to keep the inside at low moisture level, preventing condensation and quickly dissipating dew if produced.
- Dew may be produced depending on the conditions of temperature, humidity, winds, and rain, and it may take time to dehumidify.
- Never seal the surfaces of the dehumidifying device.



Precautions for Installation

Before start the installation/connection, prepare the required devices and cables.
Before starting the connection, turn the power of the devices including this product and the PC off.

Warning: Refer installation work to the dealer. Failure to observe this may cause fire, electric shock, injury, or damage to the product.

The product is designed to be installed under eaves.
Do not install this product in locations subject to direct sunlight.

Installing place
Contact your dealer for assistance if you are unsure of an appropriate place in your particular environment.

- Make sure that the installation area is strong enough to hold this product, such as a concrete ceiling.
- Install the camera in the foundation area of the architecture or where sufficient strength is assured.
- If a ceiling board such as plaster board is too weak to support the total weight, the area shall be sufficiently reinforced.

Avoid installing in the following locations.

- Locations where a chemical agent is used such as a swimming pool
- Locations subject to steam and oil smoke such as a kitchen, Locations near flammable gas or vapor
- Locations where radiation or x-ray emissions are produced, Locations subject to strong magnetic field or radio waves
- Locations where corrosive gas is produced, Locations where it may be damaged by briny air such as seashores
- Locations where the temperature is not within –30 °C - +50 °C {–22 °F - 122 °F}.
- Locations subject to vibrations (This product is not designed for on-vehicle use.)
- If a ceiling board is too weak to support the total weight, the area shall be sufficiently reinforced.

Do not install this product in a humid or dust-laden environment.
Otherwise, lifetime of the internal parts may be shortened.

Be sure to remove this product if it is not in use.

Design and engineer the power supply system to turn on/off the power of the camera since this product does not have the power switch.

About the network connection
When connecting to a network using the network cable of this product, observe the following.

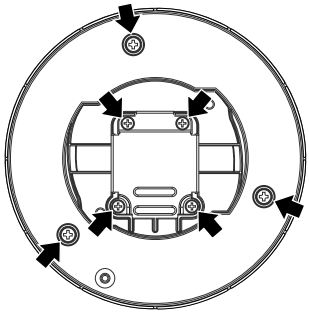
- When wiring for the network, design and engineer to not to be affected by thunder.
- It is impossible to install this product in combination with a pan/tilt head.

Screw tightening

- The screws and bolts must be tightened with an appropriate tightening torque according to the material and strength of the installation area.
- Do not use an impact driver. Use of an impact driver may damage the screws or cause tightening excessively.
- When a screw is tightened, make the screw at a right angle to the surface.
- After tightening the screws or bolts, perform visual check to ensure tightening is enough and there is no backlash.

Procure fixing screws separately.
The screws that secure this product are not supplied. Prepare them according to the material and strength of the area where the product is to be installed.

Not remove or loosen screws
If the screws (7 pieces) on the rear of the camera are loosened, camera trouble due to water leakage or camera falling may occur.

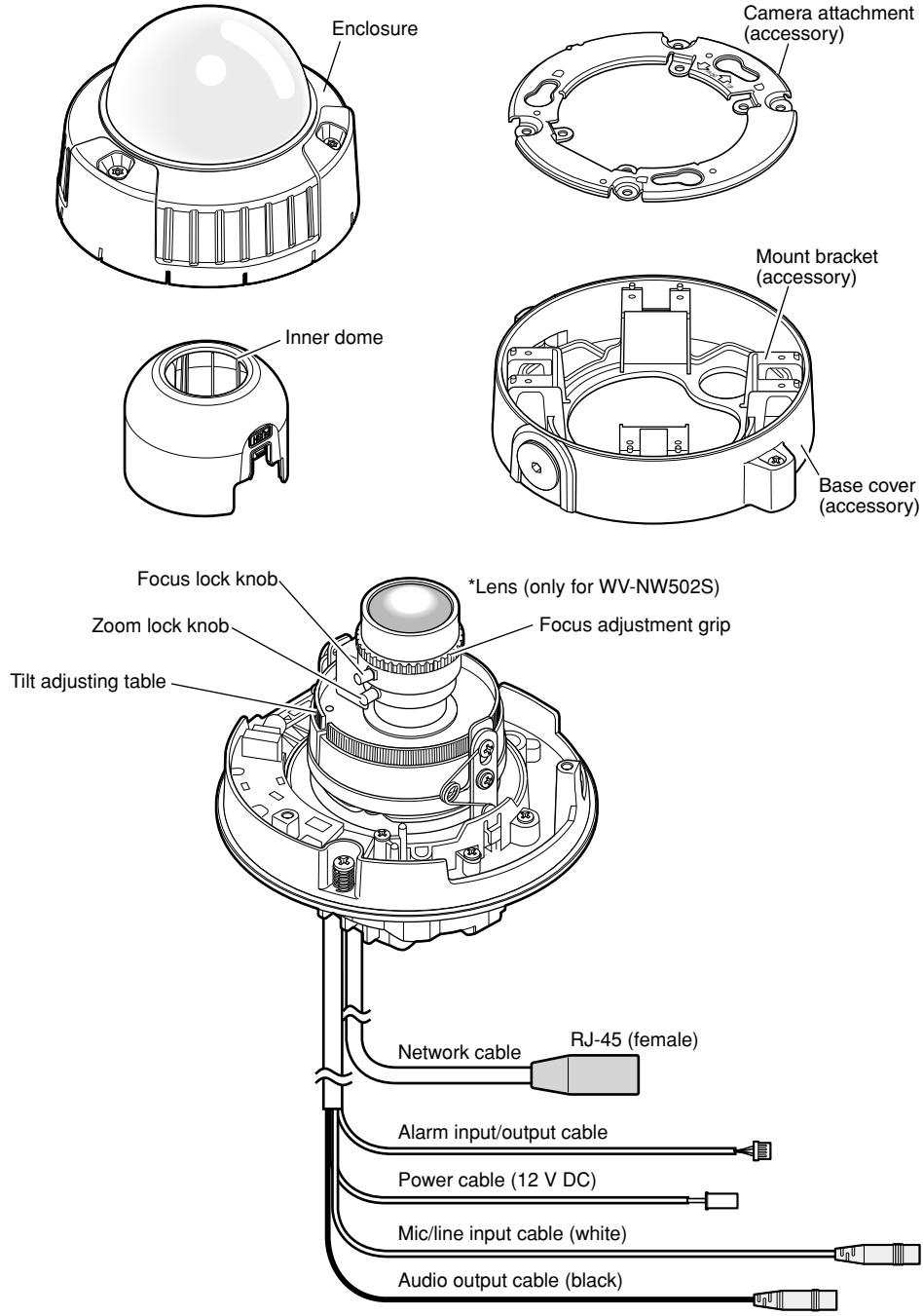


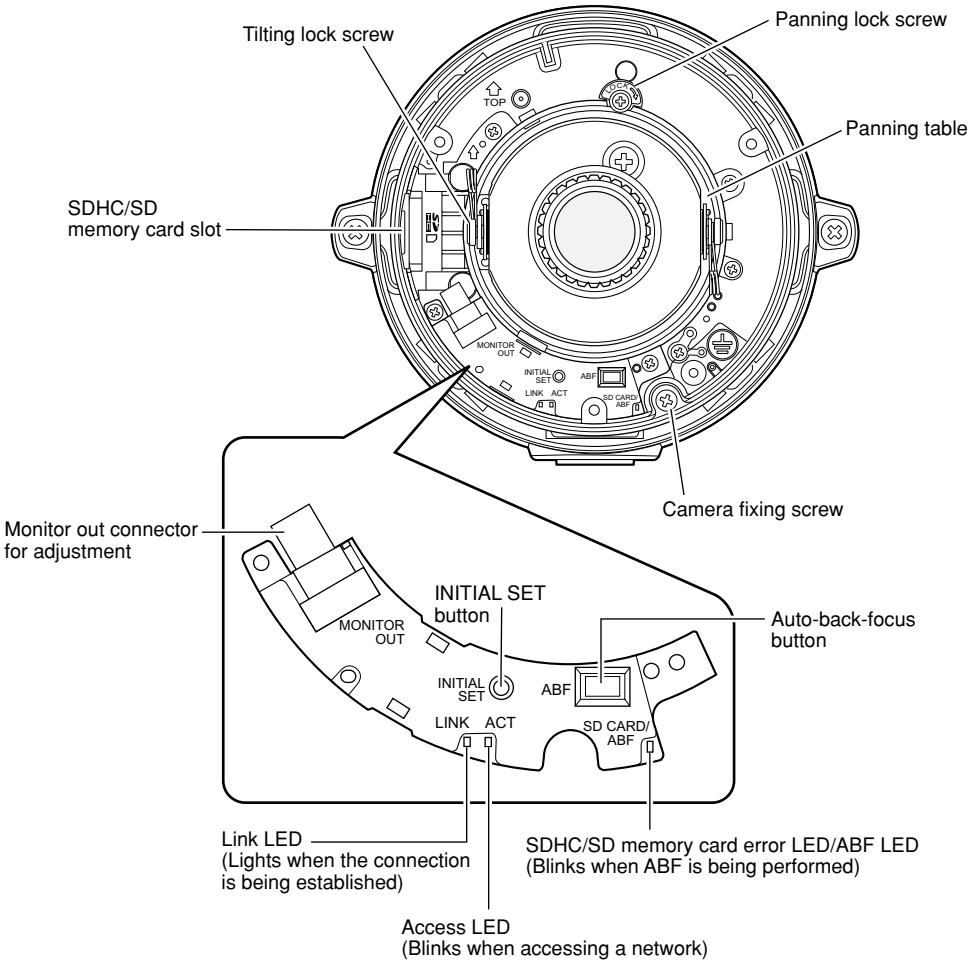
Radio disturbance
When the camera is used near TV/radio antenna, strong electric field or magnetic field (near a motor, a transformer or a power line), images may be distorted and noise sound may be produced.

PoE (Power over Ethernet)
Use a PoE hub/device that is compliant with IEEE802.3af standard.

Router
When connecting the camera to the Internet, use a broadband router with the port forwarding function (NAT, IP masquerade).
Refer to the Operating Instructions (PDF) for further information about the port forwarding function.

Major operating controls and their functions





• About the [INITIAL SET] button

Turn on the power of the camera while holding down this button, and wait for around 5 seconds without releasing this button. Wait around 2 minutes after releasing the button. The camera will start up and the settings including the network settings will be initialized. Before initializing the settings, it is recommended to copy down the settings in advance.

Preparations

When installing the camera on a wall or a ceiling, there are two methods as specified below. (☞ pages 18 - 20)

- Using a two-gang junction box
- Using supplied mount bracket

Important:

- Procure 4 screws (M4) to secure the camera attachment (accessory) or the camera mount bracket (accessory) to a wall or a ceiling according to the material of the installation area. Do not use wood screws and nails.
  Use anchor bolts (M4) for securing if the ceiling is made of concrete.
  (Recommended tightening torque: 1.6 N·m {1.18 lbf·ft})
- Be sure to mount the camera attachment with the arrow facing upward.
- Required pull-out capacity of a single screw/bolt is 196 N {44.06 lbf} or more.
- If a ceiling board such as plaster board is too weak to support the total weight, the area shall be sufficiently reinforced.
- When using an optional mounting bracket, refer to the operating instructions of the bracket in use.

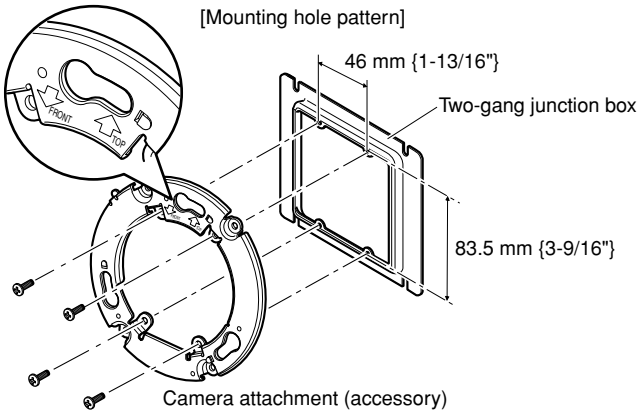
Installation place	Applicable mount bracket	Recommended screw	Number of screw	Minimum pull-out strength (per 1 pc.)
Ceiling/wall	(two-gang junction box)	M4	4 pcs.	196 N {44.06 lbf}
Ceiling/wall*1	Mount bracket (approx. 350 g {0.77 lbs})	M4	4 pcs.	196 N {44.06 lbf}
Ceiling	WV-Q169 (approx. 700 g {1.55 lbs})	–	–	*2

*1 The conditions for securing the camera mount bracket to a wall or a ceiling are described here.

*2 Make sure that the installed mount bracket can support more than 5 times of the weight of the camera.

Using a two-gang junction box

- Secure the camera attachment (accessory) to the two-gang junction box (4" x 4") built in a wall or ceiling.



Note:

- For wall mounting:
  The camera attachment shall be mounted with "⬆TOP" facing upward.
- For ceiling mounting:
  The camera attachment shall be mounted with "⬇FRONT" facing in the direction of the camera front (model number indication face).

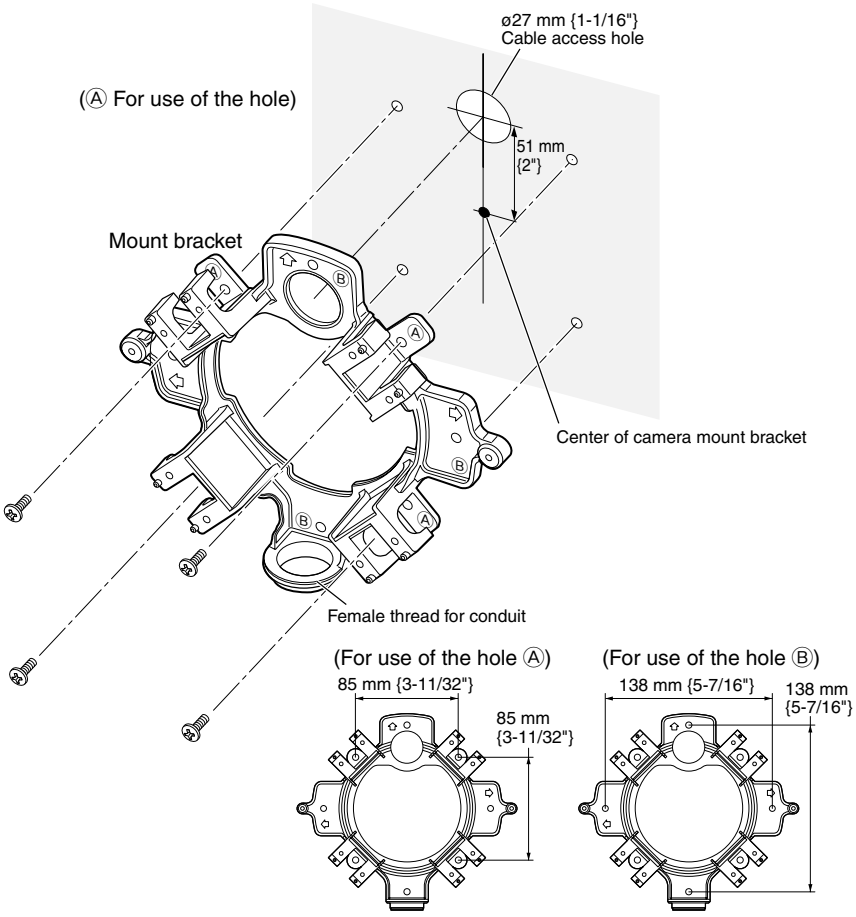
Using supplied mount bracket

- If the mount bracket (accessory) is used to mount the camera, mount the bracket on the wall or ceiling first (see the blow).
  Mount the camera attachment (accessory) with the supplied screws next (☞ page 20).
  (Recommended tightening torque: 0.78 N·m {0.58 lbf·ft})

Note:

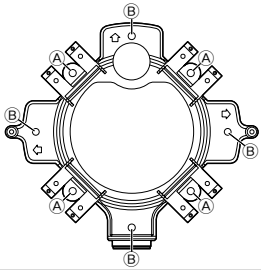
- When the camea is mounted on the wall or ceiling with a hole for cable running, or the camera is mounted using open wiring, the mount bracket is used.
- The female thread for conduit is compliant with ANSI NPSM (parallel pipe threads) 3/4".
  The female thread for conduit can be removed using a hexagon wrench.
- Refer to page 33 for how to connect the conduit.

1 Mount the mount bracket (accessory) on the wall or ceiling.



Note:

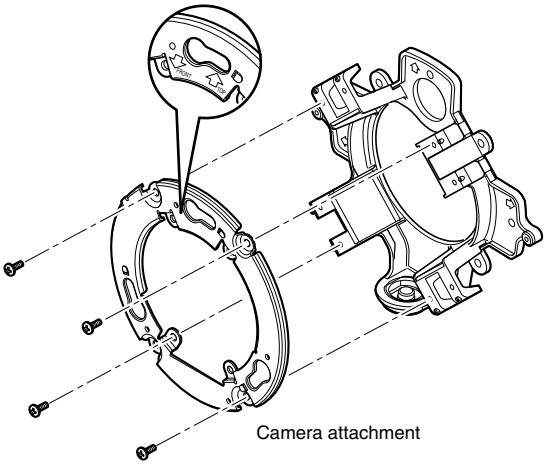
- Only the same type of holes, Ⓐ or Ⓑ, shall be used for mounting.



2 Pass the cables through the hole for cable running from the wall or ceiling.

3 Fix the camera attachment on the mount bracket using the screws supplied with the bracket.

Recommended tightening torque: 0.78 N·m {0.58 lbf·ft}



Camera attachment

Note:

- For wall mounting:
  The camera attachment shall be mounted with "⬆TOP" facing upward. Except the case of connecting the conduit upward (page 33)
- For ceiling mounting:
  The camera attachment shall be mounted with aligning the front side (model number indication face) of the camera with the position of the arrow in "⬇FRONT".
- Ensure that any of the arrows on the mount bracket is aligned with the "⬆TOP" arrow on the camera attachment.

Camera installation

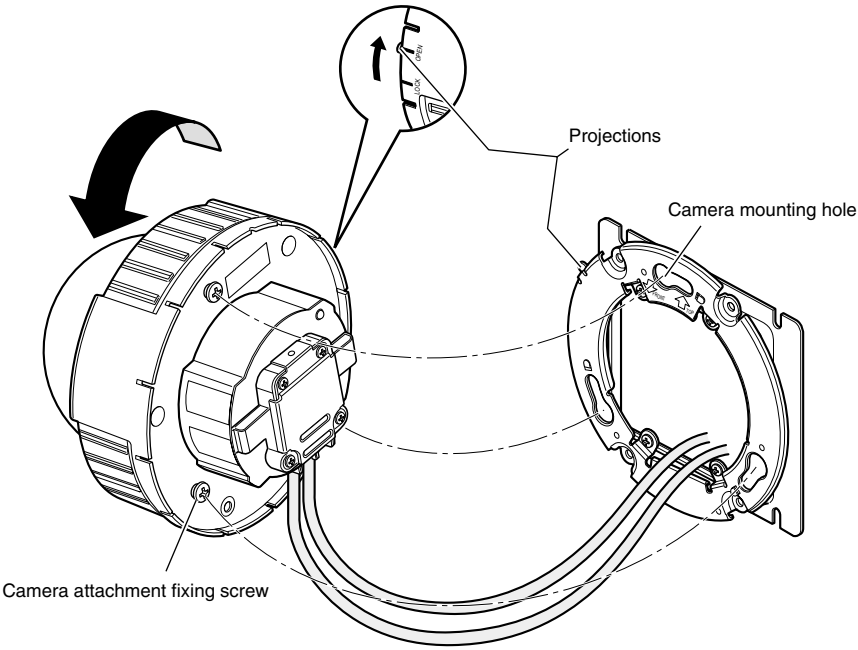
1 Mount the camera.

<Using a junction box>

① Connect each cable. (☞ page 29)
Waterproof the connecting portion. (☞ page 32.)

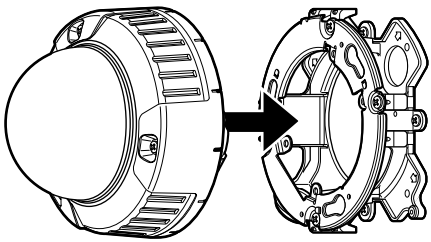
② Align the "OPEN" on the camera with the protrusion of the camera attachment.

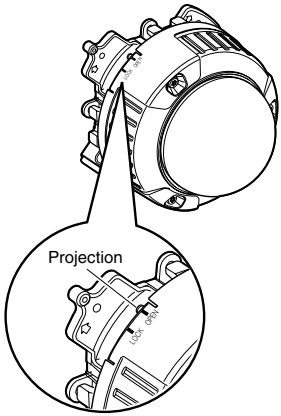
③ Engage the camera attachment fixing screws on the rear of the camera in the camera mounting holes of the camera attachment and rotate the camera in the arrow direction to secure the camera attachment and camera.
Ensure that the protrusion of the camera attachment is set to the "LOCK" position.



<Using the camera mount bracket>

① Attach the camera onto the camera attachment while aligning the "OPEN" mark of the camera with the projection of the camera attachment.

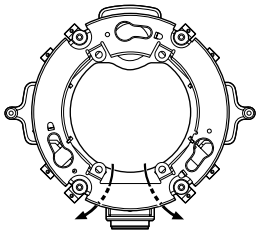




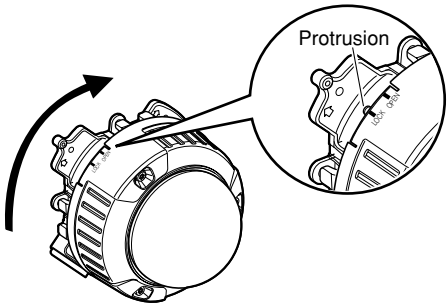
Important:

- When mounting the camera body, cables shall be run between the camera attachment and camera mount bracket as indicated by the arrow in the illustration.

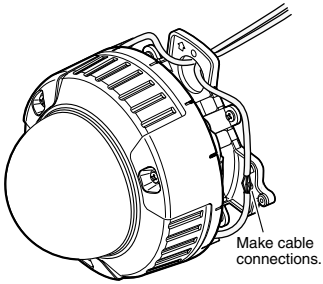
* Cable running as indicated by the arrow is an example. Cable running shall be varied with installation environment.



② Engage the rear-side screw of the camera with the screw hole of the camera attachment and rotate the camera in the direction of the arrow to secure the camera to the camera attachment.
Confirm that the embossed part of the camera attachment is set in the "LOCK" position.



③ Connect the cables at the side of the mount bracket. (☞ page 29)
Waterproof the connecting portion. (☞ page 32)



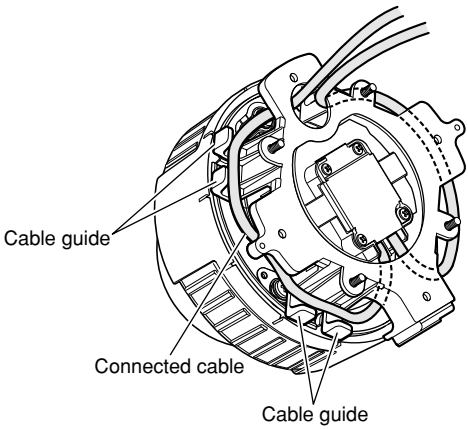
Note:

- Disconnect the 12 V power source and PoE power source to prevent power from being supplied during mounting work.

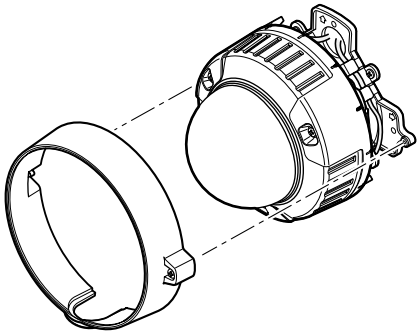
④ Accommodate the connected cables inside the cable guide of the camera mount bracket.

Important:

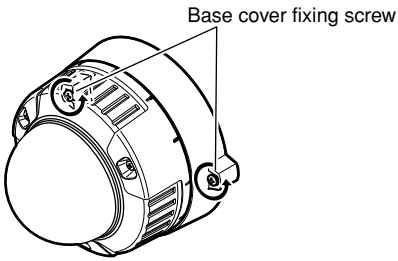
- To prevent the cables from being caught when the cover is attached, keep the cables inside the cable guide.



⑤ Attach the base cover.

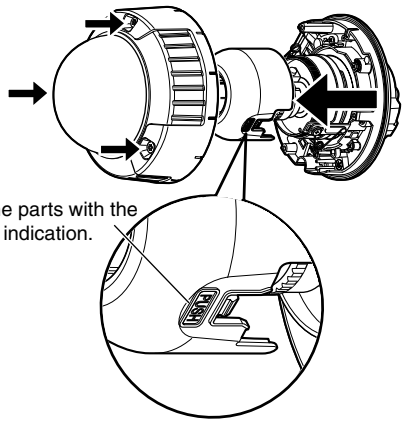


⑥ Use the bit for tamperproof screw (accessory) to tighten the fixing screws provided on both sides of the base cover.
(Recommended tightening torque: 0.78 N·m {0.58 lbf·ft})



2 Remove the enclosure and inner dome from the main body by loosening the three fixing screws.

Loosen the three fixing screws by using the provided bit for tamperproof screw. Detach the inner dome while pushing the parts with the "PUSH" indication.



Important:

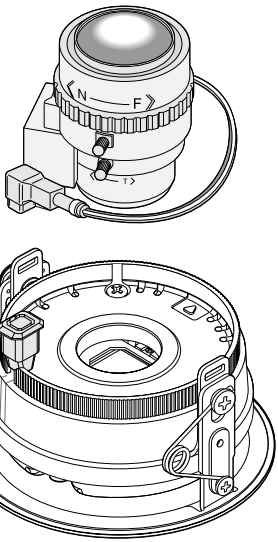
- Do not hold the inner dome when carrying the camera. Otherwise, the camera part may fall and it may damage the camera.

3 Mount the lens (WV-NW502SK)

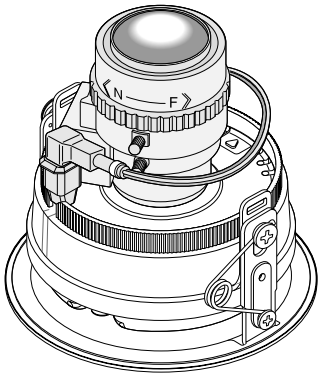
① Before mounting the lens, remove the protection sheet from the camera.

② Refer to the operating instructions of the lens for how to mount the lens.

③ Mount the optional lens to the camera by turning the lens clockwise.



④ Insert the connector of lens into the connector of camera.

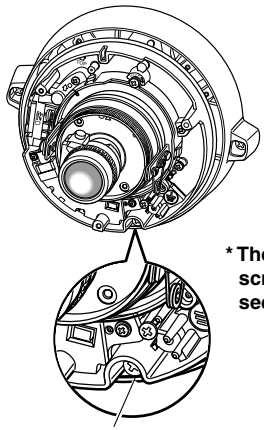


4 Secure the camera to the bracket with the camera fixing screw (red, 1position).

The illustration is an example of using the accessory camera mount bracket.

Important:

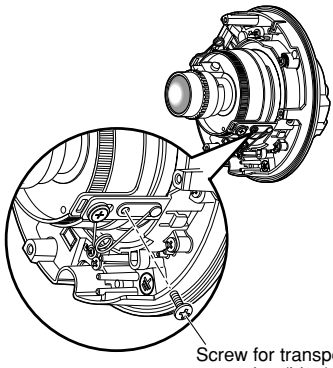
- Be sure to tighten the camera fixing screw.
  Failure to observe this may cause camera trouble due to water leakage or camera falling.
  (Recommended tightening torque: 0.78 N·m {0.58 lbf·ft})



*** The camera fixing screw shall be securely tightened.**

Camera fixing screw (red)

5 Remove the screw for transport protection (blue, 1 position) with a Phillips screw driver.



Screw for transport protection (blue)

6 Insert an SDHC/SD memory card.

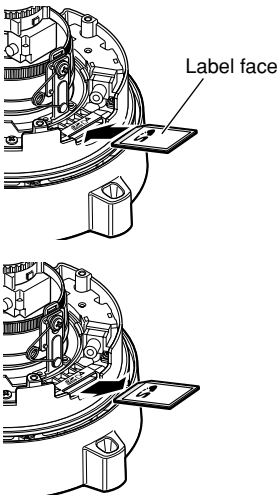
Important:

- Before inserting an SDHC/SD memory card, turn off the power of the camera first.
  Insert an SDHC/SD memory card with the label face visible (see the illustration below). Before removing the SDHC/SD memory card, select "Not use" for "SD memory card" on the [SD memory card] tab of "Basic" on the setup menu first. Turn off the power after "Not use" selection, and then unload the SDHC/SD memory card. (☞ Operating Instructions (PDF))

① Insert an SDHC/SD memory card into the SDHC/SD memory card slot.

② Insert an SDHC/SD memory card into the slot until it clicks into the place. When it clicks, it is inserted into the place.

③ To remove the SDHC/SD memory card, push down the top of the card until it clicks.
The SDHC/SD memory card will be released and come up from the slot.



Adjust the camera

1 **Be sure to view the monitor for adjustment when the camera angle is adjusted.**

Connect an adjusting monitor (such as a small LCD monitor) to the monitor out connector (for adjustment) and adjust the camera angle.

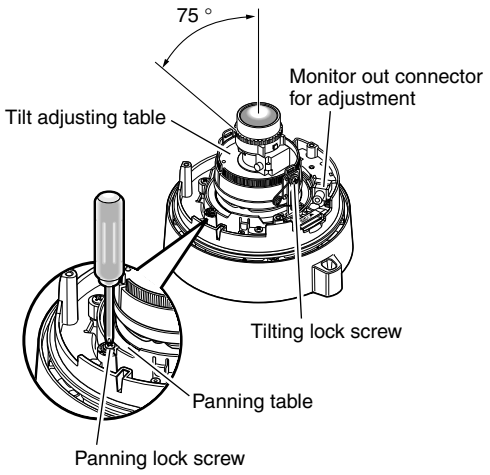
Turn on the power after connecting the adjusting monitor.

Follow the steps ①, ② and ③ to adjust the camera angle.

① Loosen the panning lock screw, rotate the camera horizontally to adjust pan direction, and then tighten the panning lock screw.

② Loosen the tilting lock screw, rotate the camera vertically to adjust tilt direction, and then tighten the tilting lock screw.

③ Rotate the tilt adjusting table to adjust the azimuth angle of the image.



Note:

- At the same time for the pan and tilt adjustments, make focus adjustments of Step 2.

Important:

- The panning lock and tilting lock screws shall be securely tightened. (Recommended tightening torque: 0.59 N·m {0.44 lbf·ft})

2 **Adjusts the focus.**

At the same time for the pan and tilt adjustments, make focus adjustments.

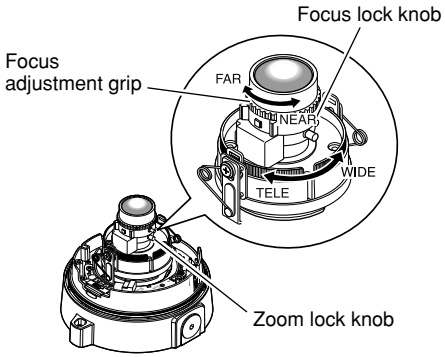
Adjust the focus by following the adjusting procedure of ①, ② and ③ shown below.

① Hold down the auto back focus button for 5 sec. or more to set ABF to the standard position.

② Loosen the zoom lock lever and move the lever between TELE and WIDE to obtain the appropriate angle of view.

③ Loosen the focus lock knob, rotate the focus adjustment grip to adjust the focus coarsely, and then tighten the focus lock knob.

* Refer to the operting instructions of the lens for the case of WV-NW502SK. (☞ page 24)



Note:<WV-NW502SK>

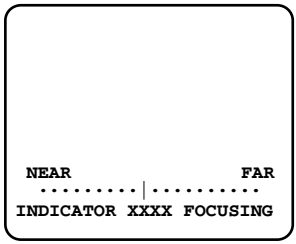
- If the zoom ring is fully rotated in the WIDE direction during use of a vari-focal lens, the periphery may become dark depending on the lens to be used. In such a case, fully rotate the focus ring in either the NEAR direction or FAR direction, slightly rotate the ring in the reverse direction, and adjust the back focus of the camera. For further information, refer to the operating instructions for the lens to be used.

Note:

- Lens adjustment without setting ABF to the standard position may lead to darkened four corners of the screen.
- When either of the zoom or the focus is changed, the other will also be changed.
- Refer to the description about ABF for focus fine adjustment.

3 Press the auto back focus button.

The ABF LED (☞ page 16) blinks, the focus position indicator appears on the lower part of the monitor for adjustment, and the back focus is automatically adjusted. (When connecting to a network, it is possible to execute and check from a PC.)



Important:

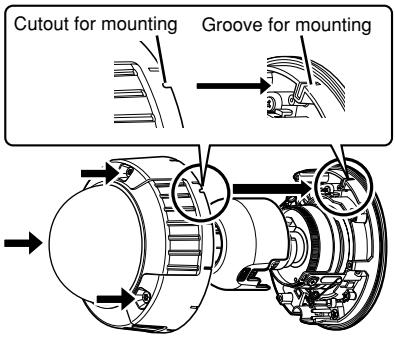
- Activate the auto back focus function from the setup menu after mounting the enclosure because mounting the enclosure may result in slightly out of focus.

Note:

- When the auto back focus button is pressed and released, the ABF function will immediately start.
- When the auto back focus button is held down for 5 seconds or more, the auto back focus position will move to the default position to be set for lens replacement, etc.
- When images in the near-infrared light area change from color to white & black, out-of-focus may be occurred according to the nature of optical property. In this case, the focus can be corrected by selecting "Auto" or "Preset" for "Adjusting method" on the setup menu (The focus will not automatically be adjusted according to the illumination level change once the focus is corrected.) Refer to the Operating Instructions (PDF) for how to set [Adjusting method] on the setup menu.
- If the product is installed and operated at temperatures of –10°C or lower, activation of the auto back focus function may result in failure to obtain accurate focus. In such a case, wait until the camera warms up (taking approx. more than 1 hour) and perform adjustment after turning on the power again.

4 Mount the enclosure and inner dome.

Tighten the screws that have been loosened in Step 2 in page 24 using the supplied driver bit.

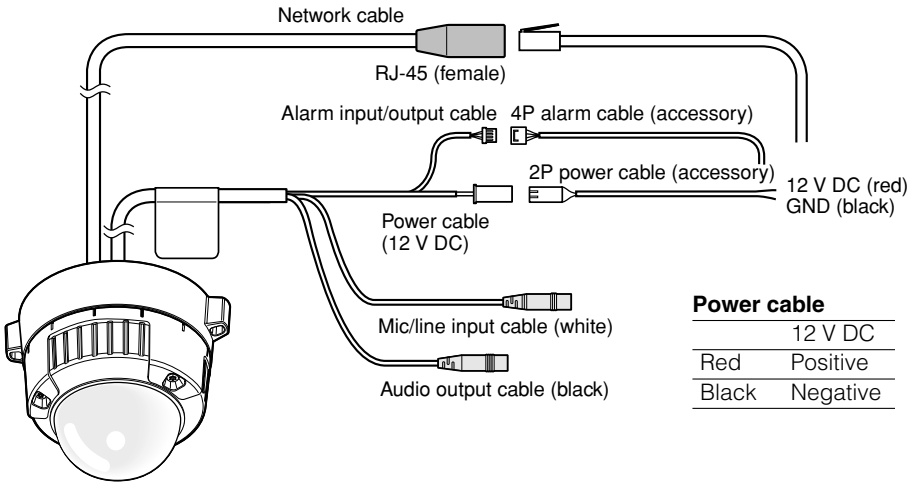


Important:

- Securely tighten all the fixing screws (x3) of enclosure.
  Otherwise, water exposure may cause damage or malfunction of camera, or camera dropping may result in injury.
  (Recommended tightening torque: 0.78 N·m {0.58 lbf·ft})
- Attach the inner dome in accordance with the lens direction to not to change the lens direction.
- Check if the tabs of the inner dome are firmly fit.
- Remove the cushioning (pink sheet) from the inside of the dome and the protection sheet from the outside of the dome.

Connection

Turn off a circuit breaker before making a connection. Before start the connection, prepare the required devices and cables.



Power cable

	12 V DC
Red	Positive
Black	Negative

1 Connect the microphone to MIC/LINE IN (for use of the audio reception function).

Input impedance:	2 kΩ ±10 %
Recommended cable length:	1 m {3.3'} or less (for microphone input)
	10 m {33'} or less (for microphone input)
Recommended microphone:	Plug-in power type microphone (option)
	Connect a mini plug (ø3.5 mm).

- Supply voltage: 2.5 V ±0.5 V
- Recommended sensitivity of microphone: –48 dB±3 dB (0 dB=1 V/Pa,1 kHz}

Important:

- Connect/disconnect the external speaker cables or audio/video cables after turning off the power of the camera and the amplifier. Otherwise, loud noise may come out from the speaker.

2 Connect an external amplifier-embedded speaker to the audio output connector (for use of the audio transmission function).

Connect a stereo mini plug (ø3.5 mm) (monaural output).

- Recommended cable length: 10 m {33 ft} or less

3 Connect the alarm input/output cable.

Rating of ALARM IN/OUT

<Ratings>

- ALARM OUT
  AUX OUT / EXPOSURE OUT
  Output specification: Open collector output (maximum applied voltage: DC 20 V)
  Open: DC 4 - 5 V by internal pull-up
  Close: Output voltage 1 V DC or less (50 mA or less)

- ALARM IN1 / DAY NIGHT IN
  ALARM IN2
  ALARM IN3
  Input specification:
  Non-voltage make contact input
  (DC 4 - 5 V internal pull-up)
  OFF: Open or DC 4 - 5 V
  ON: Make contact with GND (required drive current: 1 mA or more)

Note:

- Check if rating of an external device such as a sensor is applicable to the rating of this product by referring to the provided operating instructions.

4P alarm cable (accessory) pin configuration

1	Black	GND
2	Gray	ALARM IN3/AUX OUT/EXPOSURE OUT (Alarm input terminal 3/AUX output terminal/exposure timing output terminal)
3	Red	ALARM IN2/ALARM OUT (Alarm input terminal 2/alarm output terminal)
4	Green	ALARM IN1/DAY NIGHT IN (Alarm input terminal 1/color-BW selection input terminal)

4 Connect a LAN cable (category 5 or better) to the network cable.

5 Connect the power cable.

Important:
- The power supply of 12 V DC shall be insulated against 120 V AC.

• When using 12 V DC power supply
Connect the output cable of the AC adapter (option) to the 2P power cable.

• When using PoE (IEEE802.3af compliant)
Connect an Ethernet cable (category 5 or better) between a PoE device (such as a hub) and the network connector cable of the camera.

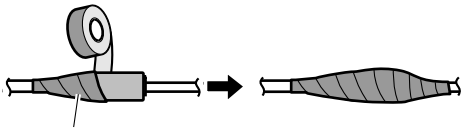
Important:
- Use all 4 pairs (8 pins) of the LAN cable.
- The maximum cable length is 100 m {328'}.
- Make sure that the PoE device in use is compliant with IEEE802.3af standard.
- When connecting both the 12 V DC power supply and the PoE device for power supply, PoE will be used for power supply.
- When disconnecting the LAN cable once, reconnect the cable after about 2 seconds. When the cable is quickly connected, the power may not be supplied from the PoE device.

Waterproof treatment for the cable joint sections

Adequate waterproof treatment is required for the cables when installing the camera with cables exposed or installing it under the eaves. The camera body is waterproof, but the cable ends are not waterproof.

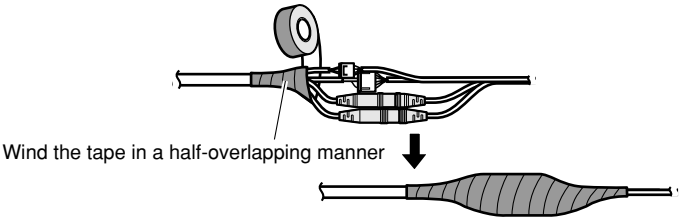
Be sure to use the supplied butyl rubber tape at the points where the cables are connected to apply waterproof treatment in the following procedure. Failure to observe this or use of a tape other than the provided butyl rubber tape (such as a vinyl tape) may cause water leakage resulting in malfunction.

When using a LAN cable



Wind the tape in a half-overlapping manner

When using the ALARM IN/OUT cable, POWER cable, MIC/LINE IN cable and AUDIO OUT cable



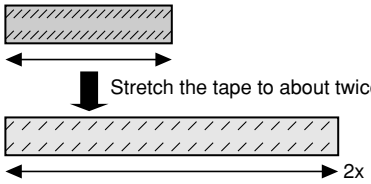
Wind the tape in a half-overlapping manner

Important:

- Waterproof treatment is also to be applied to the 2P power cable (provided), the 4P alarm cable (provided) and other connection cables if they are subject to rain.

Note:

- How to wind the supplied waterproof butyl tape
  Stretch the tape by approx. twice (see the illustration at right) and wind it around the cable. Insufficient tape stretch causes insufficient waterproofing.

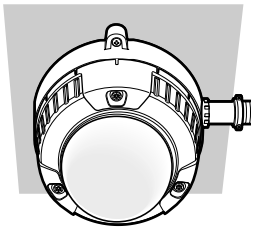


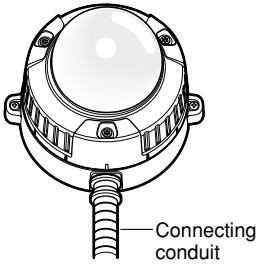
- To install this product outdoors, be sure to waterproof the cables. Waterproof grade (IEC IP66 or equivalent) is applied to this product only when it is installed correctly as described in these operating instructions and appropriate waterproof treatment is applied. The mount brackets are not waterproofed.

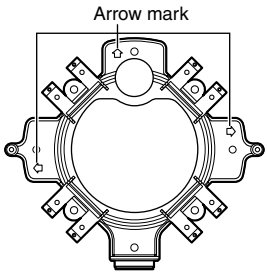
Important:

- If open wiring is conducted, be sure to use conduits and run the cables inside the tubes to protect the cables from direct sunlight.
- When connecting the conduit at the lateral or bottom position, any of the arrow marks on the bracket shall be at the top.
- When connecting the conduit upward, mount the camera attachment with the arrow position on either left or right side.

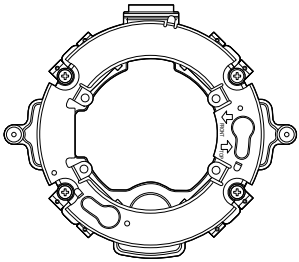
<When connecting the conduit sideward or downward>





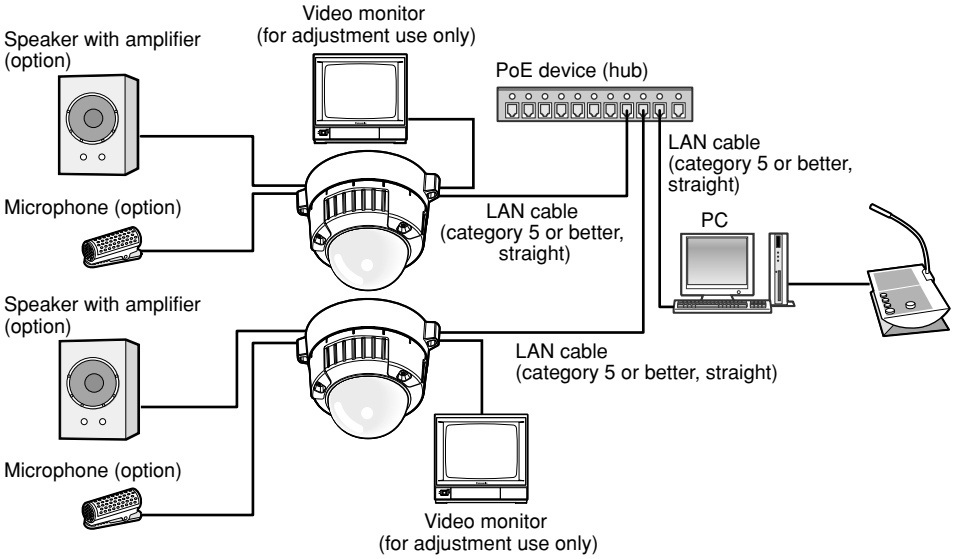


<When connecting the conduit upward>



- For installation on the wall, do not connect the conduit at the upper side to prevent water from being stored in the bracket. If water remains inside, the dehumidifying device cannot function properly.
- Installation work shall be such that there is no intrusion of water into the architecture through the conduits having been joined.

Connection example when connecting to a network using a PoE hub



<Required cable>

LAN cable (category 5 or better, straight)

Important:

- The video monitor is used for checking the adjustment of the angular field of view when installing the camera or when servicing. It is not provided for recording/monitoring use.
- Use a switching hub or a router which is compliant with 10BASE-T/100BASE-TX.
- Power supply is required for each network camera. When using a PoE device (hub), 12 V DC power supply is unnecessary.

Configure the network settings

Install the software

Before installing the software, read the readme file on the provided CD-ROM first.

Software included on the provided CD-ROM

- Panasonic IP setting software
  Configure the network settings of the camera. Refer to the following for further information.
- Viewer Software "Network Camera View4"
  It is necessary to install the viewer software "Network Camera Viewer4" to display images on a PC. Install the viewer software by double-clicking the "nwcv4setup.exe" icon on the provided CD-ROM.

Configure the network settings of the camera using the Panasonic IP setting software

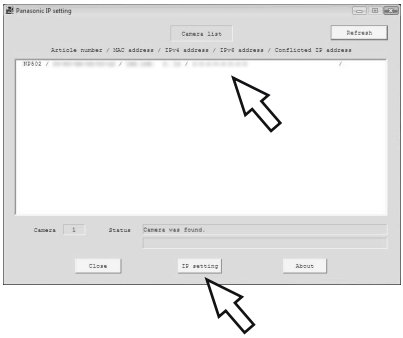
It is possible to configure the network settings of the camera using the IP setup software on the provided CD-ROM.
When using multiple cameras, it is necessary to configure the network settings of each camera independently.
If the Panasonic IP setting software does not work, configure the network settings of the camera and the PC individually on the "Network setup" page of the setup menu. Refer to the Operating Instructions (PDF) for further information.

Important:

- When using Microsoft® Windows® XP Home Edition SP3, the "Windows Security Alert" window may be displayed when starting the IP setup software.
  In this case, click the "Unblock" button on the displayed "Windows Security Alert" window.
- When using Microsoft® Windows Vista®, the "Windows Security Alert" window may be displayed when starting the IP setup software. In this case, disable "User Account Control" from the control panel.
- For the security enhancement, the MAC address/IP address of the camera to be configured will not be displayed when around 20 minutes have passed after turning on the power of the camera. (when the effective period is set to "20 minutes" in the IP setup)
- Panasonic IP setting software is inoperable in other subnets via the same router.
- This camera cannot be displayed or set with an older version of the IP setup software (version 2.xx).

1 Start the Panasonic IP setting software.

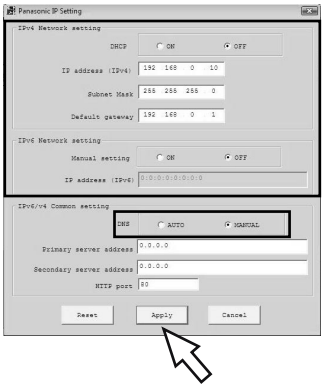
2 Click the [IP setting] button after selecting the MAC address/IP address of the camera to be configured.



Note:

- When using a DHCP server, the IP address assigned to the camera can be displayed by clicking the [Refresh] button of the IP setting software.
- When a duplicate IP address is used, the corresponding MAC address/IP address will be displayed shaded.

3 Complete each network setup item and click the [Apply] button.



Note:

- When using a DHCP server, it is possible to set "DNS" to "AUTO".

Important:

- It may take for around 2 minutes to complete to upload the settings to the camera after clicking the [Apply] button. The settings may be invalidated when the 12 V DC power supply is cut or when the LAN cable is disconnected before completing the upload.In this case, perform the settings again.
- When using a firewall (including software), allow access to all UDP ports.

Troubleshooting

Before asking for repairs, check the symptoms with the following table.

Contact your dealer if a problem cannot be solved even after checking and trying the solution in the table or a problem is not described below.

Symptom	Cause/solution	Reference pages
Power is not turned on.	**When using DC power supply** • Is DC 12 V power supply connect to the 2P power supply cable? → Check whether the connection is appropriately established. **When using a PoE device for power supply** • Are the PoE device and the network connector cable of the camera connected using a LAN cable ? → Check whether the connection is appropriately established. • Depending on the PoE device, the power supply will stop when the demanded power exceeds its total power limit for all PoE ports. → Refer to the operating instructions of the PoE device in use.	31
Power indicator not lit.	• Is "Off" set for "Link/Access LED" on the "Basic" page? → Set "On" for "Link/Access LED".	Operating Instructions (PDF)

Specifications

● Basic

Power source:	12 V DC, PoE (IEEE802.3af compliant)
Power consumption:	12 V DC: 630 mA, PoE: 7.6 W (Class 0 device)
Ambient operating temperature:	–30 °C - +50 °C {–22 °F - 122 °F} *1
Ambient operating humidity:	Less than 90 %
Waterproof:	Camera: IP66 (IEC60529) * Only when installation work specified in this book is properly performed and appropriate waterproof treatment is performed
Shock resistance:	Compliant with 50 J IEC60068-2-75
Monitor output (for adjusting the angular field of view):	VBS: 1.0 V [p-p]/75 Ω, composite signal, RCA jack
EXT I/O terminal cable:	ALARM IN1 / DAY/NIGHT IN, ALARM IN2 / ALARM OUT ALARM IN3 / AUX OUT / EXPOSURE OUT x1 each
Microphone/Line input cable:	ø3.5 mm monaural mini jack Input impedance: Approx. 2 kΩ
For microphone:	Applicable microphone: Plug-in power type Supply voltage: 2.5 V ±0.5 V
For line:	Input level: Approx. –10 dBV
Audio output cable:	ø3.5 mm stereo mini jack (monaural output) Output impedance: Approx. 600 Ω Line level
Dimensions:	ø164 mm x 146 mm (H) x 191.5 mm (W) {ø6-15/32" x 5-3/4" (H) x 5-9/16"(W)} (including protrusion of the base cover fixing screw)
Weight:	Approx. 1.8 kg {3.97 lbs}
Finish:	Main body: Aluminum die cast, light gray Transparent part (over the lens): Clear polycarbonate resin

● Camera

Image sensor:	1/3 inch interline transfer CCD
Effective pixels:	1 296 (H) x 976 (V) x 2
Scanning area:	4.86 mm (H) x 3.65 mm (V) {3/16" (H) x 1/8" (V)}
Scanning system:	Progressive
Minimum illumination:	1.3 megapixels mode Color: 1.0 lx {0.1 footcandle}, BW: 0.08 lx {0.008 footcandle} (F1.2, Auto slow shutter: Off (1/30 s), AGC: High, Super-Dynamic: Off) Color: 0.06 lx {0.006 footcandle}, BW: 0.005 lx {0.0005 footcandle} * Converted value (F1.2, Auto slow shutter: Max. 16/30 s, AGC: High, Super-Dynamic: Off)

	3 megapixels mode Color: 2.0 lx {0.2 footcandle}, BW: 0.16 lx {0.016 footcandle} (F1.2, Auto slow shutter: Off (1/30 s), AGC: High) Color: 0.12 lx {0.012 footcandle}, BW: 0.01 lx {0.001 footcandle} * Converted value (F1.2, Auto slow shutter: Max. 16/30 s, AGC: High)
Super-Dynamic:	On/Off (only at 1.3 megapixels mode)
Dynamic range:	52 dB typ. (Super-Dynamic: On, Light control: Indoor scene)
Gain (AGC):	On(Low)/On(Mid)/On(High)/Off
Adaptive black stretch:	On/Off (only at Super-Dynamic Off)
Light control mode setting:	Indoor scene/Outdoor scene/ELC (ELC: only at Super-Dynamic Off)
Shutter speed:	Off(1/30), 3/100, 2/100, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 (only at Super-Dynamic Off)
Auto slow shutter:	Off, Max. 2/30s, Max. 4/30s, Max. 6/30s, Max. 10/30s, Max. 16/30s
Black & white mode:	On/Off/Auto 1(Normal)/Auto 2(IR Light)/Auto 3(SCC)
White balance:	ATW1/ATW2/AWC
Digital noise reduction:	High/Low
Image stabilizer:	On/Off
Video analytics	
Face detection:	On/Off (with the XML notification setting)
Privacy zone:	On/Off (up to 8 zones available)
Camera title on screen:	Up to 16 characters (alphanumeric characters, marks) On/Off
VMD alarm:	On/Off, 4 areas available
Auto back focus:	AUTO/PRESET/FIX
ALC lens drive:	DC drive
Lens mount:	CS-mount

● Lens (WV-NW502S)

Type:	2.8x vari-focal lens
Focal length:	2.8 mm - 8.0 mm
F number:	1:1.2 (WIDE) - 1:1.8 (TELE)
Focus range:	∞ - 0.3 m
Angle of view:	Horizontal: 35.0 ° (TELE) - 100.0 ° (WIDE) Vertical: 26.2 ° (TELE) - 73.4 ° (WIDE)
Adjusting angle:	Panning range: ±170 ° Tilting range: ±75 ° Azimuth range: ±100 °

● Network

Network:	10BASE-T/100BASE-TX, RJ45 connector
Resolution:	1.3 megapixels mode H.264: 1 280 x 960/VGA (640 x 480)/QVGA (320 x 240), max. 30 fps MPEG-4: VGA (640 x 480)/QVGA (320 x 240), max. 30 fps

	JPEG: 1 280 x 960/VGA (640 x 480)/QVGA (320 x 240), max. 30 fps 3 megapixels mode H.264: 1 280 x 960/VGA (640 x 480)/QVGA (320 x 240), max. 15 fps MPEG-4: VGA (640 x 480)/QVGA (320 x 240), max. 15 fps JPEG: 2 048x1 536/1 280 x 960/VGA(640 x 480), max. 15 fps
Image compression method*2 *3:	H.264/MPEG4: Image quality: Low/Normal/Fine Transmission type: Unicast/Multicast Audio bit rate: Constant bit rate: 64kbps/128kbps/256kbps/384kbps/512kbps/768kbps/1024kbps/1536kbps/2048kbps/3072kbps/4096kbps/*8192kbps/Unlimited * only in H.264 mode Frame rate priority: 1fps/3fps/5fps/7.5fps/10fps/15fps/*20fps/*30fps * only in 1.3 megapixel mode JPEG: Image quality: 0 SUPER FINE/1 FINE/2/3/4/5 NORMAL/6/7/8/9 LOW (10 steps: 0-9) Transmission type: PULL/PUSH
Transmission interval:	0.1 fps - 30 fps (JPEG frame rate will be restricted when displaying both JPEG and H.264/MPEG-4 images.)
Audio compression method:	G.726 (ADPCM) 32kbps/16kbps
Bandwidth control:	Unlimited/64kbps/128kbps/256kbps/384kbps/512kbps/768kbps/1024 kbps/2048kbps//4096kbps/8192kbps
Protocol:	IPv6: TCP/IP, UDP/IP, HTTP, RTP, FTP, SMTP, DNS, NTP, SNMP IPv4: TCP/IP, UDP/IP, HTTP, RTSP, RTP, RTP/RTCP, FTP, SMTP, DHCP, DNS, DDNS, NTP, SNMP
OS:	Microsoft® Windows Vista® Business SP1 (32-bit) *4, *5 Microsoft® Windows® XP Home Edition SP3 Microsoft® Windows® XP Professional SP3
Browser:	Windows® Internet Explorer® 7.0 * Microsoft® Internet Explorer® 6.0 SP3 is required when using Microsoft® Windows® XP Home Edition SP3 or Microsoft® Windows® XP Professional SP3.
Maximum concurrent access number:	14 (Depends on network conditions)
FTP client:	Alarm image transmission, FTP periodic transmission (When the FTP transmission is failed, backup on an optional SDHC/SD memory card is available.)
Multi-screen:	Up to 16 camera images can be displayed simultaneously on a multi-screen.

Compatible SDHC/SD memory card (option):	Manufactured by Panasonic SDHC memory card: 4 GB, 8 GB, 16 GB, 32 GB SD memory card: 64 MB, 128 MB, 256 MB, 512 MB, 1 GB, 2 GB (except miniSD card and microSD card)

*1 When the camera is installed and operated in low temperatures below –10 °C {14 °F}, normal images may not be obtained immediately after startup. In such a case, wait until the camera warms up (taking approx. more than 1 hour) and perform adjustment after turning on the power again.
*2 Either H.264 or MPEG-4 is selectable.
*3 Transmission for 2 streams can be individually set in the same compression method.
*4 Constraints are imposed when using Microsoft® Windows Vista®. Refer to "Notes on Windows Vista®" (PDF) for further information about system requirements for a PC and precautions when using Microsoft® Windows Vista®.
*5 When using IPv6 for communication, use Microsoft® Windows Vista® exclusively.

Standard accessories

Installation Guide (this book)..... 1 volume
Warranty card..... 1 set
CD-ROM*1..... 1 pc.
Code label*2..... 1 pc.

The following parts are used during installation procedures.
4P alarm cable ..... 1 pc.
Camera attachment..... 1 pc.
2P power cable ..... 1 pc.
Fixing screws (M4 x 8 mm) ..... 5 pcs.
(1 piece of spare screw included)
Base cover ..... 1 pc.
Mount bracket ..... 1 pc.
Bit for tamperproof screw..... 1 pc.
Butyl tape ..... 1 pc.

*1 The CD-ROM contains the operating instructions (PDFs) and different kinds of tool software programs.
*2 This label may be required for network management. The network administrator shall retain the code label.

Optional accessories

Ceiling mount bracket WV-Q169
Smoke dome cover WV-CW4S

Panasonic System Solutions Company,
Unit Company of Panasonic Corporation of North America
www.panasonic.com/business/
For customer support, call 1.800.528.6747
Three Panasonic Way 2H-2, Secaucus,
New Jersey 07094

Panasonic Canada Inc.
5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 Canada
(905)624-5010
http://www.panasonic.ca

Panasonic Sales Company
Panasonic Puerto Rico, Inc.
AVE 65de Inf, Km 9.5 Carolina, PR 00985
(787)750-4300

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Ns0609-1079 3TR005933BZA Printed in China