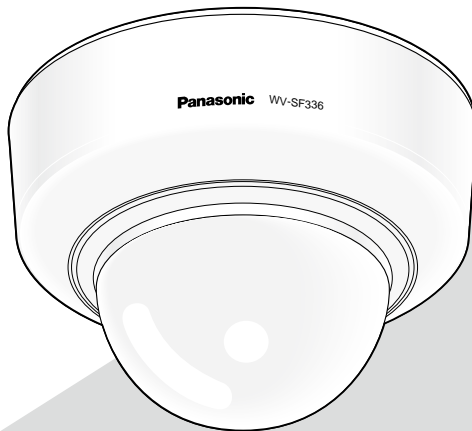


Panasonic

Installation Guide

Network Camera

Model No. **WV-SF336, WV-SF335**
WV-SF332
WV-SF336E, WV-SF335E
WV-SF332E



(This illustration represents WV-SF336.)

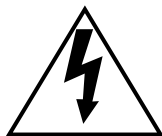
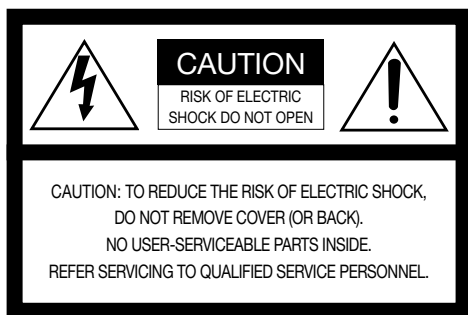


Before attempting to connect or operate this product, please read these instructions carefully and save this manual for future use.

The model number is abbreviated in some descriptions in this manual.

WARNING:

- Apparatus shall be connected to a mains socket outlet with a protective earthing connection.
- The mains plug or an appliance coupler shall remain readily operable.
- 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.
- For PERMANENTLY CONNECTED APPARATUS provided neither with an all-pole MAINS SWITCH nor an all-all pole circuit breaker, the installation shall be carried out in accordance with all applicable installation rules.
- The connections should comply with local electrical code.



The lightning flash with arrow-head 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.

UL listed model No:
WV-SF336, WV-SF335, WV-SF332

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. _____

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives 2006/95/EC and 2004/108/EC.

Wir erklären in alleiniger Verantwortung, daß das Produkt, auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt. Gemäß den Bestimmungen der Richtlinie 2006/95/EC und 2004/108/EC.

Nous déclarons sous notre propre responsabilité que le produit auquel se réfère la présente déclaration est conforme aux normes spécifiées ou à tout autre document normatif conformément aux dispositions des directives 2006/95/CE et 2004/108/CE.

Nosotros declaramos bajo nuestra única responsabilidad que el producto a que hace referencia esta declaración está conforme con las normas u otros documentos normativos siguiendo las estipulaciones de las directivas 2006/95/CE y 2004/108/CE.

Noi dichiariamo sotto nostra esclusiva responsabilità che il prodotto a cui si riferisce la presente dichiarazione risulta conforme ai seguenti standard o altri documenti normativi conformi alle disposizioni delle direttive 2006/95/CE e 2004/108/CE.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatieve documenten, overeenkomstig de bepalingen van Richtlijnen 2006/95/EC en 2004/108/EC.

Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med standarder eller andre normative dokumenter i følge bestemmelserne i direktivene 2006/95/EC og 2004/108/EC.

Vi deklarerar härmed vårt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med de standarder eller andra normativa dokument som framställs i direktiv nr 2006/95/EC och 2004/108/EC.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 2006/95/EC ja 2004/108/EC säädöksiä.

Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som følger bestemmelsene i direktivene 2006/95/EC og 2004/108/EC.

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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 only with dry cloth.
- 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.

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 System Networks Co., Ltd. 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

The network cameras WV-SF330 series are designed to operate using a PC on a network (10BASE-T/100BASE-TX).

By connecting to a network (LAN) or the Internet, images and audio from the camera can be monitored on a PC via a network.

WV-SF336

- Maximum image capture size (1 280 x 960 (Aspect ratio of 4:3), 1 280 x 720 (Aspect ratio of 16:9))
- Compatible with the auto focus (AF) function

WV-SF335

- Maximum image capture size (1 280 x 960 (Aspect ratio of 4:3), 1 280 x 720 (Aspect ratio of 16:9))
- Compatible with the focus assist (F. A.) function

WV-SF332

- Maximum image capture size (800 x 600 (Aspect ratio of 4:3), 640 x 360 (Aspect ratio of 16:9))
- Compatible with the focus assist (F. A.) function

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.
-

About notations

The following notations are used when describing the functions limited for specified models. The functions without the notations are supported by all models.

SF336 The functions with this notation are available when using the model WV-SF336.

SF335 The functions with this notation are available when using the model WV-SF335.

SF332 The functions with this notation are available when using the model WV-SF332.

Main functions

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.

Wide dynamic range function

This function compensates brightness so that it produces clearer images even if objects have various illumination intensities.

Important:

- When the wide dynamic range function is activated, noise may be increased in the dark area of the object.
-

Auto focus (AF) function **SF336**

It is possible to adjust the focus automatically by moving the focus ring of the lens with the operation button of this camera or the setup menu.

Focus assist (F. A.) function **SF335** **SF332**

During the manual focus adjustment, this function indicates the best focus position.

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 cameras on a PC and transmitting audio from the PC to the cameras is available.

SDHC/SD memory card slot equipped

It is possible to save H.264 videos and JPEG images on the SDHC/SD memory card manually at an alarm occurrence or on a web browser.

It is also possible to save JPEG images at a network failure occurrence. (Download is possible.)

* Recommended SDHC/SD memory card (☞ page 42)

About the user manuals

There are 2 sets of operating instructions for the WV-SF336, WV-SF335, WV-SF332 (NTSC model), WV-SF336E, WV-SF335E, WV-SF332E (PAL model) as follows.

- Installation Guide: Explains how to install and connect devices.
- Operating Instructions (PDF): Explains how to perform the settings and how to operate this camera.

Adobe® Reader® is required to read these operating instructions (PDF) on the provided CD-ROM. When the Adobe® Reader® is not installed on the PC, download the latest Adobe® Reader® from the Adobe web site and install it.

"WV-SF336, WV-SF335, WV-SF332" or "SF336, SF335, SF332" shown in the instructions and illustrations used in these operating instructions indicates the WV-SF336, WV-SF335, WV-SF332, WV-SF336E, WV-SF335E, WV-SF332E.

The screens used in these operating instructions show the cases of NTSC models.

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® 7 or 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® 7 Professional (64-bit) Microsoft® Windows® 7 Professional (32-bit) Microsoft® Windows Vista® Business SP1 (32-bit) Microsoft® Windows® XP Professional SP3
Web browser:	Windows® Internet Explorer® 8.0 (Microsoft® Windows® 7 Professional (32-bit/64-bit)) Windows® Internet Explorer® 7.0 (Microsoft® Windows Vista® Business SP1 (32-bit)) Microsoft® Internet Explorer® 6.0 SP3 (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® 7 or Microsoft® Windows Vista®.
-

Note:

- Refer to "Notes on Windows Vista® / Windows® 7" (PDF) for further information about system requirements for a PC and precautions when using Microsoft® Windows® 7 or 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/or other countries.
- Intel and Intel Core are trademarks or registered trademarks of Intel Corporation in the United States and other countries.
- Adobe, the Adobe logo, 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 license

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.
- After the unit is accessed by the administrator, make sure to close the browser for added security.
- Change the administrator password periodically for added security.
- 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 consult the dealer.

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 the apparatus. 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.

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 must be tightened to the specified torque.

Failure to observe this may cause a drop resulting in injury or accidents.

Do not install this product in locations subject to vibration.

Loosening of mounting screws or bolts may cause a fall of the product resulting in injury.

Install this product in a location high enough to avoid people and objects from bumping the product.

Failure to observe this may cause a drop resulting in injury or accidents.

Do not strike or give a strong shock to this product.

Failure to observe this may cause fire or injury.

Do not rub the edges of metal parts with your hand.

Failure to observe this may cause injury.

Turn the power off when do wiring of this product.

Failure to observe this may cause electric shock.

In addition, short circuit or wrong wiring may cause fire.

Turn the power off when cleaning of this product.

Failure to observe this may cause injury.

[Precautions for use]

This product is designed to be used indoors. This product is not operable outdoors.

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 camera 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 camera with care.

Do not drop this camera, nor apply shock or vibration to this camera.

Failure to observe this may cause trouble.

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.

This product will be inoperable for around 2 minutes after the restart just as when the power is turned on.

Product disposal/transfer

Images saved on the SDHC/SD memory card may lead to personal information leakage.

When it is necessary to dispose or give this product to someone, even when for repair, make sure that there is no data on the hard disk drives.

Cleaning this product body

Be sure to turn off the power before cleaning. Do not use strong abrasive detergent when cleaning this camera. 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 alcohol 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 22 for descriptions of how to insert/remove an SDHC/SD memory card.

- When using an unformatted SDHC/SD memory card, format it using this camera. 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, this product may not work properly or performance deterioration may be caused. Refer to the Operating Instructions (PDF) for how to format a SDHC/SD memory card.
- When some SDHC/SD memory cards are used with this product, the product may not work properly or performance deterioration may be caused. Use the SDHC/SD memory cards recommended in page 42.

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 color filter of the MOS image sensor

When continuously shooting a bright light source such as a spotlight, the color filter of the MOS image sensor 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.

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 noncommercial 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, LLC. See <http://www.mpegla.com>.

Precautions for Installation

Installation work shall be performed in accordance with the technology standard of the electric installation.

This camera is designed to be used indoors.

This product is not operable outdoors.

Do not expose this camera to direct sunlight for hours and do not install the product near a heater or an air conditioner. Otherwise, it may cause deformation, discoloration and malfunction. Keep this camera away from water and moisture.

Installing place

Do not place this product in the following places:

- Locations where it may get wet from rain or water splash
- Locations where a chemical agent is used such as a swimming pool
- Locations subject to humidity, dust, steam and oil smoke
- Locations in a specific environment where a solvent or a flammable atmosphere exists
- Locations where a radiation, an X-ray, a strong radio wave or a strong magnetic field is generated
- 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 -10°C to $+50^{\circ}\text{C}$ $\{14^{\circ}\text{F}$ to $122^{\circ}\text{F}\}$.
- Locations subject to vibrations (This product is not designed for on-vehicle use.)
- Locations subject to condensation as the result of severe changes in temperature (In case of installing the camera in such locations, the dome cover may become foggy or condensation may be caused on the cover.)

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

Shielded (STP) LAN cables must be used with this unit to ensure compliance with EMC standards. *

* PAL models only

Before installation

- The camera mount bracket described on page 19 shall be used to mount the camera.
- When this camera and camera mount bracket are mounted on a ceiling or a wall, use the screws described on page 19. The screws to be used are not provided. Prepare the screws according to the material, structure, strength and other factors of the mounting area and the total weight of objects to be mounted.
- Ensure that the mounting surface, anchor and screws are sufficiently strong.
- Do not mount this product on a plaster board or a wooden section because they are too weak. If this product is unavoidably mounted on such a section, the section shall be sufficiently reinforced or use an optional ceiling mount bracket (WV-Q105).

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.

Radio disturbance

When this product 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

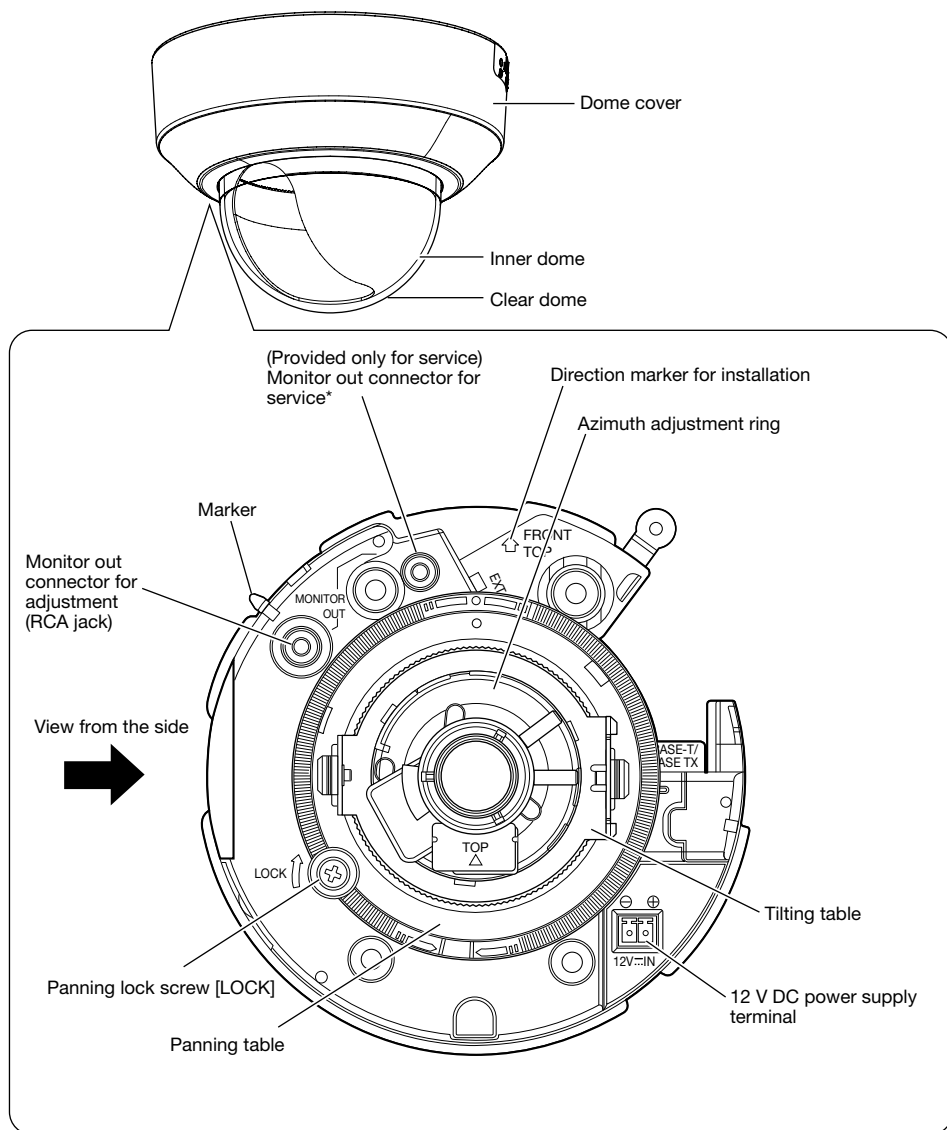
When connecting this product to the Internet, use a broadband router with the port forwarding function (NAT, IP masquerade).

Refer to the Operating Instructions (PDF) for further information about the port forwarding function.

Time & date setting

It is necessary to set the time & date before putting this product into operation. Refer to the Operating Instructions (PDF) for further information about the time & date setting.

Major operating controls



* This connector is provided only for service. Do not use the connector for checking the adjustment of the angular field of view on the video monitor.

<Side view>

SDHC/SD memory card slot

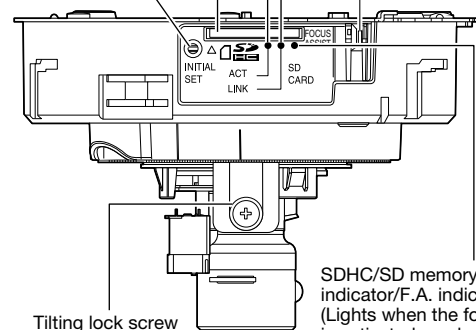
Access indicator (blinking at accessing)

Link indicator (lighting at linking)

INITIAL SET button

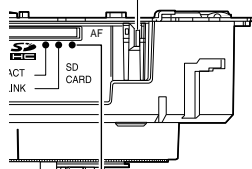
Focus assist (F.A.) button **SF335** **SF332**

Auto focus (AF) button **SF336**

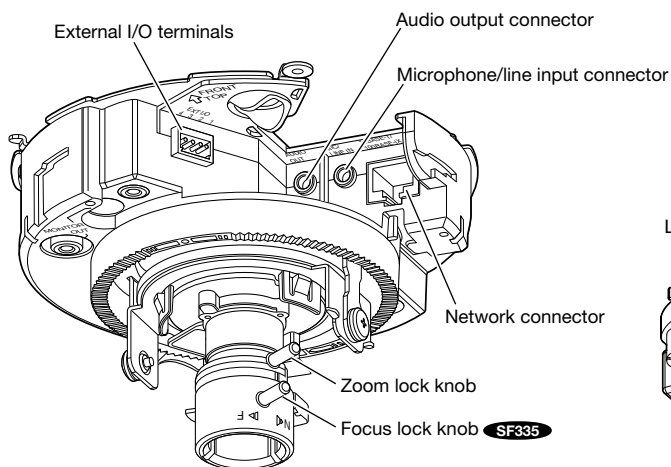


SDHC/SD memory card error indicator/F.A. indicator (Lights when the focus assist function is activated or when the focus ring is positioned near the best focus position)

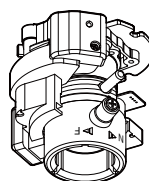
SF335 **SF332**



SDHC/SD memory card error indicator/AF indicator (Blinks when AF is being adjusted) **SF336**



Lens **SF336**



About the [INITIAL SET] button

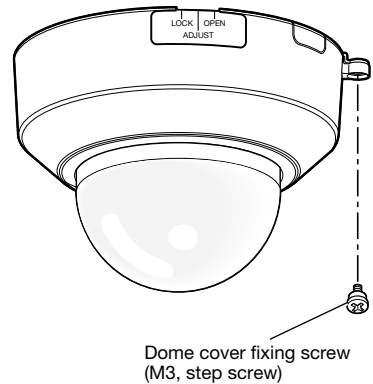
After turning off the power of the camera, turn on the power of the camera while holding down this button, and wait for around 5 seconds or more without releasing this button. Wait around 2 minutes after releasing the button. The camera will start up and the settings including the network settings will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

Detaching the dome cover

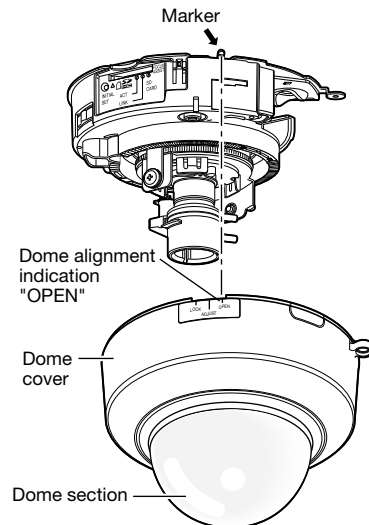
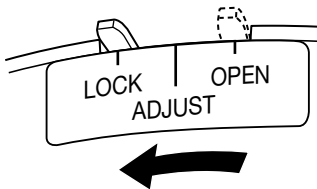
Important:

- After removal, retain the dome cover fixing screw so as not to lose. The screw is required when attaching the dome cover. (Page 34)
- Remove the cover film from the dome section of the dome cover after the installation is complete. Do not touch the dome section by hand directly after removing the cover film.

- 1 Remove the dome cover fixing screw (M3, step screw, x1).



- 2 Rotate the dome cover counterclockwise two steps, and align the indication "OPEN" to the marker of the camera to detach the dome cover.



Preparations

When installing the camera on a wall or a ceiling, there are four methods as specified below. (☞ Pages 20 and 21).

- Using the two-gang junction box
- Installing the camera directly on the ceiling or wall
- Using the optional ceiling mount bracket WV-Q168 (for embedded installation on a ceiling)
- Using the optional ceiling mount bracket WV-Q105*1 (for direct mounting on a ceiling)

Important:

- Procure 4 screws (M4) to secure the camera to a wall or a ceiling according to the material of the installation area. In this case, wood screws and nails should not be used. For mounting a camera on a concrete wall, use an anchor bolt (for M4) or an AY plug bolt (M4) for securing. (Recommended tightening torque: 1.6 N·m {1.18 lbf·ft})
 - Required pull-out capacity of a single screw/bolt is 196 N {44 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 or the optional ceiling mount bracket for the camera, WV-Q105, must be used.
-

The mounting conditions of the camera are described as follows:

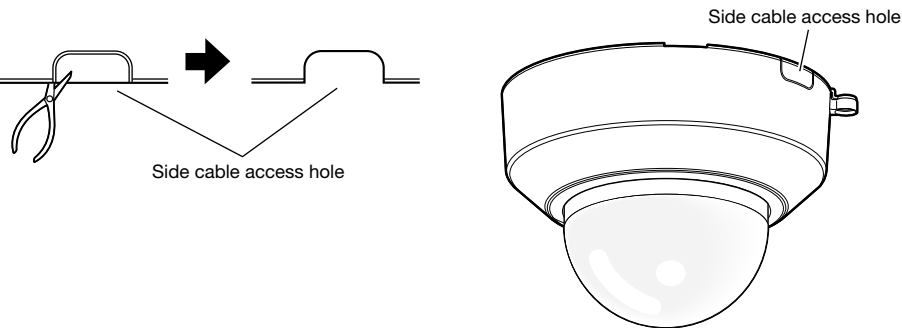
Installation place	Applicable mount bracket	Recommended screw	Number of screw	Minimum pull-out strength (per 1 pc.)
Ceiling/wall	Two-gang junction box	M4	4 pcs.	196 N {44 lbf}
Ceiling/wall	(Direct mounting)	M4	4 pcs.	196 N {44 lbf}
Ceiling	WV-Q168 (approx. 280 g {0.8 lbs})	—	—	*2
Ceiling	WV-Q105*1 (approx. 150 g {0.8 lbs})	—	—	*2

*1 PAL models only

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

Using the side cable access hole

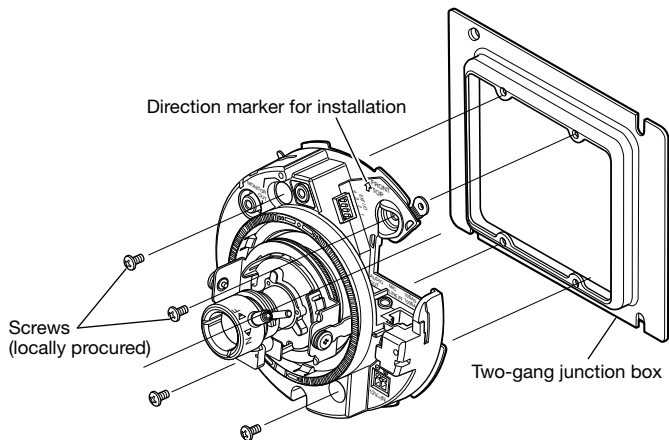
When installing the camera directly on the ceiling or wall with cables exposed or when using the optional ceiling mount bracket WV-Q168, cut out a portion of the dome cover to open a cable access hole.



Method of camera installation

Using the two-gang junction box

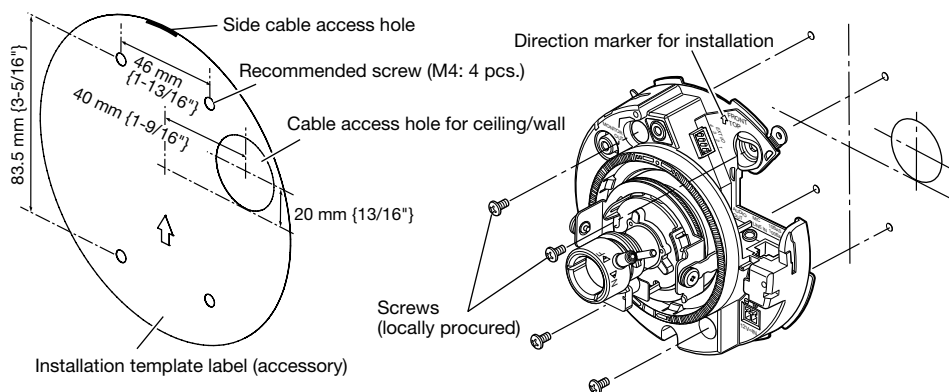
Mount the camera on the two-gang junction box by fixing 4 screws (locally procured). (E38 Page 28)



Installing the camera directly on the ceiling or wall

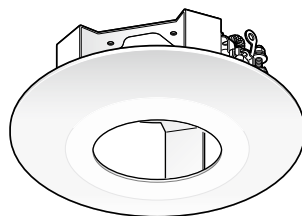
Place the installation template label (accessory) on the ceiling or wall, and make a hole to pass the cable.

Remove the template label, and mount the camera by fixing 4 screws (locally procured). (☞ Page 28)



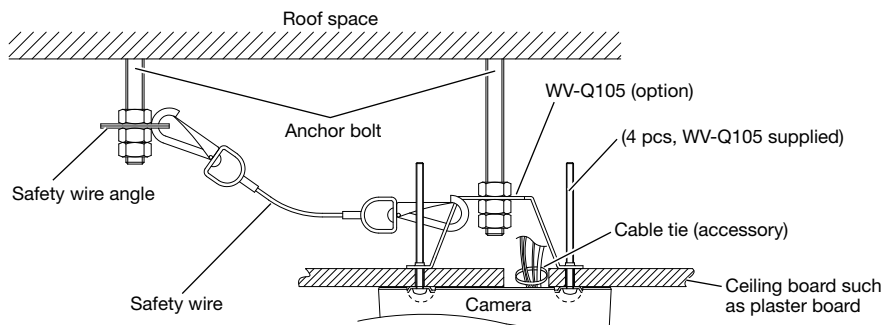
Using the optional ceiling mount bracket WV-Q168

It is possible to reduce the exposed portion of the camera body using the optional ceiling mount bracket. Refer to WV-Q168 Operating Instructions or "Installation" (☞ page 28) for how to mount the camera.



Using the optional ceiling mount bracket WV-Q105 (PAL models only)

Refer to WV-Q105 Operating Instructions and "Installation" (☞ page 28) for how to mount the camera in case of using the optional ceiling mount bracket.

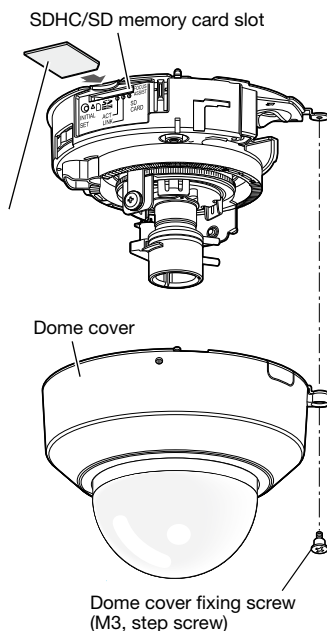


Insert/remove an SDHC/SD memory card

Important:

- Before inserting the SDHC/SD memory card, turn off the power of the camera first.
- When inserting an SDHC/SD memory card, make sure the direction.
- Before removing the SDHC/SD memory card, select "Not use" for "SD memory card" on the [SD memory card] tab of the setup menu first. Turn off the power after "Not use" selection, and then unload the SDHC/SD memory card. When the SDHC/SD memory card is inserted or removed with the power on, data in the SDHC/SD memory card may be damaged.
([☞ Operating Instructions \(PDF\)](#))

- 1** Detach the dome cover. ([☞ Page 18](#))
- 2** Insert an SDHC/SD memory card fully into the SDHC/SD memory card slot.
- 3** Attach the dome cover. ([☞ Page 34](#))
- 4** When removing the SDHC/SD memory card from the SDHC/SD memory card slot, detach the dome cover ([☞ page 18](#)), and push the card until the lock is released. After removal, attach the dome cover. ([☞ Page 34](#))



Connection

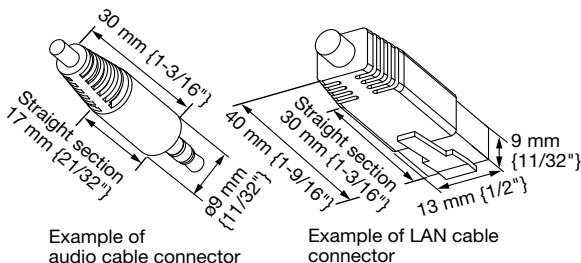
Caution:

- FOR UL LISTED MODEL(S), ONLY CONNECT 12 V DC CLASS 2 POWER SUPPLY.

Before starting the connection, turn off the power of this camera and the devices to be connected. Check and prepare the required devices and cables for connection.

Note:

- Since the connector storage section does not have a sufficient space, use audio cables and a LAN cable that do not exceed the sizes described in the illustrations.



- 1 Connect the RCA pin cable to the monitor out connector for adjustment (only used for adjustment of the angular field of view). (☞ Page 16)

Important:

- The monitor out connector for service is provided only for checking the adjustment of the angular field of view on the video monitor when installing the camera or when servicing. It is not provided for recording/monitoring use.
- When checking the adjustment of the angular field of view on the video monitor, be sure to use the RCA jack of the main body for connection with video monitor.
- Black bands may appear at the top and bottom or right and left of the screen. (That does not affect the adjustment because the angular field of view is not changed.)
- The video output on the monitor for adjustment does not guarantee the video performance or image quality.

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

Input impedance: Approx. 2 k Ω

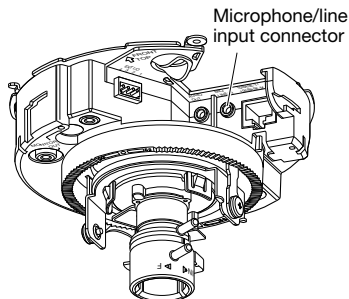
Recommended cable length:

- 1 m {3.3'} or less (for microphone input)
- 10 m {33'} or less (for LINE input)

Recommended microphone:

- Plug-in power type microphone (option)
- Connect a monaural mini plug ($\phi 3.5$ mm).

- Supply voltage: 2.5 V \pm 0.5 V
- Recommended sensitivity of microphone:
-48 dB \pm 3 dB (0 dB=1 V/Pa, 1 kHz)

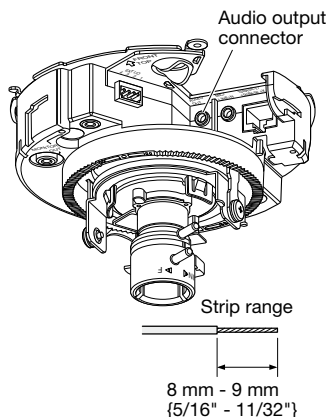


Important:

- Connect/disconnect the audio cables and turn on the power of the camera after turning off the power of the audio output devices. Otherwise, loud noise may be heard from the speaker.

- 3** Connect an external speaker with amplifier 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: Less than 10 m {33'}



- 4** Connect the cables of external devices to the EXT I/O terminal plug (accessory).

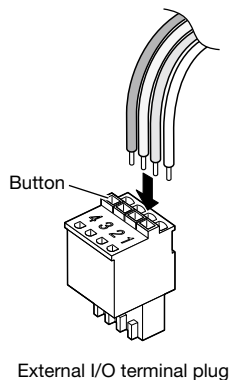
- ① When connecting an external device, remove 8 mm - 9 mm {5/16" - 11/32"} of the outer jacket of the cable and twist the cable core to prevent the short circuit first.

Specification of cable (wire): 20 AWG - 26 AWG
Single core, twisted

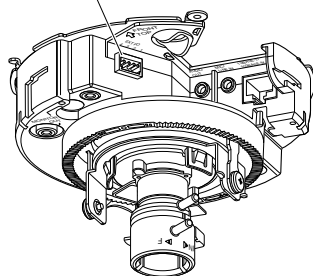
- ② Push down the button of the desired terminal on the external I/O terminal plug with a ballpoint pen, and release the button when the cable of the external device is fully inserted into the terminal hole. Make sure that the cable is firmly connected to the terminal.

- ③ After the cable connection, connect the external I/O terminal plug to the external I/O terminals of the camera.

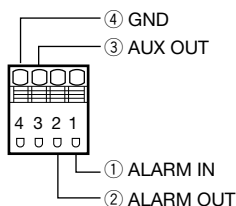
* Check whether the stripped part of the wire is not exposed and is securely connected.



External I/O terminals



<Ratings>



Important:

- Do not connect 2 wires or more directly to a terminal. When it is necessary to connect 2 wires or more, use a splitter.
 - Connect an external device with verifying that the ratings are within the specifications above.
 - When using the EXT I/O terminals as the output terminals, ensure they do not cause signal collision with external signals.
-

- ALARM OUT, AUX OUT

Output specification: Open collector output (maximum applied voltage: 20 V DC)

Open: 4 V - 5 V DC by internal pull-up

Close: Output voltage 1 V DC or less (50 mA or less)

- ALARM IN

Input specification: No-voltage make contact input (4 V - 5 V DC, internally pulled up)

OFF: Open or 4 V - 5 V DC

ON: Make contact with GND (required drive current: 1 mA or more)

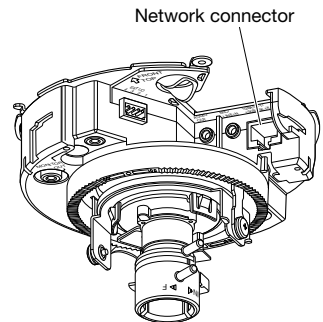
- 5** Connect a LAN cable (category 5 or better, straight, STP*) to the network connector.

* PAL models only

- 6** Connect the power supply.

Important:

- The 12 V DC power supply shall be insulated from the commercial AC power.
-

**When using 12 V DC power supply**

- ① Loosen the screw of the power cord plug (accessory).

- ② Connect the cable of the 12 V DC power supply* to the power cord plug.

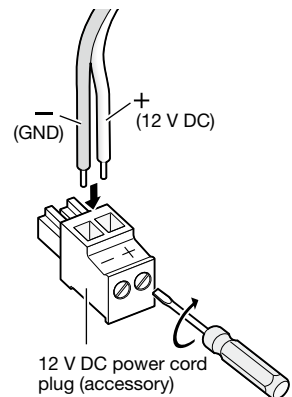
Strip 3 mm - 7 mm {1/8" - 9/32"} from the end of the wire, and twist the stripped part of the wire sufficiently to avoid short circuit.

Specification of cable (wire):

16 AWG - 24 AWG, Single core, twisted

- Check whether the stripped part of the wire is not exposed and is securely connected.
- ③ Tighten the screw of the power cord plug.
- ④ Connect the power cord plug to the 12 V DC power supply terminal.

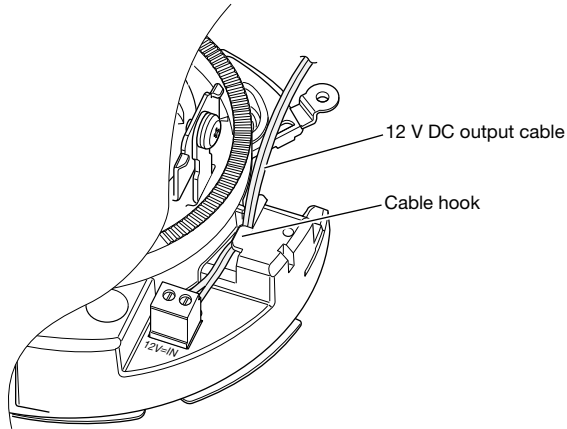
* FOR UL LISTED MODEL(S), ONLY CONNECT 12 V DC CLASS 2 POWER SUPPLY.



Important:

- Be sure to use the power cord plug provided with this product.
 - Be sure to fully insert the power cord plug into the 12 V DC power supply terminal (accessory). Otherwise, it may damage the camera or cause malfunction.
 - Be sure to use an AC adaptor compliant with the Specifications regarding power source and power consumption (☞ page 39).
-

- ⑤ Run the 12 V DC output cable through the gap of the cable hook.

**When using PoE (IEEE802.3af compliant)**

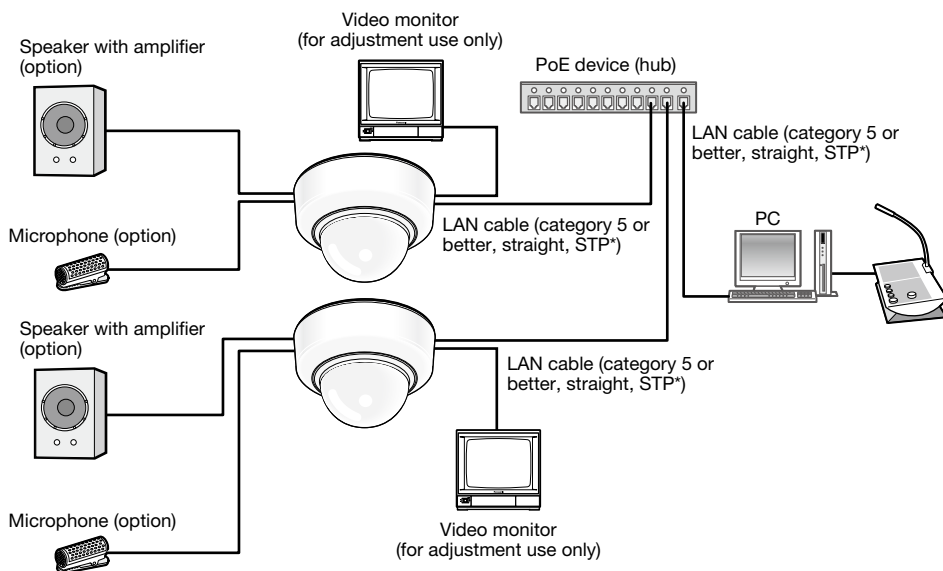
Connect a LAN cable (category 5 or better, straight, STP*) between a PoE device (such as a hub) and the network connector of the camera.

* PAL models only

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.
-

Connection example when connecting to a network using a PoE hub



<Required cable>

LAN cable (category 5 or better, straight, STP*)

* PAL models only

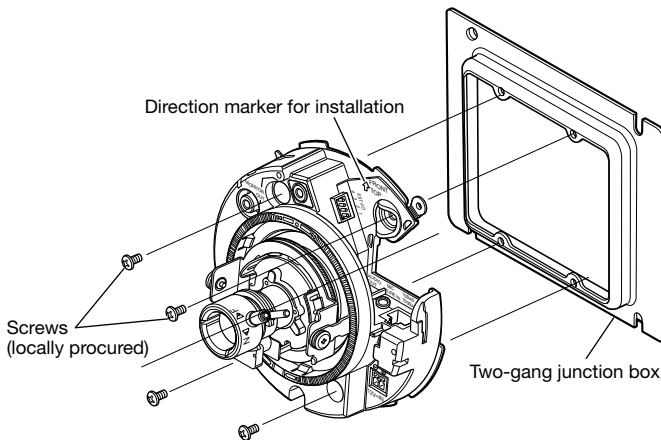
Important:

- 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.
-

Camera mounting

Installation shall be conducted after turning off each device.

- 1 Detach the dome cover. (☞ Page 18)
- 2 Connect the cables to the camera. (☞ Pages 23 to 27)
As necessary, use a cable tie (accessory) to assemble the cables.
- 3 Mount the camera. (The illustration represents the case in which a two-gang junction box is installed.)
 - Fix the camera with 4 screws (M4, locally procured)



Important:

- When tightening the screws, be careful to ensure that the cables does not tangle the cables.
-

Note:

- For ceiling mounting
"⬆FRONT" of direction marker for installation indicates the center of panning. Adjustment of lens direction will become easier when the camera is mounted with the "⬆FRONT" marker oriented to the desired shooting area. Refer to the "Adjustment" section (☞ pages 29 to 33) for further information about adjustment.
 - For wall mounting
The camera shall be mounted with the "⬆FRONT" marker facing upward.
-

Adjustment

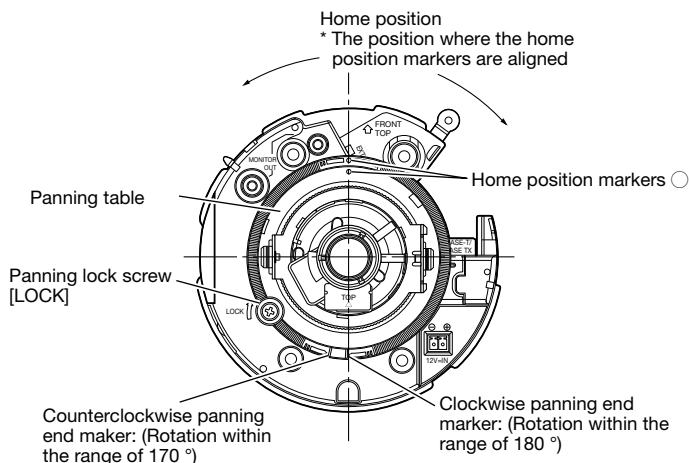
- 1 Adjust the camera angle. When determining the camera angle, repeat fine adjustments by gradually moving the panning table, tilting table, and azimuth adjustment ring.

Horizontal position (Panning)

Loosen the panning lock screw, rotate the panning table to adjust the pan direction. (Adjustable range: 350 °)

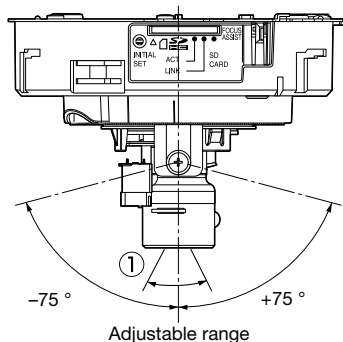
Panning is possible within the range of 180 ° (when panning clockwise) and 170 ° (when panning counterclockwise). After adjustment, tighten the panning lock screw to fix the panning table.

(Recommended tightening torque: 0.39 N.m {0.29 lbf-ft})



Vertical position (Tilting)

Loosen the tilting lock screws (x2), and rotate the tilting table to adjust the tilting direction. (Adjustable range: $\pm 75^\circ$) Since a variable focal lens is used, it is possible to change the angular field of view. This lens can also be rotated in the reverse direction, but the image azimuth is reversed. In this case, the image azimuth can be modified when the panning table is rotated to the direction of clockwise panning (180°).



<Lens angular field of view (① Angle)>

Horizontal: 27.7 ° (TELE) to 100.3 ° (WIDE)

Vertical: 20.8 ° (TELE) to 73.5 ° (WIDE)

After adjustment, tighten the tilting lock screws (x2) to fix the tilting table.

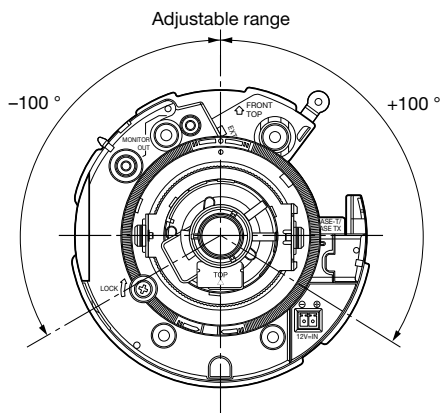
(Recommended tightening torque: 0.59 N·m {0.44 lbf-ft})

Note:

- When the camera is used at an angular field of view that is close to horizontal, it must be noted that the shadow of the dome cover may be projected.

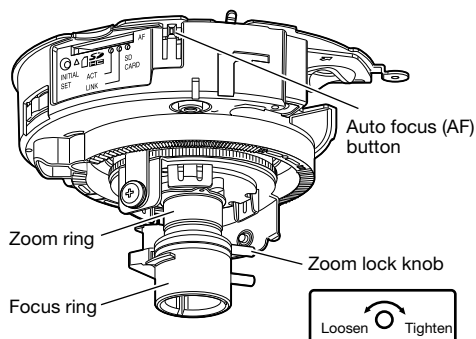
Image tilt adjustment

Rotate the azimuth adjustment ring to adjust the azimuth angle of the image. (Adjustable range: $\pm 100^\circ$)



2 Adjust the angular field of view and the focus. **SF336**

Adjust the angular field of view in accordance with the distance between the camera lens and a photographic subject.



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

- ② When the auto focus (AF) button on the lateral side of camera is pressed, the auto focus (AF) indicator will light for around 10 seconds, and the focus is automatically adjusted.

Important:

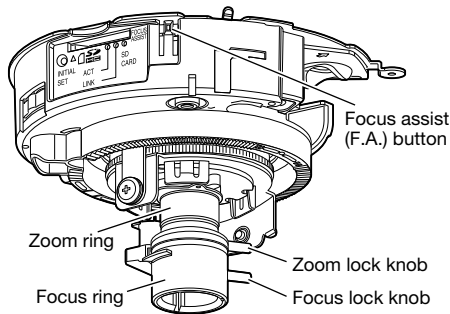
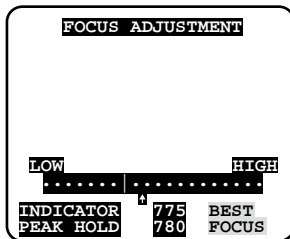
- Do not move the focus ring.
-

Note:

- If the zoom lock knob is slightly fastened before the zoom ring is moved, the ring will become stable to ease the fine adjustment.
 - When positioning the zoom ring at a step short of the "T" (or "W") end, the focus adjustment will be easier.
 - When shooting in the following place or the following subjects, focus may not be adjusted automatically. In this case, adjust the focus manually from the setup menu. Refer to the Operating Instructions (PDF) for how to perform the manual focus adjustment from the setup menu.
 - Place where the dome easily becomes dirty
 - Subj. moving frequently
 - Subj. with large illuminance change
 - Subj. with low illuminance
 - Subj. with reflection or extra brightness
 - Subj. through a window
 - Subj. with less contrast such as white wall
 - Subj. with heavy flicker
-

Adjust the angular field of view and the focus. **SF335** **SF332**

The angular field of view and focus can be adjusted in accordance with the distance between the camera lens and a photographic subject. These adjustments shall be performed together with the camera angle adjustment.



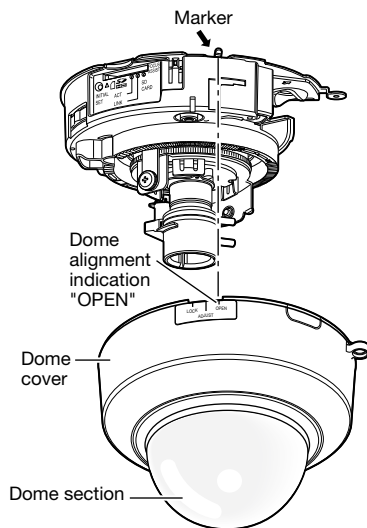
- ① Loosen the zoom lock knob and focus lock knob, and adjust the angular field of view in accordance with the photographic subject by moving the zoom lock knob and focus ring.
- ② Fasten the zoom lock knob.
- ③ Press the focus assist (F.A.) button.
→ "FOCUS ADJUSTMENT" menu will be displayed.
The focus assist function will be activated to perform the optimum adjustment.
- ④ When the focus ring is positioned near the best focus position, the position will automatically be memorized as the "PEAK HOLD" position. (The closer the focus ring is positioned to the best focus position, the greater the "PEAK HOLD" value becomes.)
- ⑤ When the focus ring is moved, the current focus position will be indicated on "INDICATOR". Adjust the focus position so that the indicator value goes close to the "PEAK HOLD" position.
- ⑥ When the indicator value goes to the best focus position, "BEST FOCUS" will be displayed in reverse at the lower right corner of the screen.
- ⑦ Fasten the focus lock knob so as to fix the best focus position.
- ⑧ Press the focus assist (F.A.) button again to close the "FOCUS ADJUSTMENT" menu. (No operation for 3 minutes also closes the menu.)

Note:

- ① When shooting the following subjects, close the "FOCUS ADJUSTMENT" menu by pressing the focus assist (F.A.) button again, or adjust the focus to obtain the best focus position while monitoring images from the camera.
 - Subj. moving frequently or having large illuminance change
 - Subj. with low illuminance
 - Subj. with reflection or extra brightness
 - Subj. through a window
 - Place where the lens easily becomes dirty
 - Subj. with less contrast such as white wall
 - Subj. with heavy flicker
 - ② If the zoom lock knob is slightly fastened before the zoom ring is moved, the ring will become stable to ease the fine adjustment.
 - ③ If the focus lock knob is slightly fastened before the focus ring is moved, the ring will become stable to ease the fine adjustment.
 - ④ In case the angular field of view has changed during adjustment, close the "FOCUS ADJUSTMENT" menu once by pressing the focus assist (F.A.) button. (When the angular field of view changes, the indicator values of "PEAK HOLD" and "INDICATOR" also change.) After fixing the angular field of view, retry Step 3.
-

Attaching the dome cover

- 1 Align the indication "OPEN" to the maker of the camera to attach the dome cover.

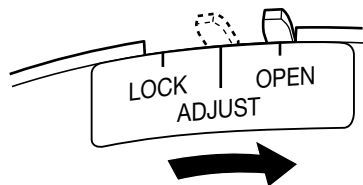


- 2 Remove the cover film from the dome cover except the dome section.



- 3 Adjust the direction of the inner dome (see page 16).

Rotate the dome cover clockwise to adjust the marker to "ADJUST". The clear dome and the inner dome can rotate together in this state. Rotate the dome section of the dome cover to adjust the direction so that no eclipse may be caused.



Important:

- For inner dome adjustments, adjust the marker to the "ADJUST" position. If the dome section is moved with unreasonable force from the "LOCK" position, this may be a cause of destruction.
-

- 4** Rotate the dome cover clockwise to adjust the marker to "LOCK".

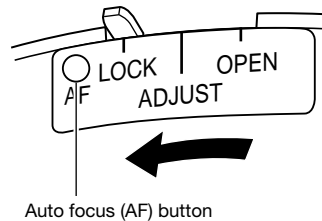
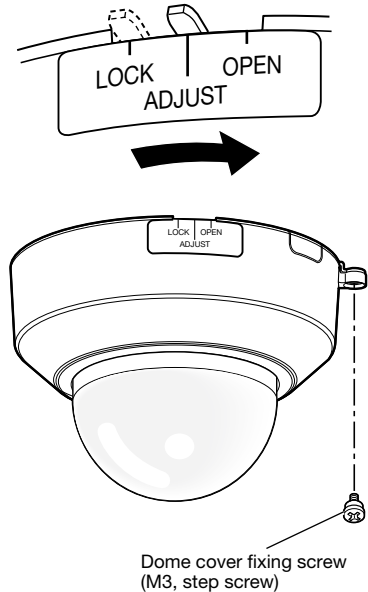
- 5** Fix the dome cover and camera by tightening the dome cover fixing screw (M3, step screw, x1).

- 6** After the installation is complete, remove the cover film, which was removed halfway in Step 2, completely from the dome section.

- 7** Push down the auto focus (AF) button with a ballpoint pen to adjust the focus again.

SF336

Refer to page 30 for further information about adjustment.



Important:

- Before pressing the auto focus (AF) button, make sure that the marker is adjusted to the "LOCK" position. **SF336**
 - When using a model equipped with the focus assist (F. A.) function, defocus may be caused by the dome cover attached. **SF335** **SF332**
In this case, the focus adjustment will be easier by detaching the dome cover and moving the focus ring to the "N" direction.
 - Before attaching the dome cover, make sure that the subject is present.
-

Configure the network settings

Install the software

Before installing the software, refer to 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 View 4"
It is necessary to install the viewer software "Network Camera View 4" to display images on a PC. Install the viewer software by double-clicking the "nwc4setup.exe" icon on the provided CD-ROM.

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

It is possible to perform the network settings of the camera using the IP setting 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" page of the setup menu. Refer to the Operating Instructions (PDF) for further information.

Important:

- 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. 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 setting 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.

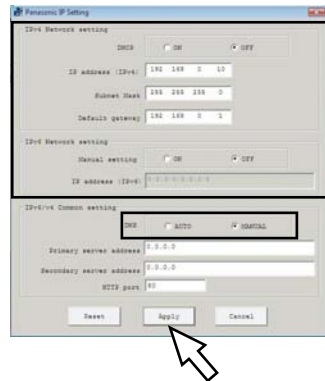
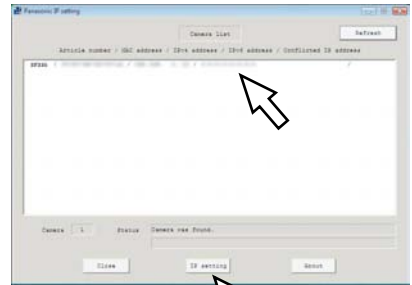
Note:

- 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 AC adaptor or 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.	<p>When using DC power supply</p> <ul style="list-style-type: none"> Is 12 V DC power supply connect to the power supply terminal? → Check whether the connection is appropriately established. Is the AC adaptor in use compliant with the Specifications? → Check the Specifications regarding AC adaptor. <p>When using a PoE device for power supply</p> <ul style="list-style-type: none"> Are the PoE device and the network connector on the rear of the camera connected using a LAN cable (4-pair)? → 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. 	25 - 26

Specifications

● Basic

Power source:	12 V DC, PoE (IEEE802.3af compliant)
Power consumption:	WV-SF336 12 V DC*: 320 mA, PoE: 4.2 W (Class 2 device) WV-SF335, WV-SF332 12 V DC*: 280 mA, PoE: 3.5 W (Class 2 device) * FOR UL LISTED MODEL(S), ONLY CONNECT 12 V DC CLASS 2 POWER SUPPLY.
Ambient operating temperature:	-10 °C to +50 °C {14 °F to 122 °F} (no condensation)
Ambient operating humidity:	Less than 90 %
Monitor output (for adjusting the angular field of view):	VBS: 1.0 V [p-p]/75 Ω, composite signal, RCA jack
External I/O terminals:	ALARM IN ALARM OUT AUX OUT x1 each
Microphone/Line input:	ø3.5 mm monaural mini jack Input impedance: Approx. 2 kΩ
For microphone input:	Applicable microphone: Plug-in power type Supply voltage: 2.5 V ±0.5 V
For line input:	Input level: Approx. -10 dBV
Audio output:	ø3.5 mm stereo mini jack (monaural output) Output impedance: Approx. 600 Ω Line level
Dimensions:	ø129.5 mm x 93 mm (H) {5-3/32" x 3-21/32" (H)}
Weight:	WV-SF336: Approx. 410 g {0.82 lbs.} WV-SF335, WV-SF332: Approx. 370 g {0.82 lbs.}
Finish:	Main body: ABS resin, sail white Dome section: Clear acrylic resin

● Camera

Image sensor:	1/3 inch-type MOS image sensor
Effective pixels:	Approx. 1.3 megapixels
Scanning area:	4.80 mm (H) × 3.60 mm (V) {3/16" (H) × 5/32" (V)}
Scanning system:	Progressive
Minimum illumination:	WV-SF336 (1 280×960) WV-SF335 (1 280×960) Color: 0.3 lx {0.03 footcandle} (F1.4, Auto slow shutter: Off (1/30 s), AGC: High) 0.019 lx {0.0019 footcandle} (F1.4, Auto slow shutter: max. 16/30 s, AGC: High)* BW: 0.2 lx {0.02 footcandle} (F1.4, Auto slow shutter: Off (1/30 s), AGC: High) 0.013 lx {0.0013 footcandle} (F1.4, Auto slow shutter: max. 16/30 s, AGC: High)*

* Converted value

WV-SF332 (800×600)

Color: 0.2 lx {0.02 footcandle} (F1.4, Auto slow shutter: Off (1/30 s), AGC: High)
0.013 lx {0.0013 footcandle} (F1.4, Auto slow shutter: max. 16/30 s, AGC: High)*
BW: 0.13 lx {0.013 footcandle} (F1.4, Auto slow shutter: Off (1/30 s), AGC: High)
0.009 lx {0.0009 footcandle} (F1.4, Auto slow shutter: max. 16/30 s, AGC: High)*

* Converted value

Wide dynamic range:	On/Off
Gain (AGC):	On(Low)/On(Mid)/On(High)/Off
Adaptive black stretch:	On/Off
Light control mode setting:	Indoor scene (50 Hz/60 Hz)/Outdoor scene/Fix shutter
Shutter speed:	Off(1/30), 3/100, 3/120, 2/100, 2/120, 1/100, 1/120, 1/250, 1/500, 1/1 000, 1/2 000, 1/4 000, 1/10 000
Auto slow shutter:	Off, Max. 2/30s, Max. 4/30s, Max. 6/30s, Max. 10/30s, Max. 16/30s
Simple black & white mode:	Off/AUTO
White balance:	ATW1/ATW2/AWC
Digital noise reduction:	High/Low
Video analytics	
Face detection:	On/Off (with the XML notification setting)
Privacy zone:	On/Off (up to 2 zones available)
Camera title on screen:	Up to 16 characters (alphanumeric characters, marks)
	On/Off
VMD alarm:	On/Off, 4 areas available

● Lens

Focal length:	2.8 mm - 10 mm {5/16" - 13/32"}
Maximum aperture ratio:	1:1.3 (WIDE) - 1:3.1 (TELE)
Angular field of view:	Horizontal: 27.7 ° (TELE) - 100.3 ° (WIDE) Vertical: 20.8 ° (TELE) - 73.5 ° (WIDE)
Adjusting angle:	Horizontal: 180 ° (clockwise), 170 ° (counterclockwise) Vertical: ±75 °, Image tilt adjustment range: ±100 °

● Network

Network:	10BASE-T/100BASE-TX, RJ45 connector
Resolution:	Aspect ratio: 4:3
(WV-SF336, WV-SF335)	H.264 1 280 × 960/VGA (640 × 480)/QVGA (320 × 240), max. 30 fps MPEG-4 VGA (640 × 480)/QVGA (320 × 240), max. 30 fps JPEG 1 280 × 960/VGA (640 × 480)/QVGA (320 × 240), max. 30 fps Aspect ratio: 16:9 H.264 1 280 × 720/640 × 360/320 × 180, max. 30 fps JPEG 1 280 × 720/640 × 360/320 × 180, max. 30 fps * MPEG-4 is not supported.

Resolution: (WV-SF332)	<p>Aspect ratio: 4:3</p> <p>H.264 800 × 600/VGA (640 × 480)/QVGA (320 × 240), max. 30 fps</p> <p>MPEG-4 VGA (640 × 480)/QVGA (320 × 240), max. 30 fps</p> <p>JPEG 800 × 600/VGA (640 × 480)/QVGA (320 × 240), max. 30 fps</p> <p>Aspect ratio: 16:9</p> <p>H.264 640 × 360/320 × 180, max. 30 fps</p> <p>JPEG 640 × 360/320 × 180, max. 30 fps</p> <p>* MPEG-4 is not supported.</p>
Image compression method* ¹ * ² :	<p>H.264/MPEG-4</p> <p>Image quality: Low/Normal/Fine</p> <p>Transmission type: Unicast/Multicast</p> <p>Audio bit rate:</p> <p>Constant bit rate: 64kbps/ 128kbps/ 256kbps/ 384kbps/ 512kbps/ 768kbps/ 1024kbps/ 1536kbps/ 2048kbps/ 3072kbps/ 4096kbps/ *8192kbps/ Unlimited</p> <p>* only in H.264 mode</p> <p>Frame rate priority: 1fps/ 3fps/ 5fps/ 7.5fps/ 10fps/ 12fps*/ 15fps/ 20fps/ 30fps</p> <p>* PAL models only</p> <p>JPEG</p> <p>Image quality: 0 SUPER FINE/ 1 FINE/ 2/ 3/ 4/ 5 NORMAL/ 6/ 7/ 8/ 9 LOW (10 steps: 0-9)</p> <p>Transmission type: PULL/PUSH</p>
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* ³ * ⁴ :	Microsoft Windows 7 Professional (64-bit) Microsoft Windows 7 Professional (32-bit) Microsoft Windows Vista Business SP1 (32-bit) Microsoft Windows XP Professional SP3
Browser:	Windows Internet Explorer 8.0 (Microsoft Windows 7 Professional (32-bit/64-bit)) Windows Internet Explorer 7.0 (Microsoft Windows Vista Business SP1 (32-bit)) Microsoft Internet Explorer 6.0 SP3 (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/SDC 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: 256 MB, 512 MB, 1 GB, 2 GB (except miniSD card and microSD card)

- *1 Either H.264 or MPEG-4 is selectable.
- *2 Transmission for 2 streams can be individually set in the same compression method.
- *3 Refer to "Notes on Windows Vista / Windows 7" (PDF) for further information about system requirements for a PC and precautions when using Microsoft Windows 7 or Microsoft Windows Vista.
- *4 When using IPv6 for communication, use Microsoft Windows 7 or Microsoft Windows Vista.

Standard accessories

Installation Guide (this document)	1 pc.
Warranty card (NTSC model only)	1 pc.
CD-ROM*1	1 pc.
Code label*2	1 pc.

The following parts are used during installation procedures.

Power cord plug	1 pc.
External I/O terminal plug	1 pc.
Installation template label	1 pc.
Cable tie	2 pcs. (incl. 1 spare)

- *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

Dome cover (Smoke type)	WV-CF5S
Ceiling Mount Bracket	WV-Q168
Ceiling Mount Bracket	WV-Q105*1
*1 PAL models only	

Information for Users on Collection and Disposal of Old Equipment and used Batteries



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.



For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

[Information on Disposal in other Countries outside the European Union]

These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.



Cd

Note for the battery symbol (bottom two symbol examples):

This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

For U.S. and Canadian fields:

**Panasonic System Networks Company
of America,
Unit of Panasonic Corporation
of North America**

www.panasonic.com/business/
For customer support, call 1.800.528.6747
Three Panasonic Way, Secaucus,
New Jersey 07094 U.S.A.

Panasonic Canada Inc.

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

For European and other fields:

Panasonic Corporation

<http://panasonic.net>

Importer's name and address to follow EU rules:

Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg F.R.Germany