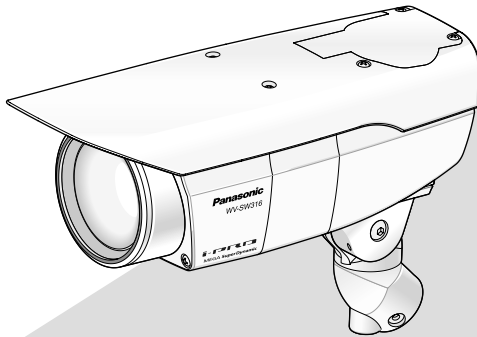# Panasonic

Installation Guide

Network Camera

Model No. WV-SW316L/WV-SW316
WV-SW314
WV-SW316LE/WV-SW316E

(This illustration represents WV-SW316.)

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.

For U.S. and Canada:
WV-SW316L, WV-SW316, WV-SW314
For Europe and other countries:
WV-SW316LE, WV-SW316E

UL listed model No.
WV-SW316L, WV-SW316, WV-SW314

Contents

Important safety instructions

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

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

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

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

8) 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.

S3125A

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

10) 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.

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(7) LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE.

Preface

The network camera WV-SW316L/WV-SW316/WV-SW314 is designed to operate using a PC on a network (10BASE-T/100BASE-TX), and can be installed outdoors.
By connecting to a network (LAN) or the Internet, images and audio from the camera can be monitored on a PC via a network.

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.

SW316L : The functions with this notation are available when using the model WV-SW316L.

SW316 : The functions with this notation are available when using the model WV-SW316.

SW314 : The functions with this notation are available when using the model WV-SW314.

Main functions

Super Dynamic
(☞ Operating Instructions (included in the CD-ROM))
Super Dynamic compensates brightness on a pixel-to-pixel basis so that it produces clearer images even if objects have various illumination intensities.

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

Auto focus (AF) function SW316L SW316
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.

Black & white mode SW316L SW316
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.

Motorized varifocal lens equipped SW316L SW316
The zoom ratio can be changed and adjusted to an optional photographic area through the operation buttons on this unit and the setup menu.

IR LED equipped SW316L
The equipped infrared LED makes it possible to take pictures at zero lx.

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 SW316L SW316
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 SW316L SW316
It is possible to save H.264 videos and JPEG images on the SDHC/SD memory card manually at an alarm occurrence, during the period of the schedule, 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 47)

About the user manuals

There are 2 sets of operating instructions for the WV-SW316L, WV-SW316, WV-SW314 (P model), WV-SW316LE, WV-SW316E (E model) as follows.
- Installation Guide: Explains how to install and connect devices.
- Operating Instructions (included in the CD-ROM): Explains how to perform the settings and how to operate this camera.

Adobe® Reader® is required to read these operating instructions 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-SW316L, WV-SW316, WV-SW314" or "SW316L, SW316, SW314" shown in the instructions and illustrations used in these operating instructions indicates the WV-SW316L, WV-SW316, WV-SW314, WV-SW316LE, WV-SW316E.

The screens used in these operating instructions show the cases of P 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: 1024 x 768 pixels or more
	Color: 24-bit True color or better
OS:	Microsoft® Windows® 7
	Microsoft® Windows Vista®
	Microsoft® Windows® XP SP3
Web browser:	Windows® Internet Explorer® 9.0 (32-bit)
	Windows® Internet Explorer® 8.0 (32-bit)
	Windows® Internet Explorer® 7.0 (32-bit)
	Microsoft® Internet Explorer® 6.0 SP3
Others:	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 view the PDF file 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.
- Microsoft Windows 7 Starter, Microsoft Windows Vista Starter and Microsoft Windows XP Professional 64-bit Edition are not supported.
- When using IPv6 for communication, use Microsoft Windows 7 or Microsoft Windows Vista.

Note:

- For further information about PC system requirements and precautions for when using Microsoft Windows 7, Microsoft Windows Vista, or Windows Internet Explorer, click "Manual" - "Open" from the supplied CD-ROM and refer to "Notes on Windows® / Internet Explorer® versions".
- If using Microsoft Windows XP, screen tearing* may occur when the shooting scene drastically changes (for example, while shooting fast-moving subjects) due to the GDI restrictions of the OS.
  * A phenomenon in which portions of the screen are displayed out of alignment
- For information on the operation verification of the supported operating systems and web browsers, refer to our website at http://panasonic.net/pss/security/support/index.html.

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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.
- Change the administrator password periodically.
- 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 this product. Be sure to consult the dealer.

Stop the operation immediately when something is wrong with this product.
When smoke goes up from the product, the smell of smoke comes from the product, or the exterior of the product has deteriorated, continued use will cause a fire or fall of the product resulting in injury, accidents, or damage to the product.
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 this 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 the product may occur.

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.

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.

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 rub the edges of metal parts with your hand.
Failure to observe this may cause injury.

Do not touch this product, the power cord or the connected cables during thunder. (even in the process of work)
Failure to observe this may cause electric shock.

Keep SDHC/SD memory cards (option) away from infants and children. SW316L SW316
Otherwise, they may swallow the cards by mistake.
In this case, consult a doctor immediately.

The measures of protection against snow-fall shall be taken.
In areas where lots of snow accumulates, the weight of snow may cause the product to fall resulting in injury or accidents. Protect the product against snowfall by installing under eaves.

The screws and fixed parts must be securely tightened.
Failure to observe this may cause the product to fall resulting in injury.

The measures of protection against a fall of this product shall be taken.
Failure to observe this may cause a drop resulting in injury or accidents.

Do not damage the power cable. SW316L SW316
Do not damage, fabricate, twist, stretch, bundle, or forcibly bend the power cable. Do not place heavy objects.
Keep away from heat sources.
Use of the damaged power cable may cause electric shock, short circuit, or fire.
Consult the dealer for repair.

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

[Precautions for use]

This product has no power switch.
When turning off the power, disconnect the power supply from the 12 V DC power supply or the PoE device. (When using both the 12 V DC power supply and the PoE device for power supply, disconnect both the connections.)

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.
Do not expose the product to direct heat sources such as a heater.

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

Handle this product with care.
Do not drop this product, nor apply shock or vibration to the product. Failure to observe this may cause trouble. If a strong shock or vibration is applied to the front cover, it may cause damage or allow water to enter this product.

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

Product disposal/transfer
Data saved on this product or a storage device used with this product 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 this product.

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.

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 (SW316L) (SW316)

• 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 28 for descriptions of how to insert/remove an SDHC/SD memory card.

• When using a 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 a 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 (included in the CD-ROM) 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 47.

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.

• When shooting fast-moving subjects or performing panning/tilting operations, objects crossing the shooting area may look to be bending askew.

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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 ACTIVITY AND/OR WAS
OBTAINED FROM A VIDEO PROVIDER
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About the dehumidifying device (SW316L)
(SW316)
- 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.

Dehumidifying device

13
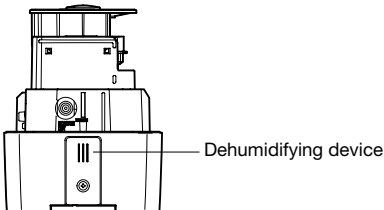
Precautions for installation

Panasonic assumes no responsibility for injuries or property damage resulting from failures arising out of improper installation or operation inconsistent with this documentation.

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 wall or ceiling board such as plaster board is too weak to support the total weight, the area shall be sufficiently reinforced.

Do not place this product in the following places:
- Locations where a chemical agent is used such as a swimming pool
- Locations subject to oil smoke such as a kitchen
- Locations that have a specific environment that is subject to an inflammable atmosphere or solvents
- 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 the specified range (page 43).
- Locations subject to vibrations (This product is not designed for on-vehicle use.)

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 this product.
The product has no power switch. When installing the product, use a power supply device equipped with the ON-OFF switch for servicing.

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 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.
- Tighten screws at a right angle to the surface. After tightening screws, perform visual check to ensure tightening is so sufficient that there is no backlash.

The measures of protection against a fall of this product shall be taken.
Failure to observe this may cause a drop resulting in injury or accidents. Be sure to install the safety wire.

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.

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.

Take notice of humidity.

Install this product when the humidity is low. If this product is installed during rainfall or at a high humidity, the inside may be exposed to moisture and the front cover may become foggy.

Heater unit

This product is equipped with an internal heater unit for use in cold climates. The heater unit turns on automatically when the temperature inside the product drops below 0 °C {32 °F}. However, in an extremely low-temperature environment below –30 °C {–22 °F}, snow and frost may not be defrosted from the front cover. When using the product in cold climates, take notice of the ambient and internal temperatures of the product.

When this product 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 around 2 hours or more, and turn on the power again.

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 (included in the CD-ROM) 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 on the provided CD-ROM for descriptions of how to perform the settings.

Major operating controls

Sunshield

Rear part of sunshield

Front cover

Rear cover

Safety wire

Tilting lock screw

Panning lock screw

(This illustration represents WV-SW316.)

Network cable   RJ-45 (female)

Alarm input/output cable

Power cable (12 V DC)

Microphone/line input cable (white)

Audio output cable (black)

Camera mount bracket
(accessory)

(This illustration represents WV-SW316.)

Mount bracket cover x2
(accessories)

SD memory card error indicator/
Auto focus indicator
(blinks when adjusting auto focus)

Access indicator (lit when accessing)

Link indicator (lit when linking)

SDHC/SD memory card slot

Auto focus (AF) button

TELE button

Initial set button

WIDE button

＜**WV-SW316L/WV-SW316**＞

Access indicator (lit when accessing)

Link indicator (lit when linking)

ACT

LINK

FOCUS ASSIST/
EXTRA OPTICAL
ZOOM

Focus assist (F.A.) button/
Extra optical zoom button

INITIAL SET

Initial set button

＜**WV-SW314**＞

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<WV-SW316L>

IR LED

Lens

Lens cover

Packing

Monitor output jack

<WV-SW316>

<WV-SW314>

Lens

Focus lock knob

Zoom lock knob

Packing

Desiccant attachment position

Lens cover

Monitor output jack

Preparations

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

- The camera mount bracket can be directly mounted on the wall using a junction box (locally procured) embedded in the wall, or a wall with a cable access hole.
- The screws that secure the camera mount bracket on a wall are not supplied. 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.

IMPORTANT:
- Prepare the mounting screws according to the material of the area where the camera mount bracket and the adapter box are to be installed. In this case, wood screws and nails should not be used. Recommended tightening torque M4: 1.57 N·m {1.16 lbf·ft}
- Required pull-out capacity of a single screw/bolt is 196 N {44.06 lbf} or more.
- If a wall or ceiling board such as plaster board is too weak to support the total weight, the area shall be sufficiently reinforced.

Secure the camera to the camera mount bracket

The tilt angle is locked downward at shipment.

1 Loosen the tilting lock screw approx. 1 rotation and adjust the tilt angle of the camera to the horizontal position.

2 Tighten the tilting lock screw again after tilt angle adjustment.

Note:
• Use a hexagonal wrench with width across flats of 4 mm (locally procured) to loosen or tighten the tilting lock screw.

(This illustration represents WV-SW316.)
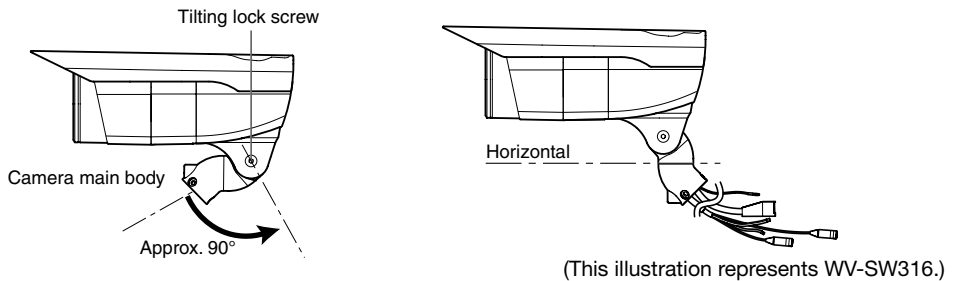
3 Pass each cable and the safety wire through the camera mount bracket, and secure the camera to the camera mount bracket with the camera fixing screws x3 (accessory).
Pass the network cable first through the camera mount bracket before passing through the other cables.

IMPORTANT:
• Ensure that the camera fixing screws (accessory) are firmly secured.
  Recommended tightening torque: 0.78 N·m {0.58 lbf·ft}

(This illustration represents WV-SW316.)
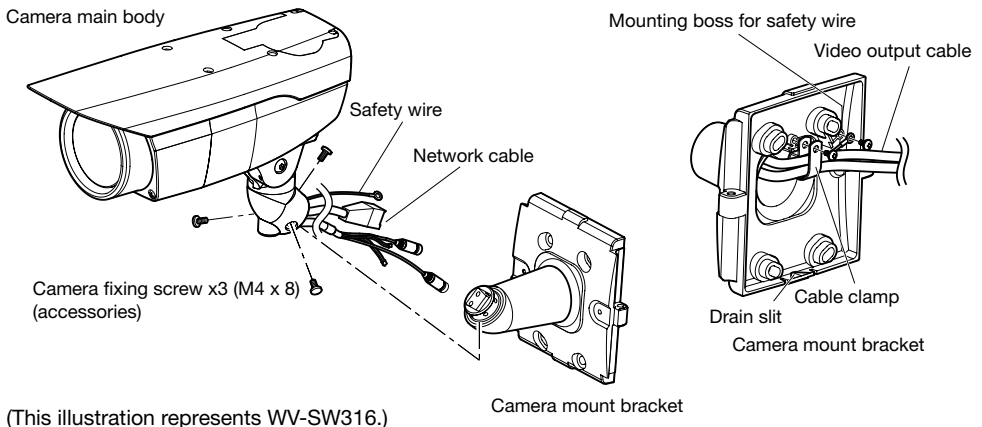
4 Remove the screws from the mounting boss of the safety wire and the mounting boss of the cable clamp.

5 Secure the safety wire with the screw from the mounting boss. Then, bundle the wire and the cable using the cable clamp and secure them with each screw from the mounting boss as illustrated.

IMPORTANT:
- Ensure that the safety wire is firmly secured.
  Recommended tightening torque: 0.59 N·m {0.44 lbf·ft}

Connection

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

Turn off a circuit breaker before making a connection. Before starting the connection, prepare the required devices and cables.
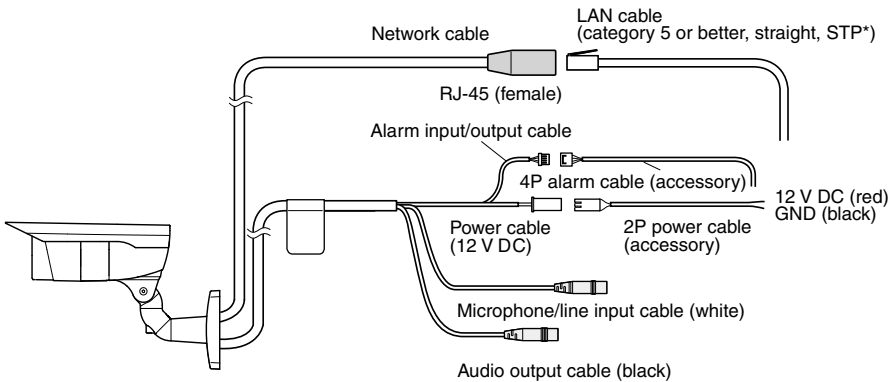
(This illustration represents WV-SW316.)

<Required cable>
LAN cable (category 5 or better, straight, STP*)
* E model only

1 Connect the microphone/line input cable and the microphone (for use of the audio reception function). (SW316L) (SW316)

Input impedance:	2 kΩ±10 %
Recommended cable length:	Less than 1 m {3.28'} (for microphone input)
	Less than 10 m {32.8'} (for line 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.

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2 Connect an external amplifier-embedded speaker to the audio output cable (for use of the audio transmission function). (SW316L) (SW316)
Connect a stereo mini plug (ø3.5 mm) (Audio output is monaural.).
- Recommended cable length: Less than 10 m {32.8 ft}

3 Connect the alarm input/output cable. (SW316L) (SW316)
\<Ratings\>

Terminal name	Ratings
ALARM OUT, AUX OUT	Open collector output (maximum applied voltage: 20 V DC)
Open	4 V DC - 5 V DC by internal pull-up
Close	Output voltage 1 V DC or less (50 mA or less)
ALARM IN, DAY/NIGHT IN	Non-voltage make contact input (4 V DC - 5 V DC, internally pulled up)
OFF	Open or 4 V DC - 5 V DC
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.

Specification of 4P alarm cable (accessory)

GND (black)
AUX OUT (gray) (Terminal 3)
ALARM OUT (red) (Terminal 2)
ALARM IN, DAY/NIGHT IN (green) (Terminal 1)
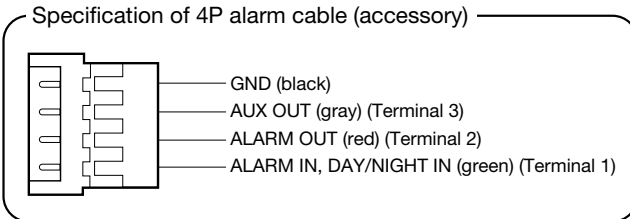
4 Connect a LAN cable (category 5e or better, straight, STP*) to the network connector.
* E model only

5 Connect the power cable.

• **When using 12 V DC power supply***[1] (SW316L) (SW316)
   Connect the output cable of the AC adaptor to the 2P power cable.

• **When using PoE (IEEE802.3af compliant)**
   Connect a LAN cable (category 5 or better, straight, STP*[2]) between a PoE device (such as a hub) and the network connector of the camera.

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

IMPORTANT:
• Use all 4 pairs (8 pins) of the LAN cable.
• The maximum cable length is 100 m {328 feet}.
• 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 the LAN cable is disconnected once, reconnect the cable after about 2 seconds. When the cable is quickly reconnected, 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 waterproof 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 waterproof tape (such as a vinyl tape) may cause water leakage resulting in malfunction.

LAN cable

Wind the tape in a
half-overlapping manner.
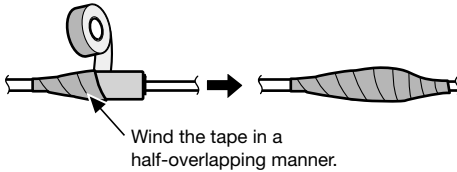
Alarm input/output cable, power cable, microphone/line input cable, audio output cable

SW316L   SW316

Wind the tape in a
half-overlapping manner.
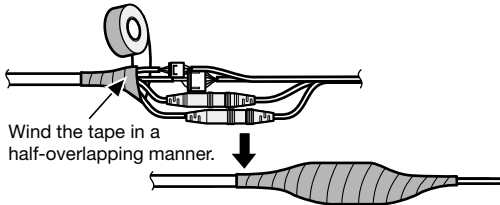
IMPORTANT:

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

Note:

  How to wind the supplied waterproof tape

• Stretch the tape by approx. twice (see the illustration) and wind it around the cable. Insufficient tape stretch causes insufficient waterproofing.

• Make sure to wind the tape so that it does not press down on the hook of the network cable.

• 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.

Stretch the tape to
about twice.

2x

hook
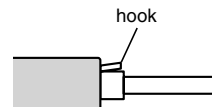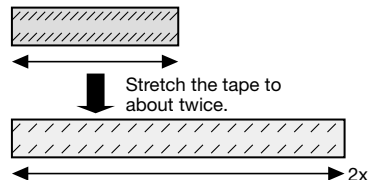
Connection example when connecting to a network using a PoE hub

Powered speaker
(option)

Monitor for adjustment
(for adjustment use only)

PoE device (hub)

Microphone (option)

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

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

PC

Powered speaker
(option)

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

Microphone (option)

Monitor for adjustment
(for adjustment use only)
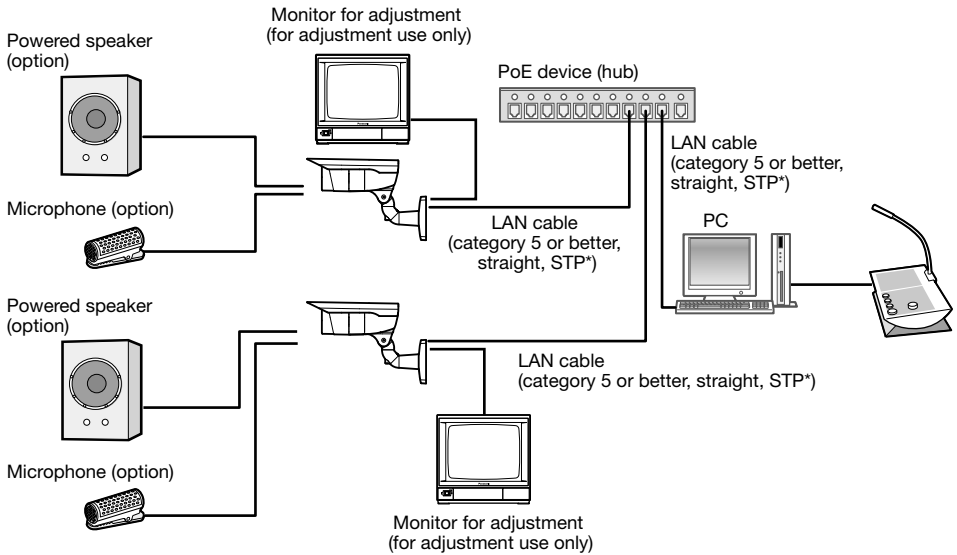
<Required cable>
LAN cable (category 5 or better, straight, STP*)
* E model only

IMPORTANT:
- The monitor for adjustment 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.

Secure the camera mount bracket when the camera is directly installed on a wall

Use 4 screws (locally procured) to secure the camera mount bracket to a wall or a junction box (locally procured).

6 mm (W) x 10 mm (L) {1/4" (W) x 3/8" (L)} (long hole)

46 mm {1-13/16"}

20 mm {13/16"}

83.5 mm {3-1/4"}

Cable access hole

Mounting screw x4 (locally procured)

Camera mount bracket
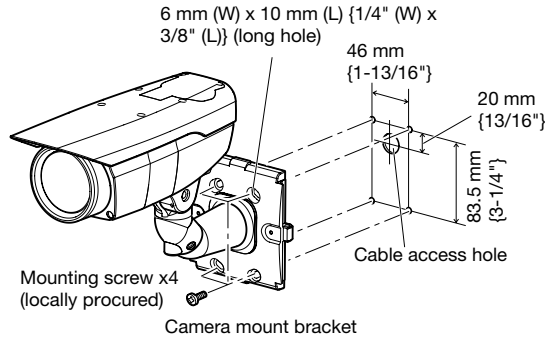
- If a junction box is used, putting the boxes side by side is recommended as illustrated. (Use unused junction boxes to pass cables through for easy cabling.)

6 mm (W) x 10 mm (L) {1/4" (W) x 3/8" (L)} (long hole)

83.5 mm {3-1/4"} 46 mm {1-13/16"}

Unused junction boxes

Mounting screw x4 (locally procured)

Junction boxes

Camera mount bracket
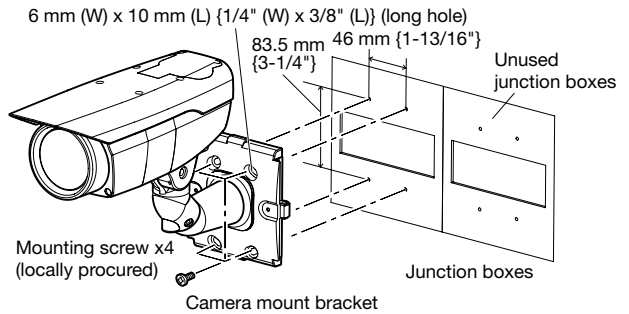
When the camera is installed on a wall using the adapter box (E model only)

1 Use 4 screws (locally procured) to secure the adapter box (accessory) to a wall or a junction box (locally procured).

View from above (internal)

TOP

46 mm {1-13/16"}

20 mm {13/16"}

83.5 mm {3-1/4"}

6 mm (W) x 10 mm (L) {1/4" (W) x 3/8" (L)} (long hole)

Cable access hole

Adapter box (accessory)

Cable access hole (used for wiring) (G3/4" internal thread)

Mounting screw x4 (locally procured)

25
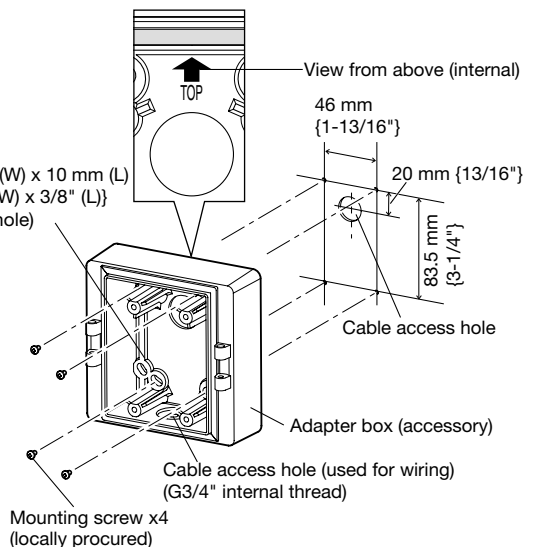
• If a junction box is used, putting the boxes side by side is recommended as shown in the illustration at right. (Use unused junction boxes to pass cables through for easy cabling.)

View from above (internal)

TOP

83.5 mm
{3-1/4"}

46 mm
{1-13/16"}

Unused junction boxes

6 mm (W) x 10 mm (L)
{1/4" (W) x 3/8" (L)}
(long hole)

Junction boxes

Mounting screw x4
(locally procured)
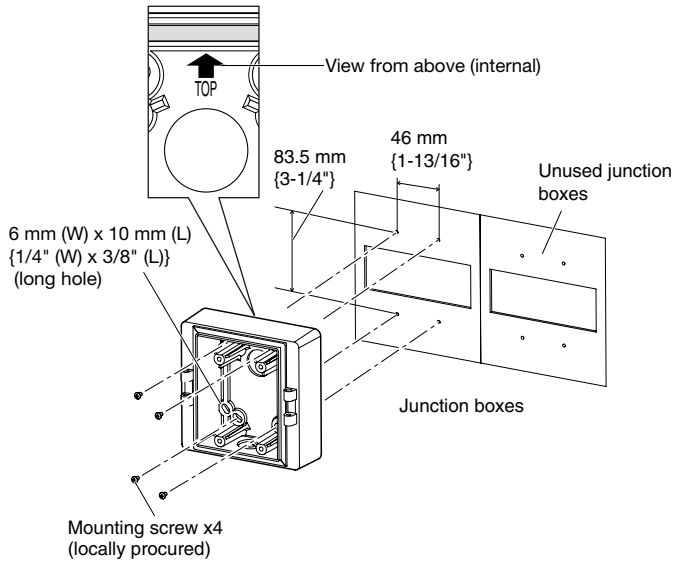
2 Attach the camera mount bracket to the left or right hinges of adapter box.

Adaptor box mounting screw (M4 x 35)

Hinges

Adapter box

Camera mount bracket

IMPORTANT:
• Ensure that the adaptor box mounting screws (accessory) are firmly secured.
Recommended tightening torque:
M4: 0.78 N·m {0.58 lbf·ft}
• Ensure that the mounting screws for adaptor box/ camera mount bracket (accessory) are firmly secured.
Recommended tightening torque:
M5: 1.86 N·m {1.37 lbf·ft}

Mounting screw for adapter box/
camera mount bracket x4 (M5 x 20)
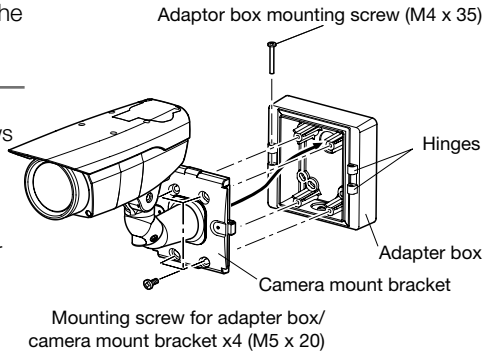
Note:
• The right or left hinges of the adapter box shall be selected so as to prevent the motion of the camera mount bracket from being interfered with by obstructions such as a wall when the camera mount bracket is connected to the hinges of the adapter box.
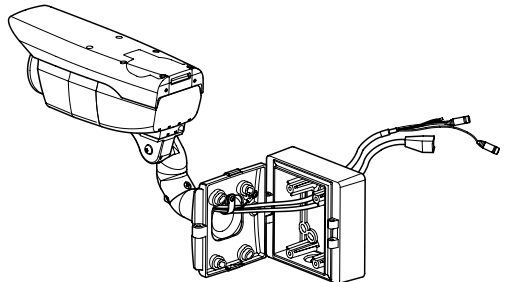
(This illustration represents WV-SW316.)

3 Secure the mount bracket cover x2 (accessories) to the camera mount bracket with the 2 mount bracket cover screws (accessories).

IMPORTANT:

• Ensure that the mount bracket cover screws (accessory) are firmly secured. Recommended tightening torque: 0.59 N·m {0.44 lbf·ft}

Mount bracket cover x2 (accessories)

Camera mount bracket

Mount bracket cover screw x2 (M3 x 6) (accessories)
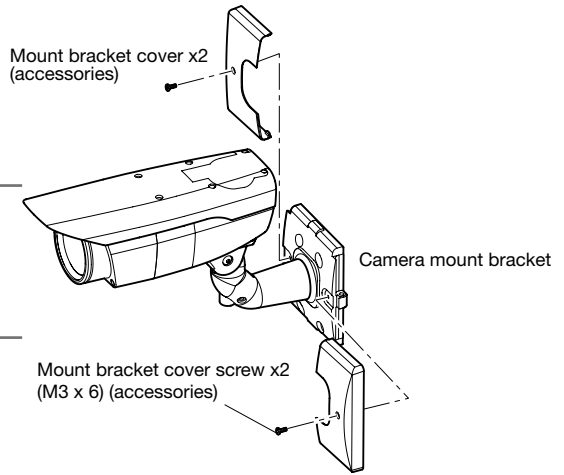
Insert/remove an SDHC/SD memory card (WV-SW316L/WV-SW316 Only)

IMPORTANT:
- Before inserting an 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 (included in the CD-ROM))

1️⃣ Loosen the 4 fixing screws of the front cover to remove the front cover.

Label side

2️⃣ Insert an SDHC/SD memory card fully into the SDHC/SD memory card slot until a click is heard.

3️⃣ Attach the front cover to the camera. (☞ Page 33)

4️⃣ When removing the SDHC/SD memory card from the SDHC/SD memory card slot, detach the front cover by following step 1, and push the card until a click is heard. After the SDHC/SD memory card is removed, attach the front cover to the camera again. (☞ Page 33)

28
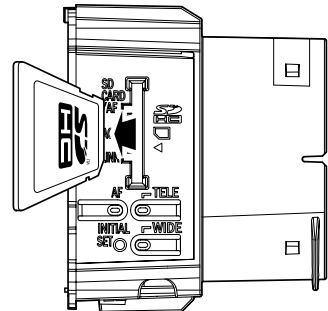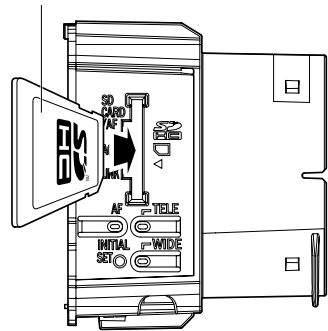
Adjustment

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

Supply power to this unit, connect the monitor for adjustment (e.g. a small LCD) to the monitor output jack, and adjust the camera angle (turn off the power after view angle adjustment for safety).

① Loosen the 4 fixing screws of the front cover to remove the front cover.
② Connect the monitor output jack and the monitor for adjustment with the RCA pin cable (locally procured).

Front cover

Fixing screw x4

Monitor output jack
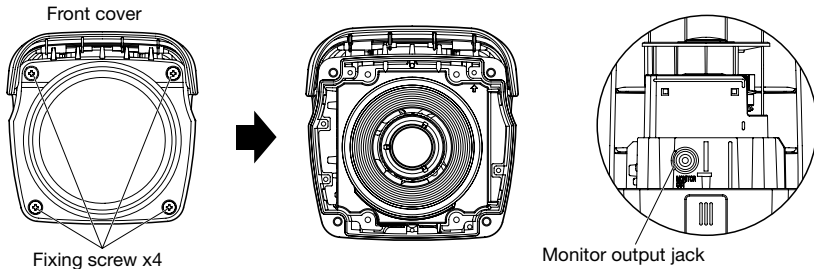
<Front cover> (This illustration represents WV-SW316.)

③ Repeat the steps (1) and (2) to adjust the camera angle.
(1) Loosen the panning lock screw and rotate the camera head horizontally to adjust panning.
(2) Loosen the tilting lock screw and rotate the camera head vertically to adjust tilting.
(3) Tighten the panning lock screw and tilting lock screw after camera angle adjustment.

IMPORTANT:
• After camera angle adjustment, the panning lock screw and tilting lock screw shall be securely tightened. Recommended tightening torque: 2.45 N·m {1.8 lbf·ft}

Tilting lock screw
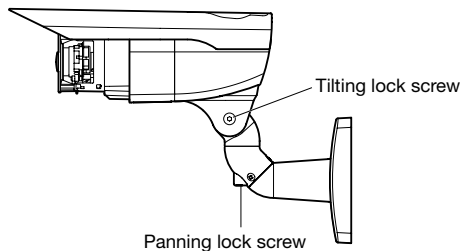
Panning lock screw

Notes:
• Use a hexagonal wrench with width across flats of 4 mm (locally procured) to loosen or tighten the panning lock screw and tilting lock screw.
• Approximately 1 rotation of loosening the panning lock screw and tilting lock screw allows camera angle adjustment. Do not loosen the screws beyond necessity.
• The camera body shall be held when the panning lock screw or tilting lock screw is loosened.
• Focus adjustment (☞ page 30-32) shall be performed at the same time panning and tilting adjustments are performed.

2 Adjust the angular field of view and the focus.

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

<WV-SW316L/WV-SW316>

Auto focus (AF) button

TELE button

WIDE button
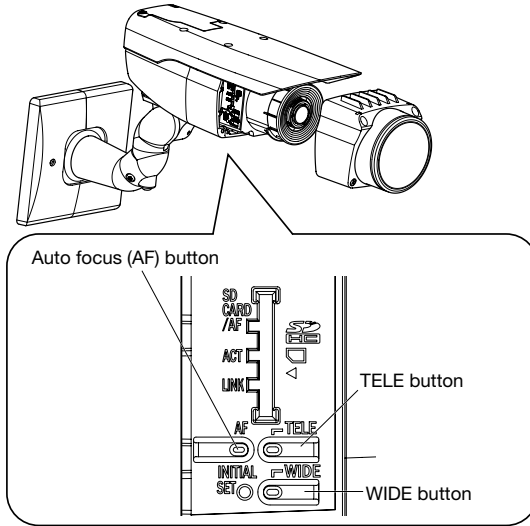
When adjusting the angular field of view and the focus from the setup menu
Refer to the Operating Instructions (included in the CD-ROM) for how to perform the manual focus adjustment from the setup menu.

When adjusting the angular field of view and the focus with the panel of the camera
① Press the TELE or WIDE buttons to move the knob between TELE and WIDE to obtain the appropriate angular field of view.

Note:
- While the button is held down, the angle of the view moves in the "T" or "W" direction.
- When the angular field of view is adjusted on the TELE side, optical zoom is applied until 3.2x, and if there are any adjustments above this, extra optical zoom is applied.
- When the image capture size under "VGA" is applied, the zoom factor can be adjusted up to 2x without deterioration of image quality.
- The zooming factor is displayed on the top right of the screen.
- When using the TELE or WIDE buttons to perform operations, the zoom factor stops once at 3.2x. If operations are continued, the angle of the view can be moved even more in the "T" or "W" directions.

② When the auto focus (AF) button is pressed, the auto focus (AF) indicator will light for around 10 seconds, and the focus is automatically adjusted.

IMPORTANT:
- Do not touch the lens.
- Defocus may be caused by the reinstalled front cover. In this case, perform the auto focus function from the setup menu.

Note:

- 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 (included in the CD-ROM) for how to perform the manual focus adjustment from the setup menu.
    - Subj. with large illuminance change
    - Subj. with reflection or extra brightness
    - Place where the front cover easily becomes dirty
    - Subj. with less contrast such as white wall
    - Subj. moving frequently
    - Subj. with low illuminance
    - Subj. through a window
    - Subj. with heavy flicker
- If the 2x extra optical zoom is applied when "1280x960", "1280x720" is selected for the image capture size, the image quality will be deteriorated because the effect of Extra Optical Zoom is not provided.
- When images in the near-infrared light area change from color to black & white, out-of-focus may be occurred according to the nature of optical property. In this case, the focus can automatically 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 (included in the CD-ROM) for how to set "Adjusting method" on the setup menu.

<WV-SW314>
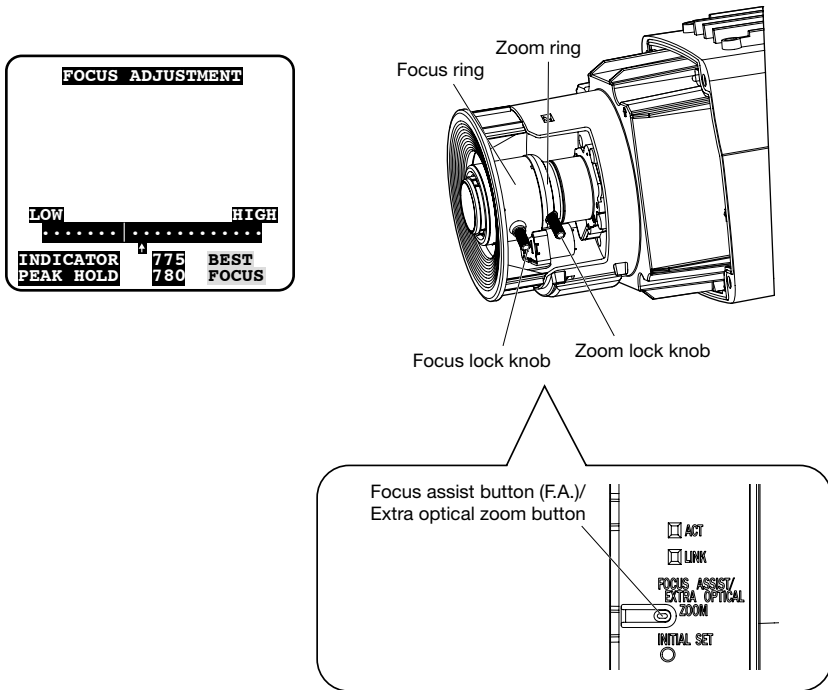
① Loosen the zoom lock knob and the focus lock knob, then move them to adjust for the appropriate viewing angle of the target.

Note:

- The focus may not be adjusted appropriately when the zoom ring is positioned at the "W" (or "T") end. In this case, adjust the focus again by slightly moving the zoom ring to the direction of "T" (or "W").

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② To adjust the angular field of view with a higher zooming effect even after adjusting the angular field of view almost fully in the "T" direction, hold down the focus assist button (F.A.)/extra optical zoom button for 5 seconds or more. 2x extra optical zoom will be applied. When the image capture size under "VGA" is applied, the zoom factor can be adjusted up to 2x without deterioration of image quality. When holding down the focus assist button (F.A.)/extra optical zoom button again for 5 seconds or more, 1x extra optical zoom will be applied.

③ Tighten the zoom lock knob.

④ 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.

⑤ When the focus lock knob 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.)

⑥ When the focus lock knob 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.

⑦ 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.

⑧ Tighten the focus lock knob so as to fix the best focus position.

⑨ Press the focus assist (F.A.) button again to close the "FOCUS ADJUSTMENT" menu.
(No operation for 3 minutes also closes the menu.)

IMPORTANT:
• When using a model equipped with the focus assist (F. A.) function, defocus may be caused by the dome cover attached.
  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.

Note:
• If the zoom lock knob is fully rotated in the "W" direction, the periphery may become dark. In such a case, rotate the zoom lock knob in the "T" direction for readjustment.
• 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.
  • Place where the front cover 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
• If the zoom lock knob is slightly tightened before the zoom is adjusted, the ring will become stable, making fine adjustments easier to perform.
• If the focus lock knob is slightly tightened before the focus is adjusted, the ring will become stable, making fine adjustments easier to perform.
• 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.
• If the 2x extra optical zoom is applied when "1280x960", "1280x720" is selected for the image capture size, the image quality will be deteriorated because the effect of Extra Optical Zoom is not provided.

Mounting the front cover

<WV-SW316L/WV-SW316>
Mount the front cover.

(3)   (1)

(2)   (4)

Fixing screw x4
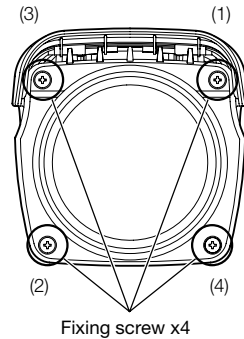
<WV-SW314>
Attach the desiccant (accessory) to the inner bottom side of the front cover along the guide rib, and mount the front cover.

Guide rib

Desiccant (accessory)

(3)   (1)

(2)   (4)
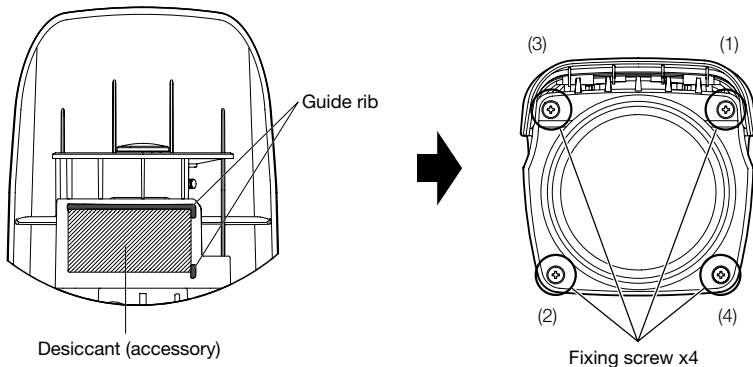
Fixing screw x4

IMPORTANT:
- Be sure to attach the desiccant (accessory). Refer to the instructions for the desiccant for how to attach it. SW314
- The tightening torque described below shall be followed for the 4 fixing screws of front cover. Recommended tightening torque: 0.59 N·m {0.44 lbf·ft}
- The tightening sequence of the 4 fixing screws of the front cover shall be observed and repeated twice as described in the illustration above.
  ((1) → (2) → (3) → (4), twice)
- Make sure the packing has not come off or become askew. If this happens put it back into place.
- Make sure the packing has no dust or other contaminants on it. Remove any dust or contaminants on the packing.
- Remove the cover film from the clear part of the front cover section after the installation is complete. Do not touch the clear part of the front cover section by hand directly after removing the cover film.

Attaching the mounting surface on the top surface of the camera body

When the mounting surface is changed to the top surface of the camera body

1 Remove the 4 sunshield fixing screws from the camera body and remove the sunshield.

2 Remove the 4 tripod head fixing screws from the camera body and remove the tripod head.

Tripod head fixing screw x4   Tripod head
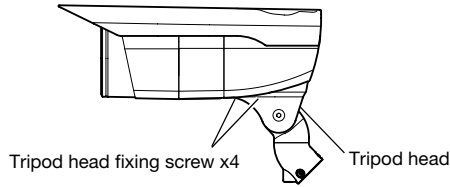
3 Loosen the fixing screw x1 and remove the rear cover, and remove the cap.

4 Rotate each cable in the direction of the arrow (clockwise) as illustrated and pass them between opening in the upper groove of the main body.
Then, attach the cap to the lower groove, and secure the rear cover with the fixing screw x1.

CAUTION
Don't remove
this part

Rear cover   Fixing screw x1
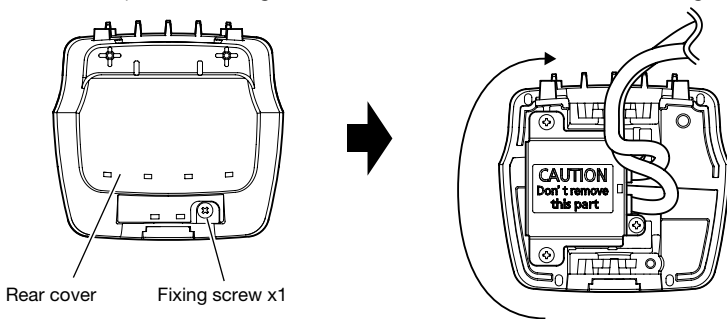
(This illustration represents WV-SW316.)

Attach the rear cover to the front cover by hooking attachment hole 1 of the rear cover to the tab on the front cover while passing the protrusion of the front cover through attachment hole 2 of the rear cover.

Tab Protrusion

Upper groove

Cap

Attachment hole 1

Attachment hole 2

(This illustration represents WV-SW316.)

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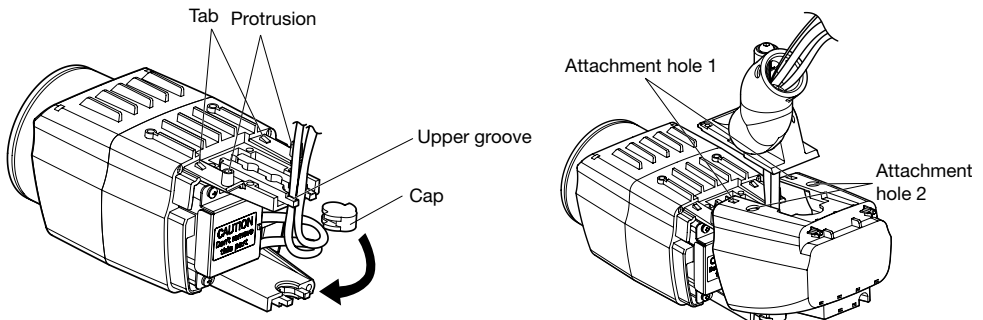
5 Mount the tripod head on the top of the camera body with the 4 tripod head mounting screws that were removed in the step 2.

IMPORTANT:
- Caution shall be taken to prevent each cable from being caught between the camera body and tripod head.
- Be sure to use the screws that were removed from the tripod head.
  Recommended tightening torque: 0.59 N·m {0.44 lbf·ft}

6 Secure the camera to the camera mount bracket with the camera fixing screws x3 (accessory). Pass each cable and the safety wire through the camera mount bracket, and connect the safety wire to the camera mount bracket. Then, bundle the wire and the cable using the cable clamp and secure them with each screw from the mounting boss to the camera mount bracket (☞ page 20-21).

Camera mount bracket

Camera fixing screw x3 (M4 x 8)
(accessories)

Tripod head fixing screw x4
(M3x10)

Camera main body

(This illustration represents WV-SW316.)
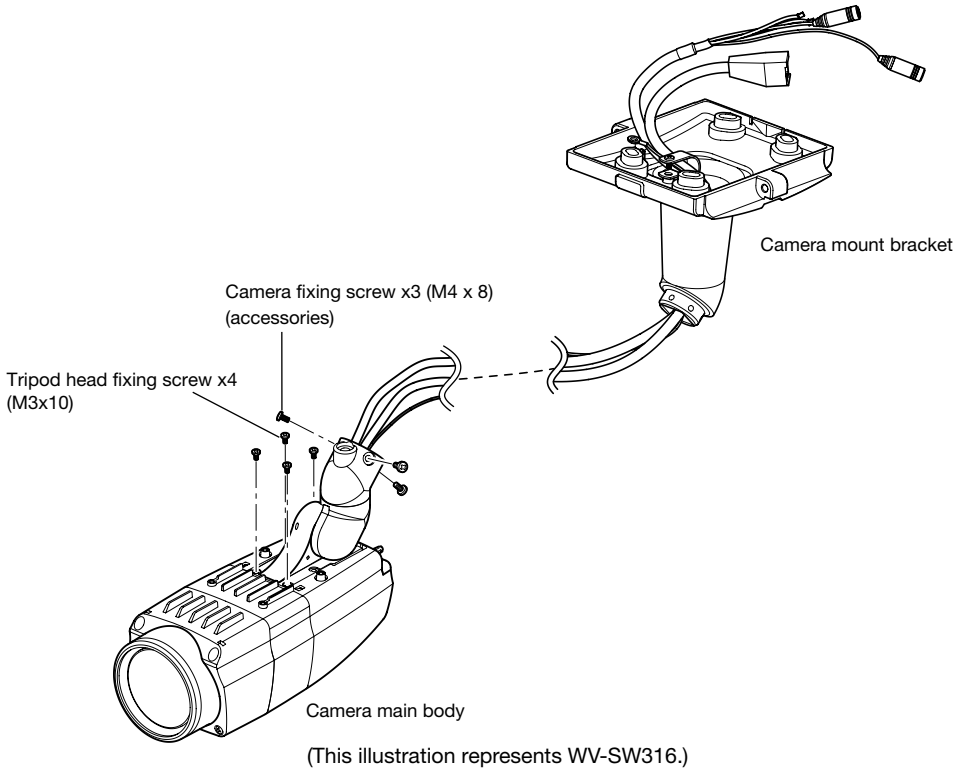
IMPORTANT:
- Be sure to use the screws that were removed from the camera mount bracket.
  Recommended tightening torque: 0.78 N·m {0.58 lbf·ft}
- Be sure to use the screws that were removed from the safety wire.
  Recommended tightening torque: 0.59 N·m {0.44 lbf·ft}

7 Remove the sunshield backside.

As illustrated, opening up the sunshield in both directions makes it easier to remove the rear part of the sunshield.

• When installing the camera to a ceiling, the rear part of the sunshield and the fixing screws are not used.

Fixing screw x2

Rear part of sunshield
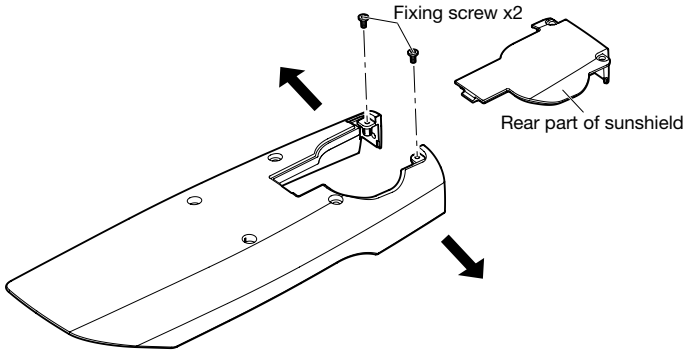
8 Mount the sunshield on the camera body with the 4 sunshield mounting screws after removing the sunshield backside.

• The sunshield is attached to the camera by inserting the protrusions on the rear cover of the camera into the attachment holes on the rear part of the sunshield.
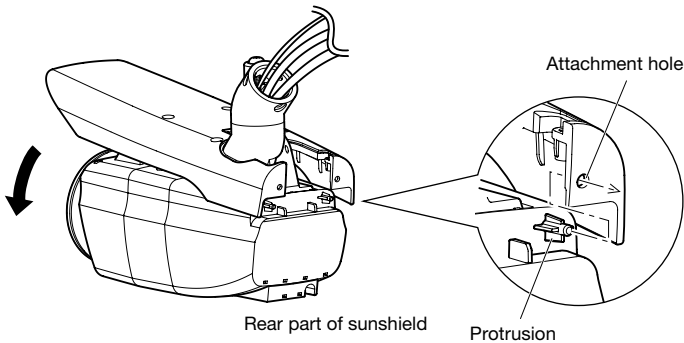
Attachment hole

Rear part of sunshield

Protrusion

(This illustration represents WV-SW316.)

IMPORTANT:
• Be sure to use the screws that were removed from the sunshield.
Recommended tightening torque: 0.59 N·m {0.44 lbf·ft}

Using the CD-ROM

About the CD launcher

Insert the provided CD-ROM into the CD-ROM drive of your PC to start up the CD launcher. Then the License Agreement will be displayed.
- Read the Agreement and choose "I accept the term in the license agreement", and click [OK]. Then the launcher window will be displayed.
- If the launcher window is not displayed, double click the "CDLauncher.exe" file on the CD-ROM.
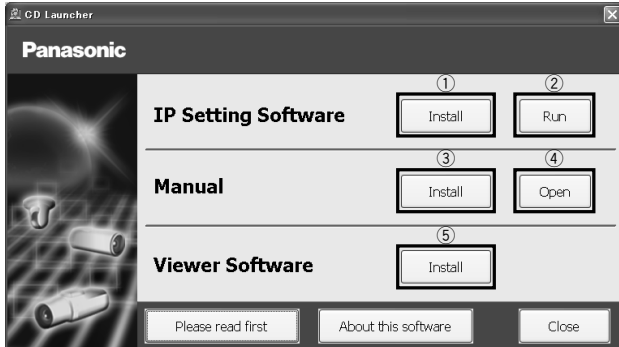
Using the supplied CD-ROM, the following actions can be performed.
① The Panasonic IP setting software can be installed on the PC.
    → Refer to "Installing Panasonic IP setting software". (☞ Page 38)
② Settings related to the camera's network can be set from the Panasonic IP setting software.
    → Refer to "Configure the network settings". (☞ Page 40)
③ The manuals can be installed on the PC.
    → Refer to "Installing the manuals". (☞ Page 39)
④ You can also view the manuals without installing them to the PC by clicking the [Open] button. You can select to view the manuals or "Notes on Windows® / Internet Explorer® versions" from the displayed menu.
⑤ The Viewer software can be installed on the PC.
    → Refer to "Installing the Viewer software". (☞ Page 39)
Make sure to read the readme file on the provided CD-ROM before using the software.

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Installing Panasonic IP setting software

On the CD launcher window, click the [Install] button next to [IP Setting Software] to display the Panasonic IP setting software installation window. Confirm the following settings before starting the installation.
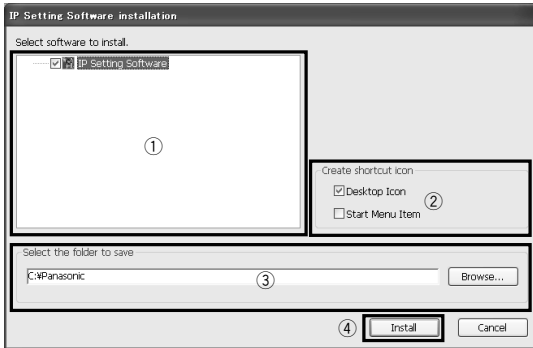
① Select the Panasonic IP setting software to install.
② Select where to create the Panasonic IP setting shortcut icon when the Panasonic IP setting software is installed.
③ Specify which folder on the PC to install the Panasonic IP setting software to.
④ Click the [Install] button to start the installation.

Note:
• To uninstall the Panasonic IP setting software delete the shortcut icon from where you specified it to be installed (the default is on the desktop) during installation and the [EasyIPConfig] folder from the folder you specified during Panasonic IP setting software installation.

Installing the manuals

On the CD launcher window, click the [Install] button next to [Manual] to display the Manual installation window. Confirm the following settings before starting the installation.
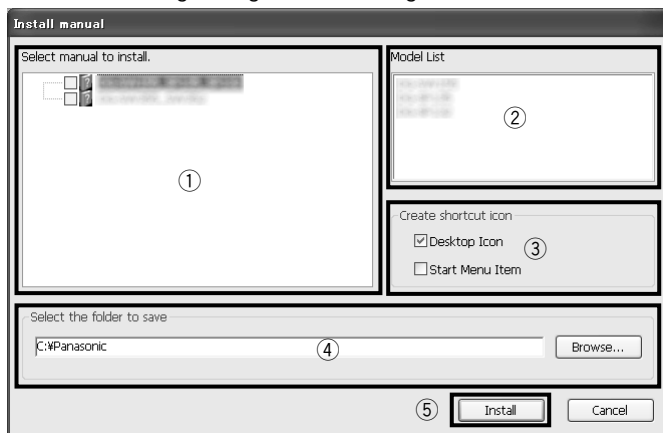
① Select which manuals to install. The camera models that the manuals support are displayed in ② "Model List".
② The camera models that are supported by the manuals selected in ① are displayed here.
③ Select where to create the manuals shortcut icon when the manuals are installed.
④ Specify which folder on the PC to install the manuals to.
⑤ Click the [Install] button to start the installation.

Note:
• To uninstall the manuals delete the shortcut icon from where you specified it to be installed (the default is on the desktop) during installation and the [Manual] folder from the folder you specified during the manuals installation.

Installing the Viewer software

The Viewer software (Network Camera View4S) must be installed on the PC in order to display camera images. On the CD launcher window, click the [Install] button next to [Viewer Software], and follow the instructions displayed on the window to install the software. A message is displayed if a PC that does not have the Viewer software installed tries to access the camera. Install the software by following the instructions displayed on the window. Refer to "Viewer software" in the Operating Instructions for further information.

Note:
• To uninstall the Viewer software, follow the steps below for depending on the OS used on your PC.
  Windows XP:
    Delete [Network Camera View 4S] from [Control Panel]-[Add or Remove Programs].
  Windows Vista/Windows 7:
    Delete [Network Camera View 4S] from [Control Panel]-[Programs]-[Uninstall a program].

Configure the network settings

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 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" page of the setup menu. Refer to the Operating Instructions (included in the CD-ROM) for further information.

IMPORTANT:
- When using Microsoft Windows 7 or 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 "20min" in the IP setup)
  However cameras in the initial set mode are still displayed even after 20 minutes.
- 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).

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1 To start the Panasonic IP setting software, click the [Run] button next to [IP Setting Software] from the CD launcher menu window, or double-click on the shortcut icon created after installing the software on the PC.

- The License Agreement will be displayed. Read the Agreement and choose "I accept the term in the license agreement", and click [OK].

2 Click the [Network Settings] button after selecting the MAC address/IP address of the camera to be configured.
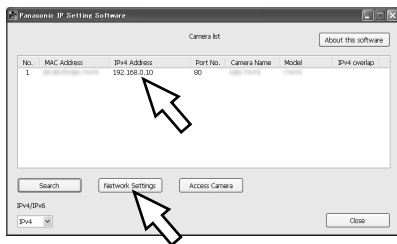
Note:
- When using a DHCP server, the IP address assigned to the camera can be displayed by clicking the [Search] button of the IP setting software.
- When a duplicate IP address is used, the corresponding camera number will be displayed shaded.
- When the [Access Camera] button is clicked, live images of the selected camera will be displayed.
- It is possible to change the "Camera list" display between IPv4 addresses and IPv6 addresses in accordance with the protocol in use.
- The information displayed can be sorted by clicking the title of each displayed item.

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

Note:

- By unchecking the "Wait for camera restarting." checkbox, multiple cameras can be continuously configured.

Network Settings	⊠

Network Settings ⊙ StaticIP   ○ DHCP
                  ○ Auto(AutoIP)

Port No.   [80]

IPv4 Address   [192 . 168 . 0 . 10]

Subnet Mask   [255 . 255 . 255 . 0]

Default Gateway   [192 . 168 . 0 . 1]

DNS   ○ Auto   ⊙ Manual

Primary DNS   [0 . 0 . 0 . 0]

Secondary DNS   [0 . 0 . 0 . 0]

☑ Wait for camera restarting.

[Save]   [Back]
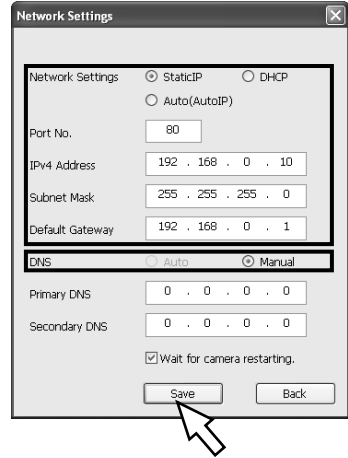
IMPORTANT:

- It may take for around 2 minutes to complete to upload the settings to the camera after clicking the [Save] button. The settings may be invalidated 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.

About the default user name and password

Click the [Setup] button on the "Live" page, the user authentication window will be displayed. Enter the default user name and password as follows, and log in.
User name: admin
Password: 12345

IMPORTANT:

- To enhance the security, change the password for the user name "admin". It is recommended to change this password periodically.
- To enhance the security of the "Live" page, it is possible to set authentication for the "Live" page by selecting "On" for "User auth.". Refer to the Operating Instructions (included in the CD-ROM) for further information.

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** (SW316L) (SW316) • Is 12 V DC power supply connected to the 2P power supply cable? → Check whether the connection is appropriately established. • Is the AC adaptor in use compliant with the Specifications? → Check the Specifications regarding AC adaptor. **When using a PoE device for power supply** • Are the PoE device and the network 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.	21
When the IR LED lights a part or all of the screen appears blurred.	• Is there a wall or other reflecting surface or object near the camera (including areas not displayed in images)? (SW316L) → Adjust the camera angle so that light from the IR LED is not reflected.	29
When the IR LED lights the camera switches between color mode and black-and-white mode.	• The subject may be too close to the camera. (SW316L) → Adjust the distance between the camera and the subject.	29

Specifications

• Basic

Power source:	SW316L SW316 12 V DC, PoE (IEEE802.3af compliant) SW314 PoE (IEEE802.3af compliant)
Power consumption:	SW316L SW316 12 V DC*: 850 mA, PoE 48 V: 200 mA (Class 0 device) SW314 PoE 48 V: 70 mA (Class 0 device) * FOR UL LISTED MODEL(S), ONLY CONNECT 12 V DC CLASS 2 POWER SUPPLY.
Ambient operating temperature:	SW316L SW316 –40 °C to +50 °C {-40 °F to 122 °F}* SW314 –10 °C to +50 °C {14 °F to 122 °F}
Ambient operating humidity:	Less than 90 % (no condensation)
IR LED irradiation distance:	SW316L 15 m {49.21 feet}
Waterproof:	Camera: IP66 (IEC60529) * Only when installation work specified in this book is properly performed and appropriate waterproof treatment is performed
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:	SW316L SW316 ALARM IN, DAY/NIGHT IN, ALARM OUT, AUX OUT (x1 for each)

Microphone/line input cable:
 	
  For microphone input:
 	
  For line input:
	SW316L SW316
	ø3.5 mm monaural mini jack
	Input impedance: Approx. 2 kΩ
	Applicable microphone: Plug-in power type
	Supply voltage: 2.5 V ±0.5 V
	Input level: Approx. –10 dBV

Audio output cable:	SW316L SW316 ø3.5 mm stereo mini jack (monaural output) Output impedance: Approx. 600 Ω Line level
Dimensions:	94 (W) mm x 89 (H) mm x ø226 mm {3-7/10 inches (W) x 3-1/2 inches (H) x ø8-7/8 inches} (including projection of the base cover fixing screw)
Mass:	SW316L SW316 Approx. 1.4 kg {3.09 lbs} SW314 Approx. 1.3 kg {2.87 lbs}
Finish:	Main body: Aluminum die cast/resin, metallic silver coating Front cover section clear part: Polycarbonate resin

* When using this product without turning the power off. (However, the temperature inside the camera shall be -10 °C {14 °F} or higher.) Perform settings or startup operations when the ambient temperature is -30 °C {-22 °F} or higher. The auto focus function and motorized zoom are not available until the heater unit of the camera raises the internal temperature of the camera.

• Camera

Image sensor:	1/3-type MOS image sensor
Effective pixels:	Approx. 1.3 megapixels
Scanning area:	4.80 mm (H) × 3.60 mm(V) {3/16 inches (H) x 5/32 inches (V)}
Scanning system:	Progressive

Minimum illumination:	**SW316L**
	Color: 0.3 lx {0.03 footcandle}
	        (F1.3, Auto slow shutter: Off (1/30 s), Gain: On(High))
	        0.019 lx {0.0019 footcandle}
	        (F1.3, Auto slow shutter: max. 16/30 s, Gain: On(High))*
	BW: 0 lx {0.000 footcandle}
	        (F1.3, Auto slow shutter: Off (1/30 s), Gain: On(High),
	        when the IR LED is lit)
	
	SW316
	Color: 0.3 lx {0.03 footcandle}
	        (F1.3, Auto slow shutter: Off (1/30 s), Gain: On(High))
	        0.019 lx {0.0019 footcandle}
	        (F1.3, Auto slow shutter: max. 16/30 s, Gain: On(High))*
	BW: 0.05 lx {0.005 footcandle}
	        (F1.3, Auto slow shutter: Off (1/30 s), Gain: On(High))
	        0.003 lx {0.0003 footcandle}
	        (F1.3, Auto slow shutter: max. 16/30 s, Gain: On(High))*
	
	SW314
	Color: 0.3 lx {0.03 footcandle}
	        (F1.3, Auto slow shutter: Off (1/30 s), Gain: On(High))
	        0.019 lx {0.0019 footcandle}
	        (F1.3, Auto slow shutter: max. 16/30 s, Gain: On(High))*
	BW: 0.2 lx {0.02 footcandle}
	        (F1.3, Auto slow shutter: Off (1/30 s), Gain: On(High))
	        0.013 lx {0.0013 footcandle}
	        (F1.3, Auto slow shutter: max. 16/30 s, Gain: On(High))*
	* Converted value

Super-Dynamic:	On/Off
Dynamic range:	52 dB typ. (Super-Dynamic: On, light control: indoor scene)
Face SD:	On/Off
Gain (AGC):	On(High)/ On(Mid)/ On(Low)/ Off
Adaptive black stretch:	On/Off
Back light compensation (BLC):	On/Off
Light control mode setting:	Indoor scene (50 Hz/60 Hz)/ Outdoor scene/ Fix shutter
Shutter speed:	1/30, 3/100, 3/120, 2/100, 2/120, 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 (only at Super-Dynamic Off)
Auto slow shutter:	Off (1/30 s), max. 2/30 s, max. 4/30 s, max. 6/30 s, max. 10/30 s, max. 16/30 s
Color/BW:	On/ Off/ AUTO1/ AUTO2
IR LED Light:	**SW316L** Off/ Auto (High)/ Auto (Mid)/ Auto (Low)
White balance:	ATW1/ ATW2/ AWC
Digital noise reduction:	High/Low

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Video analytics Face detection:	On/Off (with the XML notification setting)
Privacy zone:	On/Off (up to 2 zones available)
VIQS:	On/Off
Camera title on screen:	Up to 20 characters (alphanumeric characters, marks) On/Off
Video motion detection (VMD alarm):	On/Off, 4 areas available

• Lens

Zoom ratio:	(SW316L) (SW316) 3.2x Extra zoom: 6.4x (at VGA) (SW314) 3.6x Extra zoom: 7.2x (at VGA)
Focal length:	(SW316L) (SW316) 3.1 mm - 10 mm (SW314) 2.8 mm - 10 mm
Maximum aperture ratio:	(SW316L) (SW316) 1:1.3 (WIDE) - 1:3.0 (TELE) (SW314) 1:1.3 (WIDE) - 1:3.1 (TELE)
Angular field of view:	(SW316L) (SW316) Horizontal: 27.9 ° (TELE) - 90.6 ° (WIDE) Vertical: 20.9 ° (TELE) - 66.9 ° (WIDE) (SW314) Horizontal: 27.7 ° (TELE) - 100.3 ° (WIDE) Vertical: 20.8 ° (TELE) - 73.6 ° (WIDE)

• Camera Mount bracket

Adjusting angle:	Horizontal: ±100 ° Vertical: +30 °, -90°
Dimensions:	125(W) mm x 125 (H) mm x ø108 mm {4-15/16 inches (W) x 4-15/16 inches (H) x ø4-1/4 inches}
Mass:	Approx. 220 g {0.49 lbs}
Finish:	Aluminum die cast, metallic silver coating

<Camera mount bracket dimensional drawing> (unit : mm)

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• Network

Network:	10BASE-T/100BASE-TX, RJ45 connector
Resolution:	Aspect ratio: 4:3
	H.264 1280×960/ VGA (640×480)/ QVGA (320×240), max. 30 fps
	MPEG-4 VGA (640×480)/ QVGA (320×240), max. 30 fps
	JPEG (MJPEG) 1280×960/ VGA (640×480)/ QVGA (320×240), max. 30 fps
	Aspect ratio: 16:9
	H.264 1280×720/ 640×360/ 320×180, max. 30 fps
	JPEG (MJPEG) 1280×720/ 640×360/ 320×180, max. 30 fps
	* MPEG-4 is not supported.
Image compression method[1] [2]:	H.264/MPEG4
	Image quality: Low/ Normal/ Fine
	Transmission type: Unicast/Multicast
	Audio bit rate:
	Constant bit rate/Best effort: 64 kbps/ 128 kbps/ 256 kbps/ 384 kbps/ 512 kbps/ 768 kbps/ 1024 kbps/ 1536 kbps/ 2048 kbps/ 3072 kbps/ 4096 kbps/ *8192 kbps
	* only in H.264 mode
	Frame rate:
	1 fps/ 3 fps/ 5 fps/ 7.5 fps/ 10 fps/ 12 fps/ 15 fps/ 20 fps/ 30 fps
	JPEG (MJPEG)
	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) 32 kbps/16 kbps G.711 64 kbps
Bandwidth control:	Unlimited/ 64 kbps/ 128 kbps/ 256 kbps/ 384 kbps/ 512 kbps/ 768 kbps/ 1024 kbps/ 2048 kbps/ 4096 kbps/ 8192 kbps
Protocol:	IPv6: TCP/IP, UDP/IP, HTTP, HTTPS, RTP, FTP, SMTP, DNS, NTP, SNMP, DHCPv6, MLD, ICMP, ARP IPv4: TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, SMTP, DHCP, DNS, DDNS, NTP, SNMP, UPnP, IGMP, ICMP, ARP
OS[3] [4]:	Microsoft Windows 7 Microsoft Windows Vista Microsoft Windows XP SP3
Browser:	Windows Internet Explorer 9.0 (32-bit) Windows Internet Explorer 8.0 (32-bit) Windows Internet Explorer 7.0 (32-bit) Microsoft Internet Explorer 6.0 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. SW316L SW316)

Multi-screen:	Up to 16 camera images can be displayed simultaneously on a multi-screen. (Including the camera itself)
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)
Cellular phone compatibility:	JPEG image, AUX control (by access level)
Mobile terminal compatibility*5:	iPad, iPhone, iPod touch (iOS 4.2.1 or later) Android™ mobile terminals (As of January, 2012)

*1 Either H.264 or MPEG-4 is selectable.

*2 Transmission for 2 streams can be individually set in the same compression method.

*3 For further information about PC system requirements and precautions for when using Microsoft Windows 7, Microsoft Windows Vista, or Windows Internet Explorer, click "Manual" - "Open" from the supplied CD-ROM and refer to "Notes on Windows® / Internet Explorer® versions".

*4 When using IPv6 for communication, use Microsoft Windows 7 or Microsoft Windows Vista.

*5 For information on the camera models of the supported operating systems, refer to our website at http://panasonic.net/pss/security/support/info.html.

Standard accessories

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

The following parts are used during installation procedures.
4P alarm cable (SW316L) (SW316) ....1 pc.
2P power cable (SW316L) (SW316) ....1 pc.
Waterproof tape...1 pc.
Adapter box (E model only)..1 pc.
Camera mount bracket..1 pc.
Mount bracket cover...2 pcs.
Adapter box mounting screw (M4 x 35) (E model only).......................1 pc.
Mounting screws for adapter box/ camera mount bracket (M5 x 20)
(E model only)..5 pcs. (of them, 1 for spare)
Camera fixing screw (M4 x 8)...4 pcs. (of them, 1 for spare)
Mount bracket cover screw (M3 x 6)..3 pcs. (of them, 1 for spare)
Desiccant (SW314) ....1 pc.

*1 The CD-ROM contains the operating instructions 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

User License Accessory (For MPEG-4) ....BB-HCA5A (P model)
                                                                                            BB-HCA5CE (E model, Korea*)
                                                                                            * Required in Korea
User License Accessory (For H.264)............................BB-HCA8A (P model)
                                                                                            BB-HCA8CE (E model, Korea*)
                                                                                            * Required in Korea
Adapter Box WV-Q120

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 Canada:

Panasonic System Communications Company of North 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 Europe and other countries:

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