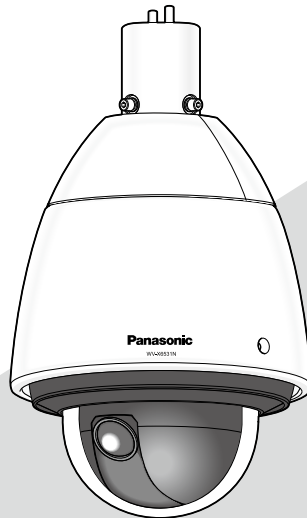


Panasonic®

Important Information

Network Camera

Model No. **WV-X6531N / WV-X6511N**
WV-X6531NRF / WV-X6531NEG
WV-X6531NPJ
WV-S6530N / WV-X6531NS
(Heavy salt damage resistance)



WV-X6531N

* For information about the installation tasks, refer to the provided Installation Guide. For information about how to perform the settings and how to operate the camera, refer to the Operating Instructions on the provided CD-ROM.

* WV-X6531NRF, WV-X6531NEG and WV-X6531NPJ are the same model as the Network Camera WV-X6531N.



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.

Contents

Limitation of liability.....	3
Disclaimer of warranty.....	3
Preface	4
About notations.....	4
Main functions.....	4
About the user manuals	6
System requirements for a PC	6
Trademarks and registered trademarks.....	7
Copyright.....	7
Open Source Software	8
Network security	8
Precautions	9
Precautions for installation.....	14
Parts and functions	17
Insert/remove an SD memory card*	25
Troubleshooting.....	27
Specifications.....	30
Optional accessories.....	35

* SDXC/SDHC/SD memory card is described as SD memory card.

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 i-PRO Sensing Solutions 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 LOSS OR DAMAGE, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
- (2) ANY INCONVENIENCE, LOSS, OR DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
- (3) ALL MALFUNCTIONS OR TROUBLES FROM UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER, REGARDLESS OF THE CAUSE OF THE MALFUNCTION OR TROUBLE;
- (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 AS A PHOTOGRAPHED SUBJECT DUE TO VIOLATION OF PRIVACY CONCERNING A SURVEILLANCE CAMERA'S PICTURE OR SAVED DATA, FOR SOME REASON (INCLUDING USE WHEN USER AUTHENTICATION ON THE AUTHENTICATION SETTING SCREEN IS SET TO OFF), BECOMING PUBLIC OR BEING USED FOR ANY PURPOSE;
- (7) LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE (INCLUDING INITIALIZATION OF THE PRODUCT DUE TO FORGOTTEN AUTHENTICATION INFORMATION SUCH AS A USER NAME AND PASSWORD).

Preface

This product is an outdoor use PTZ (PAN, TILT, ZOOM) type monitoring camera with a 10BASE-T/100BASE-TX network port for network connection.
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.

X6531 The functions with this notation are available when using the model WV-X6531N / WV-X6531NS.

X6511 The functions with this notation are available when using the model WV-X6511N.

S6530 The functions with this notation are available when using the model WV-S6530N.

Main functions

40x optical zoom **X6531 **X6511**, 21x optical zoom **S6530** and high accuracy preset position function**

A single camera provides wide area monitoring.

Stabilizer using gyro sensor and image vector detection adopted **X6531 **X6511****

Intelligent Zoom Stabilization using a gyro sensor and image vector detection enables correcting low-frequency vibration of the poles caused by wind or fine vibration generated when high magnification is set, and shooting with less blurring can be achieved.

Refer to “Stabilizer” of Operating Instructions for descriptions of how to set Intelligent Zoom Stabilization.

ClearSight coating (rain wash coating)*1 for dome cover adopted

The rain wash coating is a special coating applied to the surface of the dome cover that makes it difficult for water droplets to adhere to the dome cover.

X6531

X6511

The camera conforms to the IP66*2 and Type 4X (UL50)*3, is compliant with NEMA 4X*4 ratings, and provides high dust resistance and waterproof performance.

S6530

The camera conforms to the IP66*2 and Type 4 (UL50)*3, is compliant with NEMA 4*4 ratings, and provides high dust resistance and waterproof performance.

Waterproofing treatment is not required for the camera body (Waterproofing treatment is required for all cable connection parts except for Ethernet cable).

Achieves high-level shock resistance with IK10*5 (IEC 62262) conformity.

The camera has a strong shock resistance body which is needed in outdoor installations.

Delivers high image quality streaming at low bit rates thanks to a H.265 engine equipped with Panasonic's own Smart Facial Coding technology*6.

This allows H.265 compression in addition to conventional H.264 compression technology, and when combined with Smart Facial Coding, reduces data load compared to our previous models.

Panasonic's own intelligent auto (iA) feature provides increased discernibility even in environments with poor visibility

Improvements to the Super Dynamic (SD) feature and shutter speed optimization provides clear discernibility even when monitoring moving people or car silhouettes or when license plates are illuminated by car headlights. Also, face recognition under the condition where brightness of the background changes is enabled by a function of recognizing face position and adjusting the brightness automatically.

Equipped with SD memory card slot

It is possible to save H.265 / H.264 videos and JPEG images on the SD memory card manually when an alarm occurs, during the period of the schedule, or on a Web browser. (Downloading is possible.) It is also possible to save JPEG images if a network failure occurs.

Encryption and alteration detection functions enhanced the security.

Heavy salt damage resistance compliant with ISO14993*7 (WV-X6531NS only)

Provides heavy salt damage resistance for the camera exterior against corrosion. In addition, use anti-corrosive screws for the camera exterior to prevent cohering due to corrosion.

*1 The rain wash coating is only effective against water (rain water) and is not effective against other substances such as oil or damage to the dome cover.

*2 IP66: The applicable product has "Dust tight (6)" protection against foreign solids and has "Powerful water jets (6)" protection against water (IEC60529).

*3 Type 4X (UL50), Type 4 (UL50): 4X, 4 indicates the rank in the UL waterproof standard.

*4 NEMA: Dust resistance and waterproof performance standards set by National Electrical Manufacturers Association (United States).

*5 IK10: is a standard in regards to shock resistance that represents the level of impact protection, and is regulated by the International Electrotechnical Commission (IEC).

*6 This technology allows the camera to learn the location of faces and moving objects, and transmit only the face portion of the image in high definition, thereby greatly reducing the bandwidth required.

*7 ISO14993: Standards for accelerated testing involving cyclic exposure to salt mist, dry and wet conditions.

About the user manuals

Product documentation is composed of the following documents.

- Important Information (this document): Provides basic information about the product.
- Installation Guide: Explains installation, mounting and cable connections.
- 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.

The external appearance and other parts shown in this manual may differ from the actual product within the scope that will not interfere with normal use due to improvement of the product.

System requirements for a PC

CPU:	Intel® Core™ Processor family - Intel® Core™ i5-6500 or faster - Intel® Core™ i7-6700 or faster recommended
Memory:	A minimum of 1 GB or more (for 32-bit OSs), 2 GB or more (for 64-bit OSs) memory is required. 4 GB (2 GB x 2, Dual Channel) or more recommended.
Network interface:	10BASE-T/100BASE-TX 1 port
Audio interface:	Sound card (when using the audio function)
Monitor:	Image capture size: 1024×768 pixels or more Color: 24-bit True color or better
OS:	Microsoft Windows 10 Microsoft Windows 8.1 Microsoft Windows 8 Microsoft Windows 7
Web browser:	Windows Internet Explorer 11 (32-bit) Windows Internet Explorer 10 (32-bit) Windows Internet Explorer 9 (32-bit) Windows Internet Explorer 8 (32-bit) Microsoft Edge Firefox Google Chrome™
Others:	CD-ROM drive (It is necessary to read the operating instructions and use the software on the provided CD-ROM.) Adobe® Reader® (It is necessary to view the PDF file on the provided CD-ROM.)

IMPORTANT:

- For information on the operation verification of the supported operating systems and web browsers, refer to our website at <https://security.panasonic.com/support/info/>.
 - 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 RT and Microsoft Windows 7 Starter are not supported.
 - When using Microsoft Windows 8.1, Microsoft Windows 8, use it in the desktop. The software cannot be used in the Modern UI design.
-

Note:

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

Trademarks and registered trademarks

- Microsoft, Windows, Windows Media, Internet Explorer, and ActiveX are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.
- Intel and Intel Core are trademarks of Intel Corporation in the U.S. and other countries.
- Adobe, Acrobat Reader, and Reader are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.
- SDXC Logo is a trademark of SD-3C, LLC.
- iPad and iPhone are trademarks of Apple Inc., registered in the U.S. and other countries.
- Android and Google Chrome are trademarks of Google LLC.
- Firefox is a trademark of the Mozilla Foundation in the US and other countries.
- The word “QR Code” is a registered trademark of DENSO WAVE INCORPORATED in Japan and other countries.
- All other trademarks identified herein are the property of their respective owners.

Copyright

Except for open source software licensed under GPL/LGPL and so on, distributing, copying, disassembling, reverse compiling and reverse engineering of the software provided with this product are all expressly prohibited. In addition, exporting any software provided with this product violating export laws is prohibited.

Open Source Software

- This product contains open source software licensed under GPL (GNU General Public License), LGPL (GNU Lesser General Public License), etc.
- Customers can duplicate, distribute and modify the source code of the software under license of GPL and/or LGPL.
- Refer to the “readme.txt” file on the provided CD-ROM for further information about open source software licenses and the source code.
- Please note that Panasonic shall not respond to any inquiries regarding the contents of the source code.

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.).
- To prevent unauthorized access, use user-authentication, set user names and passwords, and limit which users can log in.
- 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. Additionally, save user authentication information (user names and passwords) in such a way that it is kept out of the hands of third parties.
- Do not install the camera in locations where the camera or the cables can be destroyed or damaged by persons with malicious intent.

Precautions

Do not insert any foreign objects.

Fire or electrical shock may be caused if water or any foreign objects, such as metal objects, enter inside the unit.

Turn the power off immediately and contact qualified service personnel for service.

Do not use this product in an inflammable atmosphere.

Failure to observe this may cause an explosion resulting in injury.

Avoid installing this product in the locations where salt damage occurs (except for WV-X6531NS) or corrosive gas is produced.

Otherwise, the mounting portions will deteriorate and accidents such as a fall of the product may occur.

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

Failure to observe this may cause fire or injury.

Keep SDXC/SDHC/SD memory cards away from infants and children.

Otherwise, they may swallow the cards by mistake. In this case, consult a doctor immediately.

Do not hang down from this product or use this product as a pedestal.

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

Do not damage the power cable.

Do not damage, fabricate, twist, stretch, bundle, or forcibly bend the power cable. Do not place heavy objects on it, and keep it away from heat sources.

Use of a damaged power cable may cause electric shock, short circuit, or fire. Consult the dealer for repair.

Do not install this product on a place that is greatly influenced by wind.

Installation on a place where the wind speed is 60 m/s {approx. 134 mph} or more may cause a fall of the product resulting in injury or accidents.

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 install or clean the camera, or touch this product, the power cable or the connected cables during thunder storms.

Failure to observe this may cause electric shock.

Refer installation work to the dealer.

Installation work requires technique and experience. 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 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, or damage to the product.

In this case, 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 or accidents.

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.

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.

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.

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

Failure to observe this may cause 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.
Be sure to install the safety wire.

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 or accidents.

Correctly perform all wiring

Short circuits in the wiring or incorrect wiring may cause fire or electrical shock.

The measures of protection against snow-fall shall be taken.

Weight of snow may cause a fall of the product resulting in injury or accidents.
Protect the product against snowfall by installing it under eaves.

Turn the power off when cleaning this product.

Failure to observe this may cause electrical shock.

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

Failure to observe this may cause injury.

[Precautions for use]

When the product is accessible from the Internet

To prevent unauthorized access, note the following.

- Leave user authentication turned on.
- Periodically change passwords that are used to access the product.

Refer to the Operating Instructions on the provided CD-ROM for information about how to change passwords.

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 this product to direct heat sources such as a heater.

This product has no power switch.

When turning off the power, disconnect the power supply from the 24 V AC power supply or the PoE+ device.

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.

About the battery

A battery is installed inside the camera. Do not leave the battery exposed in environments of excessive heat as a result of sunlight or fire.

Do not subject dome cover to strong impact.

Doing so may cause damage or immersion.

Do not touch the dome cover with your bare hands.

A dirty dome cover causes deterioration of picture quality.

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.

About the automatic status detection function

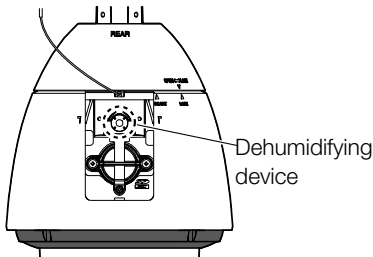
When this product malfunctions due to exogenous noise, etc. for 30 seconds or more, the product will automatically reset and will return to normal state. When the product is reset, initialization will be carried out as when the power of the product is turned on. When the product repeatedly resets, exogenous noise level around the product may be high and that may cause malfunction. Contact your dealer for instructions.

Periodically images on the screen appear to be distorted

When the camera is installed in a location where it is subject to small vibrations (for example, when it is installed near devices that vibrate), images may appear distorted and stretched lengthways. This phenomenon is a characteristic of image pickup devices that use MOS sensors and is caused by the relationship between the periodic movements of the camera and the timing that the image sensor reads images. This is not a problem with the camera. To reduce the possibility of this phenomenon occurring, install the camera in a secure location.

About the dehumidifying device

- This product has dehumidifying device to keep the inside at low moisture level, preventing condensation and quickly dissipating dew if produced.
- Dew may be produced depending on the conditions of temperature, humidity, winds, and rain, and it may take time to dehumidify.



* The main sunshield rear cover and the indication label are omitted.

What to do if “WARMING UP-PLEASE WAIT” appears on the display.

This message indicates that the temperature inside the camera has become extremely low. The camera will be automatically restarted when the inside the camera is warmed up by the built-in heater. Please wait for a while.

We shall not be liable for content compensation, losses of recorded or edited content and any direct or indirect consequent damages caused by failure to record or edit due to faults with this unit or the SD memory card. In addition, the same provisions apply after unit is repaired.

About the MOS image sensor

- When continuously shooting a bright light source such as a spotlight, the color filter of the MOS image sensor may become deteriorated and this 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.

Cleaning this product body

Be sure to turn off the power before cleaning. Failure to observe this may cause injury. Do not use benzine, thinner, alcohol, or any other types of solvents or detergents. Otherwise, it may cause discoloration. When using a chemical cloth for cleaning, read the caution provided with the chemical cloth product.

- * Do not loosen or remove screws unless instructed to do so in the product documentation.
- * The camera position may be moved inadvertently while cleaning the camera body. Restart the product or refresh the camera position (position refresh) to correct the camera position. Refer to the Operating Instructions on the provided CD-ROM for further information.

Cleaning of the dome cover

- When cleaning the dome cover, hose or spray fresh water that is not containing lubricant agent or silicon substances and wash away adherents such as grain of sand. If dirt is hard to remove, use a sponge soaked into the fresh water mentioned above and wipe off.
 - Do not wipe the cover with a dry cloth. (Using dry cloth may spread oil constituent adhered to the surface, and it may result in damaging the rain wash coating.)
 - If dirt cannot be wiped off with a damp cloth, use a neutral detergent and sufficiently rinse off the detergent.
 - Do not use organic solvent such as benzene and thinner.
 - Before using a spray, abandon a few sprays to eliminate impurities.
- * Improper cleaning of the dome cover may cause the rain wash coating to become less effective. In this case, in order to have effective rain wash coating, a new dome cover must be purchased to replace the existing dome cover. Consult with your dealer or construction contractor.

About the rain wash coating

Due to effectiveness of the rain wash coating, drops are likely to be accumulated right under the camera and it may cause a partial distortion of the video.

About the stabilizer function

Depending on the conditions in the installation area, effects of the stabilizer function may not be fully achieved.

Consumable parts

The following are consumables: Replace them in accordance with their operating lifetimes. Their operating lifetimes vary depending on the usage environment and conditions. The operating lifetimes below are just guides for when using the camera at +35 °C {95 °F}.

X6531 X6511

- Lens unit, panning motor, tilting motor, flat cable for tilting: Approx. 3.7 million operations (Approx. 20000 hours)
Cooling fan: Approx. 52000 hours
Slip ring: Approx. 3.7 million operations (Approx. 20000 hours)
- * When continuing the action of moving the set position for a long period, dust may accumulate in a slip ring. It can be prevented by executing the position refresh action regularly (about once a week) using the schedule setting. Refer to our website (<https://security.panasonic.com/support/info/> <Control No.: C0125>) for slip ring information.

S6530

- Lens unit, panning motor, tilting motor, flat cable for panning, flat cable for tilting: Approx. 3.7 million operations (Approx. 20000 hours)
Cooling fan: Approx. 52000 hours

AVC Patent Portfolio License

THIS PRODUCT IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL USE OF A CONSUMER OR OTHER USES IN WHICH IT DOES NOT RECEIVE REMUNERATION 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 ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION MAY BE OBTAINED FROM MPEG LA, L.L.C.
SEE [HTTP://WWW.MPEGLA.COM](http://www.mpegla.com)

Lens and pan/tilt head

If a lens and pan/tilt head are not performed for a long period of time, the grease coating inside these parts may become sticky. That may obstruct the parts from moving. To prevent this, move the lens or pan/tilt head periodically. Or perform position refresh periodically in the manner described in "Position refresh".

Position refresh

During the use for a long period of time, the preset positions may become inaccurate. When "Position refresh" is set for the created schedule, the camera position will be corrected periodically. Refer to the Operating Instructions on the provided CD-ROM for how to perform the settings.



Tilt angles and the zoom ratio

This product contains a function to prevent image deterioration when using a tilt angle higher than horizontal (0° to -15°). However, when this product is used at a tilt angle higher than about -5° , depending on the zoom rate used, images may become distorted or the upper parts of the images may become dark. In this case, adjust the zoom rate or tilt angle as necessary.

Equipment classification and power source indication label


Remove the main sunshield rear cover of this product to refer to the indication label for the equipment classification and power source, etc.

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.

When abandoning the memory media, it is recommended to destroy it physically after deleting data by PC.

Meaning of symbols

 : Direct current symbol

 : Alternating current symbol

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.

For information about the installation tasks, refer to the provided Installation Guide.

In order to prevent injury, the product must be securely mounted to a wall or ceiling according to Installation Guide.

Installation place

<WV-X6531NS (Heavy salt damage resistance) only>

The camera has heavy salt damage resistance treatment applied, but this does not ensure complete resistance against corrosion. Please pay attention to the installation location such as in places where seawater does not splash directly.

Especially when installing this product in coastal areas and area that are sprayed with snow-melting agent that are not exposed to rainwater, periodically clean by rinsing to remove adhered salt. Periodically inspect the camera when installing it in coastal areas or areas that are sprayed with snow-melting agent. (Replace parts as necessary.)

Prepare the foundation of the installation site, installation support, and any other installation setting with heavy salt damage resistance treatment.

<WV-X6531N / WV-X6511N / WV-S6530N>

The product can not be installed in areas by the sea, the seashore, or where snow-melting agent is sprayed.

Power supply

This product has no power switch.

When performing electrical work, make sure the camera can be turned on and off. When an Ethernet cable or power cable is connected, the power is turned on. When the product is supplied, the product will perform panning, tilting, zooming and focusing.

When cleaning the product, remove the Ethernet cable or disconnect the power cable from the main power supply.

Installation area for this product

Select an appropriate place for the installation area (such as a strong wall or ceiling) in your particular environment.

- When hanging the camera from a ceiling, use the WV-Q121B / WV-Q121BS (Heavy salt damage resistance) (option) ceiling mount bracket.
- When installing on a wall, use wall mount bracket WV-Q122A / WV-Q122AS (Heavy salt damage resistance) (option).
- When pendant-mounting on a ceiling on a bracket that is custom-made, use the attachment pipe. <WV-X6531N / WV-X6511N / WV-S6530N only>
- 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.
- Do not mount the product on a plaster board or a wooden section because they are too weak. If the product is unavoidably mounted on such a section, the section shall be sufficiently reinforced.

When using the camera in combination with an attachment pipe and attaching to a locally procured bracket <WV-X6531N / WV-X6511N / WV-S6530N only>

- Locally procure a M6 eye bolt (stainless steel).
Recommended tightening torque:
2.45 N·m {1.8 lbf·ft}
- In order to prevent the camera from falling, procure a bracket that can be attached a safety wire.
- Connect the M6 eye bolt and locally procured bracket together with the safety wire.

- Check that the surface that the attachment pipe and locally procured bracket are to be attached to can bear the weight of the bracket and camera.

Mounting method for this product

This product is designed to be used as a pendant mount camera. If the product is mounted on a desktop or at a slant, it may not work correctly and its lifetime may be shortened.

Do not place this product in the following places:

- Locations where a chemical agent is used such as a swimming pool
- Locations subject to moisture or 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 subject to corrosive gases such as from hot springs, volcanic regions, etc.
- Locations where the temperature is not within the specified range (☞ page 30)
- Locations subject to vibrations, such as on vehicles, marine vessels, or above product lines (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 product in such locations, the dome cover may become foggy or condensation may be caused on the cover.)

Sulfurization caused by rubber products

Do not place the product near rubber products (packing, rubber feet, etc.) that contain sulfur. There is a risk that sulfur components in rubber products may cause electrical parts and terminals, etc. to become sulfurized and corrode.

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 checks to ensure that the tightening is sufficient enough so that there is no movement or looseness.

Heater unit

This product is equipped with an internal heater unit for use in cold climates. The product can be used in temperatures as low as $-30\text{ }^{\circ}\text{C}$ $\{-22\text{ }^{\circ}\text{F}\}$ when connected to a PoE+ hub,

X6531 **X6511**

$-50\text{ }^{\circ}\text{C}$ $\{-58\text{ }^{\circ}\text{F}\}$ when connected to a 24 V AC power supply or a tested PoE injector, and

S6530

$-40\text{ }^{\circ}\text{C}$ $\{-40\text{ }^{\circ}\text{F}\}$ when connected to a 24 V AC power supply.

The heater unit turns on automatically when the temperature inside the product drops below $+10\text{ }^{\circ}\text{C}$ $\{50\text{ }^{\circ}\text{F}\}$. As the camera warms up, snow or frost accumulated on the dome cover will melt. However, it may not be defrosted from the cover depending on the ambient temperature or weather condition. Also, the camera may not function properly, if it is installed and operated in an environment where the temperature is below $-30\text{ }^{\circ}\text{C}$ $\{-22\text{ }^{\circ}\text{F}\}$. In such a case, wait approximately 2 hours or more until the camera is warmed up. Then, turn on the power again.

Influence on images and their quality

Under the following conditions, image quality may deteriorate or images may not be viewed properly.

(1) Influence by rainfall

During rainfall, there may be raindrops on the dome cover due to wind, which makes surveillance images difficult to be viewed.

(2) Influence by snowfall

During snowfall, there may be snow on the dome cover due to wind, which makes surveillance images difficult to be viewed (varies depending on the amount and quality of snowfall).

(3) Influence by dust in the air or gas emission from vehicles

Depending on the installation environment, dome cover may become dirty due to dust in the air or gas emission from vehicles.

This may degrade the quality of images.

(4) Influence by high-intensity light source like sunlight

Due to the incidence angle of the high-intensity light source like sunlight or a lighting lamp, a picture that does not exist (reflected light) may enter the camera and create a phenomenon called ghosting in the screen. This phenomenon noticeably appears with LED lighting in particular.

Protection from lightning

When cables are used outdoors, there is a chance that they may be affected by lightning. In such a case, install a lightning arrestor close to the camera, and make the length of the network cable between the camera and lightning arrestor as short as possible to prevent the camera from being damaged by lightning.

Take notice of humidity

Install this product when the humidity is low. If installation is performed when it is raining or in very humid conditions, the inside may be affected by humidity, causing mist-over inside the dome cover.

When noise disturbance may happen

Conduct the power distribution work to keep a distance of 1 m {3.28 feet} or more from the 120 V (for U.S. and Canada) or 220 V – 240 V (for Europe and other countries) power line. Or conduct the electric conduit work separately (Always connect the metal pipe with grounding).

Radio disturbance

Noise may appear in video or audio near a strong electric field from a TV or radio antenna, motors and transformers, or a strong electric field/magnetic field from a power line (lamp line) of AC100 V or more.

PoE+ (Power over Ethernet Plus)

Use a PoE+ hub/device that is compliant with IEEE802.3at standard.

It is impossible to supply the power to this product from a PoE hub 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 on the provided CD-ROM for further information about the port forwarding function.

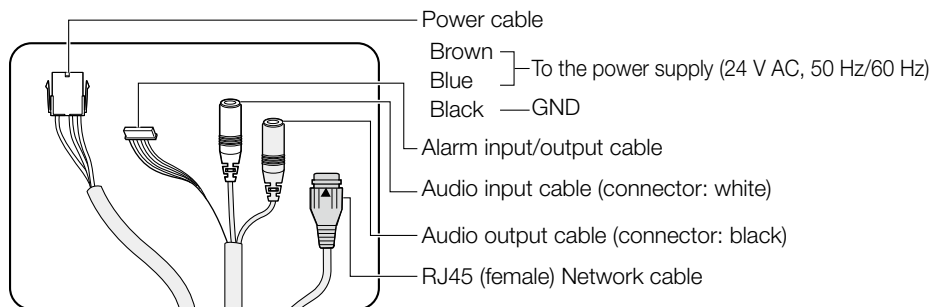
Time & date setting

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.

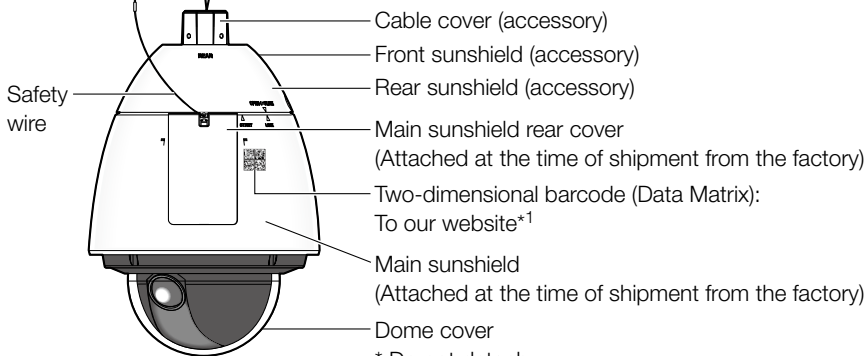
Make sure to remove this product if it will no longer be used.

Parts and functions

[Whole unit] * This illustration represents WV-X6531N



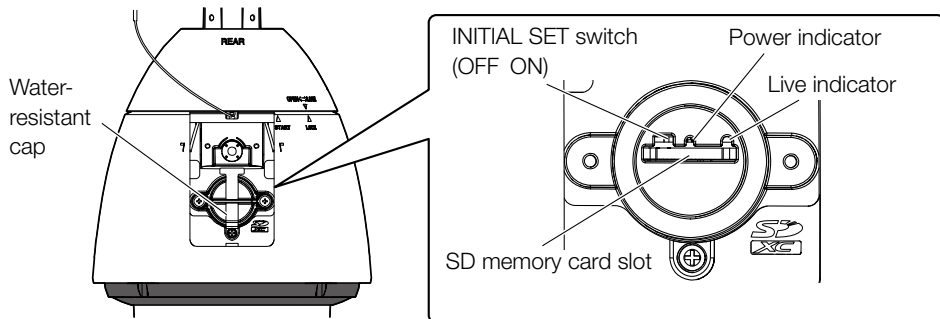
* Mount bracket and the attachment pipe are omitted in the left illustration.



* Do not detach.

*1 Depending on the scanning application used, the Data Matrix may not be able to be read correctly. In this case, access the site by directly entering the following URL.
https://security.panasonic.com/support/qr_sp_select/

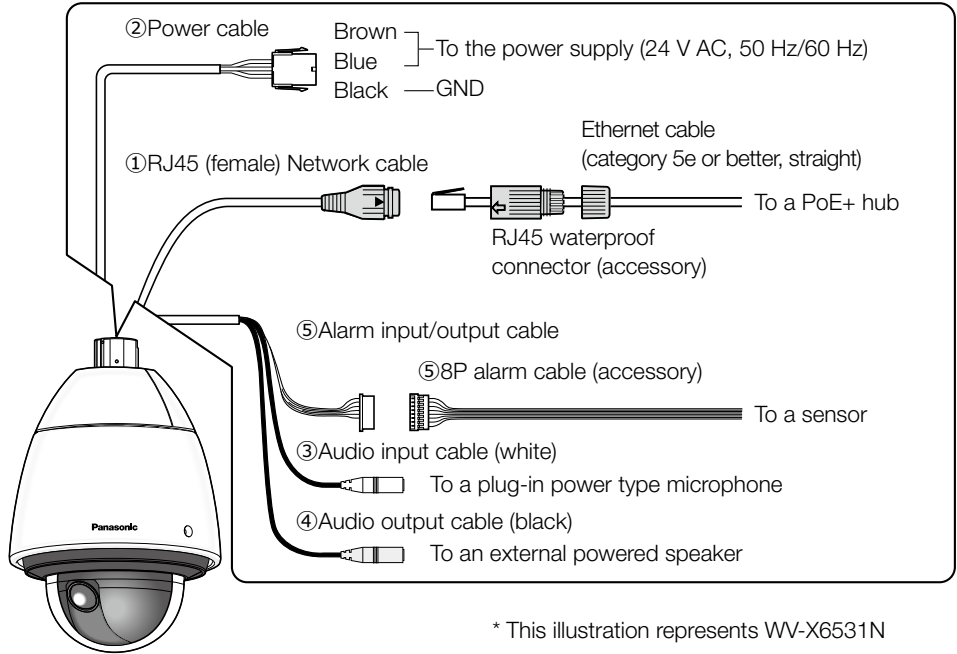
[With the main sunshield rear cover detached]



* The main sunshield rear cover and the indication label are omitted.

* The part of the water-resistant cap is omitted.

■ Cables



① RJ45 (female) Network cable

Connect an Ethernet cable (category 5e or better, straight) to the network connector.

IMPORTANT:

- Use all 4 pairs (8 pins) of the Ethernet cable.
- The maximum length of the Ethernet cable (locally procured) is 100 m.
- Make sure that the PoE+ device in use is compliant with IEEE802.3at standard.
- When connecting both the 24 V AC power supply and the PoE+ device for power supply, 24 V AC will be used for power supply.
- When the Ethernet cable is disconnected once, reconnect the cable after around 2 seconds. When the cable is quickly reconnected, the power may not be supplied from the PoE+ device.

② Power cable / 24 V AC power supply connector kit (accessory)

Caution:

- A READILY ACCESSIBLE DISCONNECT DEVICE SHALL BE INCORPORATED TO THE EQUIPMENT POWERED BY 24 V AC POWER SUPPLY.
- ONLY CONNECT 24 V AC CLASS 2 POWER SUPPLY (UL 1310/CSA 223) or LIMITED POWER SOURCE (IEC/EN/UL/CSA 60950-1).
- ONLY CONNECT POWER OVER ETHERNET 54 V DC / PoE+ 54 V DC LIMITED POWER SOURCE (IEC/EN/UL/CSA 60950-1).

In the case of the use of a 24 V AC power supply, connect the output of the AC transformer to the 24 V AC power supply connector (accessory) with the contact (accessory). Then, connect the 24 V AC power supply connector to the joining terminal of the power cable.

IMPORTANT:

- Be sure to use the 24 V AC power supply connector kit (accessory) provided with this product.
- Be sure to fully insert the 24 V AC power supply connector (accessory) into the power cable. Otherwise, it may damage the camera or cause malfunction.
- When installing the camera, make sure that excessive force is not applied to the power cable.
- Be sure to use an insulated AC transformer from a commercial power supply compliant with the Specifications (written on the inside of the main sunshield rear cover) regarding power source and power consumption.

③ Audio input cable (white)

Connect a microphone or the line out of an external device using a stereo mini plug (ø3.5 mm).

(Monaural input (X6531) (X6511) / stereo input (S6530))

- Input impedance : Approx. 2 k Ω (unbalanced)
- Recommended cable length : Less than 1 m {3.28 feet} (for microphone input)
Less than 10 m {32.8 feet} (for line input)
- Recommended microphone : Plug-in power type (locally procured)
(Sensitivity of microphone : -48 dB \pm 3 dB (0 dB=1 V/Pa, 1 kHz))
- Supply voltage : 4.0 V \pm 0.5 V
- Input level for the line input : Approx. -10 dBV

④ Audio output cable (black)

Connect an external speaker* using a stereo mini plug (ø3.5 mm). (Monaural output (X6531) (X6511) / stereo output (S6530))

- Output impedance : Approx. 600 Ω (unbalanced)
- Recommended cable length : Less than 10 m {32.8 feet}
- Output level : -20 dBV * Use a powered speaker.

Note:

- The audio output can be switched to the monitor output. Refer to the Operating Instructions on the provided CD-ROM for descriptions of how to switch the output.
- The video output is set to NTSC in the default settings of the camera. If you want to change the video output setting to PAL, refer to the Operating Instructions on the provided CD-ROM.

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.
 - Make sure that the stereo mini plug is connected to this cable. When a monaural mini plug is connected, audio (Image: when audio output is switched to monitor output) may not be heard. When connecting a monaural speaker with amplifier, use a locally procured conversion cable (mono-stereo).
-

⑤ Alarm input/output cable / 8P alarm cable (accessory)

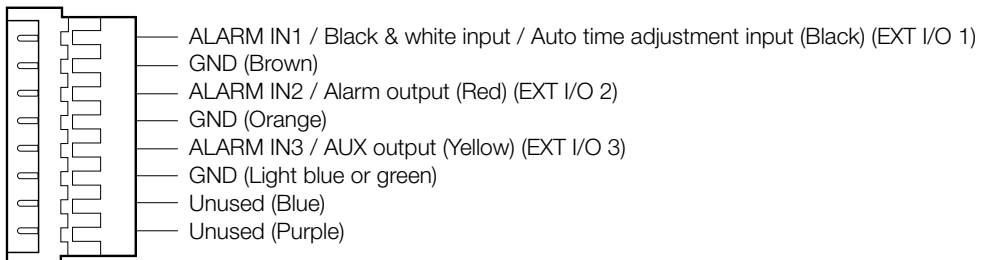
Connect the 8P alarm cable (accessory) to the alarm input/output cable. Then, connect the external device cable to the 8P alarm cable.

Note:

- Off, input, and output of the EXT I/O terminal 2 and 3 can be switched by configuring the setting. Refer to the Operating Instructions on the provided CD-ROM for further information about the EXT I/O terminal 2 and 3 (ALARM IN2, 3) settings (“Off”, “Alarm input”, “Alarm output” or “AUX output”).
-

<Ratings>

- ALARM IN1 (Black & white input, Auto time adjustment input), ALARM IN2, ALARM IN3
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)
- ALARM OUT, AUX OUT
Output specification : Open collector output (maximum applied voltage: 20 V DC)
ON : 4 V – 5 V DC by internal pull-up
OFF : Output voltage 1 V DC or less (maximum drive current: 50 mA)

8P alarm cable**IMPORTANT:**

- Install external devices so that they do not exceed the rating of the network camera.
 - When using the EXT I/O terminals as the output terminals, ensure they do not cause signal collision with external signals.
-

Connection example

Before starting the installation, check the entire system configuration.

When connecting with a PC directly

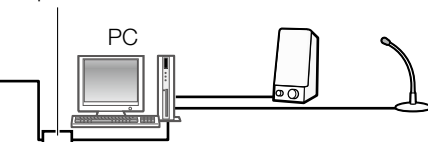
<Required cable> Ethernet cable (category 5e or better, cross)

RJ45 waterproof connector

Powered speaker



Plug-in power type
microphone



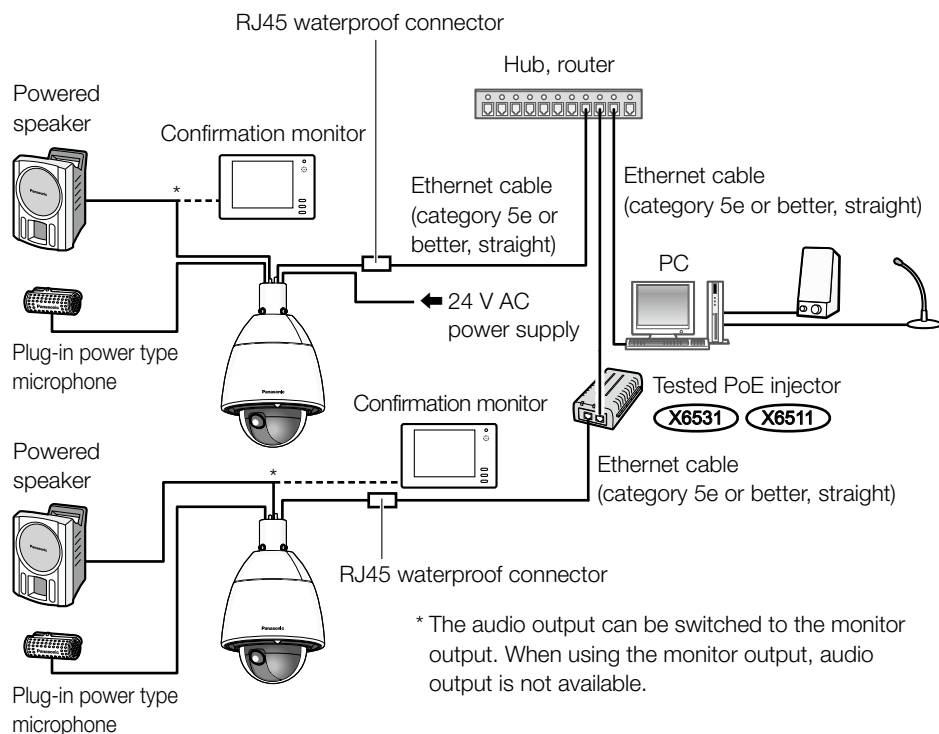
Ethernet cable
(category 5e or better, cross)

← 24 V AC power supply

Connecting to a network using a PoE+ hub when the temperature is $-30\text{ }^{\circ}\text{C}$ $\{-22\text{ }^{\circ}\text{F}\}$ or less

* When the temperature is $-30\text{ }^{\circ}\text{C}$ $\{-22\text{ }^{\circ}\text{F}\}$ or less, use a 24 V AC power supply or a tested PoE injector (X6531 X6511).

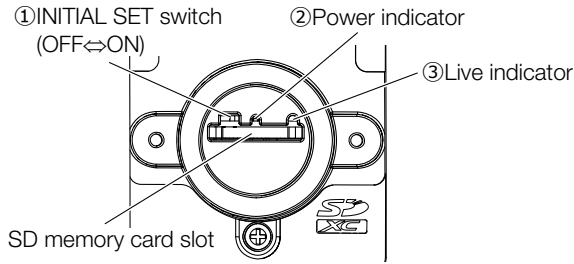
<Required cable> Ethernet cable (category 5e or better, straight)



IMPORTANT:

- Use a switching hub or a router which is compliant with 10BASE-T/100BASE-TX.
- If a PoE+ hub is not used, each network camera must be connected to a 24 V AC power supply.
- When using 24 V AC, power supply from a PoE+ hub or router is not required.

■ Indicators and buttons



① INITIAL SET switch

Use the INITIAL SET switch to reset the settings of the camera to the default.

IMPORTANT:

- When the camera is initialized, the settings including the network settings will be initialized. Note that the preset position settings and the CRT key (SSL encryption key) used for the HTTPS protocol will not be initialized.
-

Step 1

Open the water-resistant cap by following steps 1-3 of the “Insert an SD memory card” section (☞ page 25).

Step 2

Move the INITIAL SET switch to the right (ON).

- The factory default is OFF.

Step 3

Move the INITIAL SET switch to the right, and then turn on the power of the camera. Turn on the power of the camera and turn off (move it to the left) the INITIAL SET switch about 15 seconds later. After about 2 minutes the camera will start up and the setting data including network setting data will be initialized. If it is not initialized, please try again.

(If it is initialized properly, the live indicator will repeat twice the blinking action like blinking orange → lighting orange → blinking orange after the action of lighting orange → turning off.)

IMPORTANT:

- When the camera is initialized, the settings including the network settings will be initialized. Before initializing the settings, it is recommended to write down the settings in advance.
 - Do not turn off the power of the camera during the process of initialization. Otherwise, it may fail to initialize and may cause malfunction.
-

Step 4

Turn off the power of the camera.

IMPORTANT:

- If the INITIAL SET switch is positioned to the “ON” side, the camera cannot enter the normal operation mode. Be sure to return the INITIAL SET switch to the “OFF” position.
-

Step 5

Return the water-resistant cap and the main sunshield rear cover to the original state by following step 5 of the “Insert an SD memory card” section (☞ page 26).

Step 6

Turn on the power of the camera.

②Power indicator

When the camera is in the energizing operation, it will light green.

③Live indicator

The live indicator will light or blink as follows depending on the camera status.

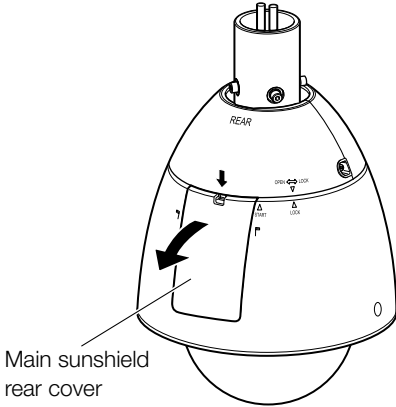
Operation status		Indicator status
When the power is turned on	Before the network connection is established	Lights orange → Lights off → Blinks orange → Lights orange
	When the network connection is established	Lights orange → Lights off → Blinks orange → Blinks green → Lights green
During the standby or connection (Cable is not connected.)		Lights orange
During the standby or connection (Cable is connected.)		Lights green
During the upgrade process		Blinks orange
Initialization (When the network connection is established)		Lights orange → Lights off → Blinks orange → Lights orange → Blinks orange → Blinks green → Lights green
Port forwarding error caused by the UPnP function		Blinks orange (in 2 seconds intervals (on for 1 second / off for 1 second))
Trouble happening on the camera		Blinks red
Failure in writing data on the SD memory card		Lights red

Insert/remove an SD memory card

■ Insert an SD memory card

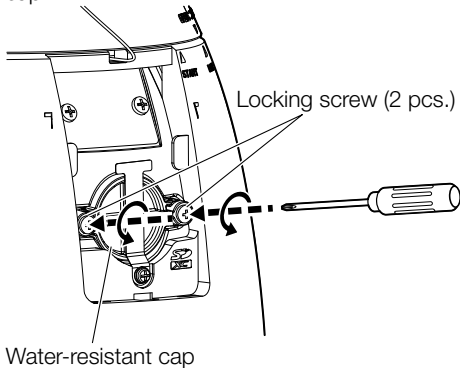
Step 1

Pull out the main sunshield rear cover on the rear of the camera by pressing the tab on the top of the sunshield.



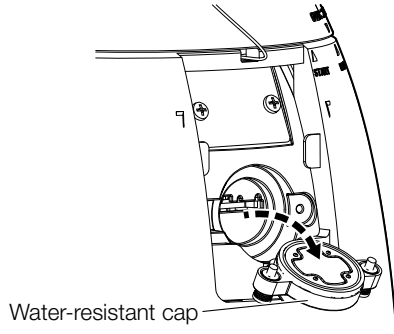
Step 2

Remove the locking screw of the water-resistant cap.



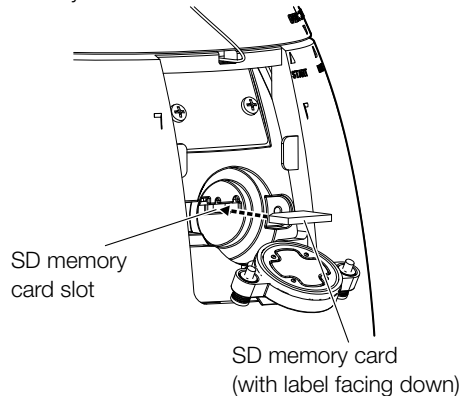
Step 3

Remove the water-resistant cap by pulling it out toward the forefront.



Step 4

Insert an SD memory card into the SD memory card slot. Push the SD memory card straight into the SD memory card slot until a click is heard.



Step 5

Perform Step 3 → Step 1 in reverse order.

Remount the water-resistant cap and mount the main sunshield rear cover in their original location.

Recommended tightening torque of the water-resistant cap locking screws:

0.69 N·m {0.51 lbf·ft}

■ Remove an SD memory card

When removing an SD memory card, reverse the procedure.

- Before removing the SD memory card, make sure to select “Not use” for “SD memory card” on the [SD memory card] tab of “Basic” page on the setup menu first. (☞ Operating Instructions (included in the CD-ROM))

Note:

- Refer to the Operating Instructions on the provided CD-ROM for further information about the SD memory card settings.
- When using an SD memory card, format it using this product. Recorded data on the SD memory card will be deleted when formatted.

If an unformatted SD memory card or an 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 on the provided CD-ROM for how to format an SD memory card.

- When some SD memory cards are used with this product, the product may not work properly or performance deterioration may be caused. Use the compatible SD memory cards. (☞ page 35)
-

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 a PoE+ device for power supply</p> <ul style="list-style-type: none"> Are the PoE+ (IEEE802.3at compliant) device and the RJ45 (female) network cable of the camera connected using a Ethernet cable (category 5e or better)? 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. 	Installation Guide
	<p>When using AC power supply</p> <ul style="list-style-type: none"> Is the power cable connected firmly to power that meets the required specifications? Check whether the connection is appropriately established. Is the power supply connector housing attached to the camera firmly? Check if it is attached correctly and firmly. 	
The camera does not move to the preset positions accurately.	<ul style="list-style-type: none"> When the preset positions become inaccurate during use, it is possible to correct the positions by executing the position refresh function. In addition, when "Position refresh" is set for the created schedule, the camera position will be corrected periodically. In some situations, reconfigure the preset positions. 	Operating Instructions (included in the CD-ROM)
When the camera is panning/tilting, the camera stops panning/tilting and mechanical noise comes from the camera.	<ul style="list-style-type: none"> The camera position may have become inaccurate. Carry out the refresh position function from the [Default reset] tab of the "Maintenance" page of the setup menu. 	Operating Instructions (included in the CD-ROM)
The camera starts panning unpredictably.	<ul style="list-style-type: none"> This may be caused by noise. Check the exogenous noise level around the camera. 	10, 11
	<ul style="list-style-type: none"> The protection circuit against high temperature may function. When the digital flip (function to turn the screen upside-down when tilting exceeds a certain angle) continues for a given time in high temperature, the system releases the digital flip and operates panning and tilting automatically to return the screen to the original position. The position refresh may be done automatically to improve the positional accuracy of PAN, TILT and ZOOM when turned on in low temperature, which is not a failure. 	—

Symptom	Cause/solution	Reference pages
<p>When the power is turned on, the live indicator lights or blinks orange.</p>	<ul style="list-style-type: none"> • Is the Ethernet cable connected appropriately? Connect the Ethernet cable appropriately. • Is the hub or router connected to the camera operating appropriately? Check if the hub or router in use is operating appropriately. • Isn't the Ethernet cable connected to the camera broken? Replace the cable with another one. 	<p>18</p>
<p>Live indicator keeps on blinking orange approx. in 2 seconds intervals.</p>	<ul style="list-style-type: none"> • UPnP™ error has occurred since the power is not supplied to the router. Turn on the power of the router. Wait until the connections are established. 	<p>–</p>
	<ul style="list-style-type: none"> • An error has occurred during the port update by the UPnP function. If the router in use does not support the UPnP function, perform the port forwarding setting for the router. In addition, deactivate the setting of auto port forwarding for the camera. 	<p>Operating Instructions (included in the CD-ROM)</p>
	<ul style="list-style-type: none"> • UPnP function of the router is disabled. Refer to the operating instructions of the router to enable the UPnP function. 	<p>–</p>
<p>Live indicator never lights up.</p>	<ul style="list-style-type: none"> • Is “Off” selected for “Indicator” on the “Basic” page? Select “On” or “On(Access)” for the indicator setting. 	<p>Operating Instructions (included in the CD-ROM)</p>
<p>Live indicator keeps on blinking red.</p>	<ul style="list-style-type: none"> • The camera may be out of order. Contact your dealer. • Refer to the [Status information] on the Panasonic support website (https://security.panasonic.com/support/info/) after checking the displayed contents of the “Maintenance” page - the [Status] tab - [Self check] of the setup menu. 	<p>–</p>
<p>Live indicator lights red.</p>	<p>This indicator lights up red when data cannot be saved on the SD memory card.</p> <ul style="list-style-type: none"> • Isn't the write protect switch of the inserted SD memory card set to “LOCK”? Unlock the write protect switch of the SD memory card. • Hasn't the inserted SD memory card been formatted on a PC? Use an SD memory card formatted on the camera. Or install the software to format the SD memory card on the PC. Refer to our website (https://security.panasonic.com/support/info/) for further information about the supported software. • Isn't the inserted SD memory card faulty? Replace the card with a normal one. 	<p>Operating Instructions (included in the CD-ROM)</p>

Symptom	Cause/solution	Reference pages
Audio input contains noise.	<ul style="list-style-type: none"> • Check the following. <ul style="list-style-type: none"> • Grounding of the camera, a switching hub or peripheral devices are not done. • The camera is used near an electrical power line. • The camera is used near a device which produces strong magnetic field or radio waves (such as near a TV/radio antenna, a motor of an air conditioning system, a transformer, etc.) <p>When audio input still contains noise even after checking the above possibilities, use a powered microphone or connect audio output with low output impedance.</p>	16
The power cable insulation is damaged. The power cable, plug and connectors get hot during use. The power cable gets hot when bent or stretched.	<ul style="list-style-type: none"> • The power cable and connectors are worn out. This may result in electric shock or a fire. Unplug the power cable from the AC outlet immediately, and refer to qualified service personnel. 	-
It is hard to see images with the camera when there are raindrops on the dome cover.	<ul style="list-style-type: none"> • The effectiveness of the rain wash coating may have been reduced. Refer to “Cleaning of the dome cover” in “Precautions for use” and clean the dome cover. If the situation does not improve contact your dealer. 	12
The image refresh interval on the web browser is longer or the image is displayed intermittently.	<ul style="list-style-type: none"> • When using the camera with the high frame rate and high image quality, the image update delays due to the PC specifications. These cases may be improved by using a PC with the following specifications. CPU: Intel® Core™ i7 6700 or faster Memory: 8 GB dual channel (4 GB×2) or more 【Example of using the camera in case that the image refresh interval is longer or intermittent】 <ul style="list-style-type: none"> • Image capture size: 1920×1080, Frame rate: 60 fps, Bit rate: 4096 kbps X6531 S6530 • Image capture size: 1280×720, Frame rate: 60 fps, Bit rate: 3072 kbps • Image capture size: 1280×720, Frame rate: 30 fps, Bit rate: 2048 kbps (When referring to multiple browsers 4 images or more) 	6

Specifications

• Basic

	WV-X6531N / WV-X6511N / WV-X6531NS	WV-S6530N
Power source*1:	AC 24 V (50 Hz/60 Hz), PoE+ device (IEEE802.3at compliant) Tested PoE injector (60 W)	AC 24 V (50 Hz/60 Hz), PoE+ device (IEEE802.3at compliant)
Power consumption*1:	AC 24 V: 3.4 A/Approx. 55 W PoE+ DC 54 V: 470 mA/ Approx. 25 W (Class4 device) Tested PoE injector (60 W) DC 54 V: 1.0 A/Approx. 50 W	AC 24 V: 2.7 A/Approx. 43 W PoE+ DC 54 V: 430 mA/ Approx. 22 W (Class4 device)
Operating environment Ambient operating temperature:	-50 °C to +60 °C {-58 °F to +140 °F} (AC 24 V/ Tested PoE injector (60 W)) -30 °C to +60 °C {-22 °F to +140 °F} (PoE+ device) (Power On range: -30 °C to +60 °C {-22 °F to +140 °F})	-40 °C to +60 °C {-40 °F to +140 °F} (AC 24 V) -30 °C to +60 °C {-22 °F to +140 °F} (PoE+ device) (Power On range: -30 °C to +60 °C {-22 °F to +140 °F})
Ambient operating humidity:	10 % to 100 % (no condensation)	10 % to 100 % (no condensation)
Storage environment Storage temperature:	-50 °C to +70 °C {-58 °F to +158 °F}	-40 °C to +70 °C {-40 °F to +158 °F}
Storage humidity:	10 % to 95 % (no condensation)	10 % to 95 % (no condensation)
External I/O terminals:	ALARM IN 1 (Black & white input, ALARM IN 2 (ALARM OUT) (×1) ALARM IN 3 (AUX OUT) (×1)	Auto time adjustment input) (×1)
Audio input:	ø3.5 mm stereo mini jack (Monaural input) Input impedance: Approx. 2 kΩ (unbalanced)	ø3.5 mm stereo mini jack (Stereo input) Input impedance: Approx. 2 kΩ (unbalanced)
For microphone input:	Recommended applicable microphone: Plug-in power type (Sensitivity of microphone: -48 dB ±3 dB (0 dB=1 V/Pa, 1 kHz)) Supply voltage: 4.0 V ±0.5 V	Recommended applicable microphone: Plug-in power type (Sensitivity of microphone: -48 dB ±3 dB (0 dB=1 V/Pa, 1 kHz)) Supply voltage: 4.0 V ±0.5 V
For line input:	Input level: Approx. -10 dBV	Input level: Approx. -10 dBV
Audio output*2:	ø3.5 mm stereo mini jack (Monaural output) Output impedance: Approx. 600 Ω (unbalanced) Output level: -20 dBV	ø3.5 mm stereo mini jack (Stereo output) Output impedance: Approx. 600 Ω (unbalanced) Output level: -20 dBV
Waterproof*3:	IP66 (IEC60529), Type 4X (UL50), NEMA 4X compliant	IP66 (IEC60529), Type 4 (UL50), NEMA 4 compliant
Shock resistance:	IK10 (IEC 62262)	
Dimensions:	Maximum ø229 mm × 393 mm (H) {ø9-1/32 inches × 15-15/32 inches (H)} Maximum ø229 mm × 360 mm (H) (WV-X6531NS only) {ø9-1/32 inches × 14-3/16 inches (H)}	
Mass:	WV-X6531N / WV-X6511N Approx. 5.2 kg {11.47 lbs} (including cable cover and attach- ment pipe (Approx. 200 g {0.44 lbs})) WV-X6531NS Approx. 5.0 kg {11.03 lbs} (including cable cover)	Approx. 4.8 kg {10.58 lbs} (including cable cover and attachment pipe (Approx. 200 g {0.44 lbs}))

	WV-X6531N / WV-X6511N / WV-X6531NS	WV-S6530N
Finish:	Main body: Aluminum die cast*5, Natural silver Sunshields*4: ABS+PC resin coating, Natural silver Outer fixing screws: SUS (Corrosion-resistant treatment) Dome cover: Polycarbonate resin (with ClearSight coating (rain wash coating)), Clear	
Others:	Heavy salt damage resistance specifications (ISO14993 compliant) (WV-X6531NS only)	

*1 Refer to our website (<https://security.panasonic.com/support/info/>) for further information about Power source and Power consumption information.

*2 The audio output can be switched to the monitor output. Refer to the Operating Instructions on the provided CD-ROM for descriptions of how to switch the output.

*3 Only when installation work is properly performed according to the Installation Guide and appropriate waterproof treatment is performed.

*4 It is impossible to remove the main sunshield.

*5 The heavy salt damage resistance coating (Silver metallic) is only provided for WV-X6531NS.

• Camera

Image sensor:	1/2.8 type MOS image sensor X6531 X6511 1/2.9 type MOS image sensor S6530
Effective pixels:	Approx. 2.1 mega pixels X6531 X6511 Approx. 2.4 mega pixels S6530
Scanning area:	5.57 mm (H) × 3.13 mm (V) {7/32 inches (H) × 1/8 inches (V)} X6531 X6511 5.28 mm (H) × 2.97 mm (V) {7/32 inches (H) × 1/8 inches (V)} S6530
Scanning system:	Progressive
Minimum illumination:	X6531 Color: 0.015 lx {0.00139 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: 11) 0.001 lx {0.00009 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: 11)* BW : 0.006 lx {0.00056 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: 11) 0.0004 lx {0.00004 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: 11)* X6511 Color: 0.011 lx {0.00102 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: 11) 0.0007 lx {0.00007 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: 11)* BW : 0.005 lx {0.00046 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: 11) 0.0003 lx {0.00003 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: 11)*

	<p>S6530</p> <p>Color: 0.015 lx {0.00139 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: 11) 0.001 lx {0.00009 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: 11)*</p> <p>BW : 0.006 lx {0.00056 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: 11) 0.0004 lx {0.00004 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: 11)*</p> <p>* Converted value</p>
Intelligent auto:	On/ Off
Super Dynamic:	On/ Off, the level can be set in the range of 0 to 31. * When 60 fps is selected, the Super Dynamic function is automatically set to off.
Dynamic range:	144 dB typ. (Super Dynamic: On)
Maximum gain (AGC):	The level can be set in the range of 0 to 11.
Auto contrast adjust:	On/ Off
Adaptive black stretch:	The level can be set in the range of 0 to 255.
Back light compensation (BLC)/High light compensation (HLC):	BLC/ HLC/ Off (only when Super Dynamic/ Intelligent auto: Off)
Fog compensation:	On/ Off (only when Intelligent auto/ auto contrast adjust: Off)
Light control mode setting:	Outdoor scene/ Indoor scene (50 Hz)/ Indoor scene (60 Hz)/ Fix shutter
Shutter speed:	1/30 Fix, 3/120 Fix, 2/100 Fix, 2/120 Fix, 1/60 Fix, 1/100 Fix, 1/120 Fix, 1/250 Fix, 1/500 Fix, 1/1000 Fix, 1/2000 Fix, 1/4000 Fix, 1/10000 Fix * 1/30 Fix to 2/120 Fix is available during 30 fps mode only. * 1/60 Fix is available during 60 fps mode only.
Maximum shutter:	Max.1/4000 s, Max.1/2000 s, Max.1/1000 s, Max.1/500 s, Max.1/250 s, Max.1/120 s, Max.1/100 s, Max.2/120 s, Max.2/100 s, Max.3/120s, Max.1/30 s, Max.2/30 s, Max.4/30 s, Max.6/30 s, Max.10/30 s, Max.16/30 s * Max.2/100 s and Max.3/120 s are available during 30 fps mode only.
Color/BW:	Off/ On/ Auto1(Normal)/ Auto2(IR Light)/ Auto3(SCC)
White balance:	ATW1/ ATW2/ AWC
Digital noise reduction:	The level can be set in the range of 0 to 255.
Stabilizer:	On/ Off (available only in the 30 fps mode)
Privacy zone:	Filling/ Pixelate/ Off (up to 32 zones available)
Camera title on screen:	On/ Off Up to 20 characters (alphanumeric characters, marks)
Video Motion Detection (VMD):	On/ Off, 4 areas available

• Lens

	WV-X6531N / WV-X6511N / WV-X6531NS	WV-S6530N
Zoom ratio:	40x Optical zoom 60x with HD Extra Optical Zoom*1 (Motorized zoom / Motorized focus)	21x Optical zoom 31x with HD Extra Optical Zoom*1 (Motorized zoom / Motorized focus)
Digital (electronic) zoom:	16x (Max 640x)	16x (Max 336x)
Focal length:	4.25 mm – 170 mm {5/32 inches – 6-11/16 inches}	4.0 mm – 84.6 mm {5/32 inches – 3-11/32 inches}

	WV-X6531N / WV-X6511N / WV-X6531NS	WV-S6530N
Maximum aperture ratio:	1:1.6 (WIDE) – 1:4.95 (TELE)	1:1.6 (WIDE) – 1:4.5 (TELE)
Focus range:	3 m {9ft 10-1/8 inches} – ∞	1.5 m {4ft 11-1/16 inches} – ∞
Aperture range:	F1.6 – Close	
Angular field of view:	[16:9 mode] Horizontal: 2.1 ° (TELE) – 65 ° (WIDE) Vertical: 1.2 ° (TELE) – 39 ° (WIDE) [4:3 mode] Horizontal: 1.6 ° (TELE) – 51 ° (WIDE) Vertical: 1.2 ° (TELE) – 39 ° (WIDE)	[16:9 mode] Horizontal: 3.4 ° (TELE) – 73 ° (WIDE) Vertical: 2.0 ° (TELE) – 42 ° (WIDE) [4:3 mode] Horizontal: 2.9 ° (TELE) – 61 ° (WIDE) Vertical: 2.2 ° (TELE) – 46 ° (WIDE)

*1 Resolution 1280×720.

• Panning/tilting platform

	WV-X6531N / WV-X6511N / WV-X6531NS	WV-S6530N
Panning range:	360 ° Endless panning	0 ° – 350 °
Panning speed:	Manual: Approx. 0.065 °/s – 120 °/s Preset: Up to approx. 300 °/s	Manual: Approx. 0.5 °/s – 100 °/s Preset: Up to approx. 300 °/s
Tilting range:	Operational range: –15 ° – 195 ° (level – downward – level) Recommended range*1: 0 ° – 180 ° Selectable tilting angle: 10 ° / 5 ° / 3 ° / 0 °*2 / –3 °*2 / –5 °*2 / –10 °*2 / –15 °*2	Operational range: –30 ° – 90 ° (level – downward) Recommended range*1: 0 ° – 90 ° Selectable tilting angle: 10 ° / 5 ° / 3 ° / 0 °*2 / –3 °*2 / –5 °*2 / –10 °*2 / –15 °*2 / –20 °*2 / –25 °*2 / –30 °*2
Tilting speed:	Manual: Approx. 0.065 °/s – 120 °/s Preset: Up to approx. 300 °/s	Manual: Approx. 0.5 °/s – 100 °/s Preset: Up to approx. 100 °/s
Number of the preset positions:	256	
Auto mode:	Auto track/ Auto pan/ Preset sequence/ Patrol	
Self return:	10 s/ 20 s/ 30 s/ 1 min/ 2 min/ 3 min/ 5 min/ 10 min/ 20 min/ 30 min/ 60 min	

*1 The recommended range is a guide for the range of angles at which images can be completely viewed. If the camera is tilted to an angle higher than in this range, parts of the image may not be able to be viewed.

*2 The area hidden by the camera housing may increase when the tilt angle of the camera is horizontal or larger.

• Network

Network:	10BASE-T/100BASE-TX, RJ45 connector
Resolution*1: H.265/ H.264 JPEG (MJPEG)	<p>X6531 S6530</p> <p>2 mega pixel [16:9] (30 fps mode)/ 2 mega pixel [16:9] (60 fps mode) 1920×1080, 1280×720, 640×360, 320×180</p> <p>3 mega pixel [4:3] (30 fps mode) 2048×1536*2, 1280×960, 800×600, VGA, 400×300, QVGA</p> <p>X6511</p> <p>1.3 mega pixel [16:9] (30 fps mode)/ 1.3 mega pixel [16:9] (60 fps mode) 1280×720, 640×360, 320×180</p> <p>1.3 mega pixel [4:3] (30 fps mode) 1280×960, 800×600, VGA, 400×300, QVGA</p>

Image compression method*3: H.265/ H.264	<p>Transmission priority: Constant bit rate / Variable bit rate / Frame rate / Best effort</p> <p>Frame rate: 1 fps/ 3 fps/ 5 fps*/ 7.5 fps*/ 10 fps*/ 12 fps*/ 15 fps*/ 20 fps*/ 30 fps*/ 60 fps*</p> <p>* The frame rate is limited to “bit rate”. When a value with an asterisk (*) is selected, the actual frame rate may be lower than the value selected.</p> <p>Bit rate per client: 64 kbps/ 128 kbps*/ 256 kbps*/ 384 kbps*/ 512 kbps*/ 768 kbps*/ 1024 kbps*/ 1536 kbps*/ 2048 kbps*/ 3072 kbps*/ 4096 kbps*/ 6144 kbps*/ 8192 kbps*/ 10240 kbps*/ 12288 kbps*/ 14336 kbps*/ 16384 kbps*/ 20480 kbps*/ 24576 kbps*/ --FREE ENTRY--</p> <p>* The available range of the bit rate varies depending on the setting selected for “image capture size”.</p> <p>Image quality:</p> <ul style="list-style-type: none"> • For “Constant bit rate”, “Frame rate”, and “Best effort”: Motion priority/ Normal/ Quality priority • “VBR”: 0 Super fine/ 1 Fine/ 2/ 3/ 4/ 5 Normal/ 6/ 7/ 8/ 9 Low <p>Transmission type: Unicast/ Multicast</p>
JPEG (MJPEG)	<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> <p>Refresh interval: 0.1 fps/ 0.2 fps/ 0.33 fps/ 0.5 fps/ 1 fps/ 2 fps/ 3 fps/ 5 fps/ 6 fps/ 10 fps/ 12 fps/ 15 fps/ 30 fps (JPEG frame rates are limited when using JPEG and H.265/H.264 simultaneously)</p>
Smart coding:	<p>Smart Facial Coding* On(Smart Facial Coding)/ On(AUTO VIQS)/ Off * Smart Facial Coding is only available with Stream(1).</p> <p>GOP(Group of pictures) control On(Advanced)*/ On(Low)/ On(Mid)/ Off * On(Advanced) is only available with H.265.</p>
Audio compression method:	<p>G.726 (ADPCM) : 16 kbps/ 32 kbps G.711 : 64 kbps AAC-LC*4 : 64 kbps/ 96 kbps/ 128 kbps</p>
Bandwidth control:	<p>Unlimited/ 64 kbps/ 128 kbps/ 256 kbps/ 384 kbps/ 512 kbps/ 768 kbps/ 1024 kbps/ 2048 kbps/ 4096 kbps/ 6144 kbps/ 8192 kbps/ 10240 kbps/ 15360 kbps/ 20480 kbps/ 25600 kbps/ 30720 kbps/ 35840 kbps/ 40960 kbps/ 51200 kbps</p>
Protocol:	<p>IPv6: TCP/IP, UDP/IP, HTTP, HTTPS, FTP, SMTP, DNS, NTP, SNMP, DHCPv6, RTP, MLD, ICMP, ARP, IEEE 802.1X, DiffServ</p> <p>IPv4: TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, SMTP, DHCP, DNS, DDNS, NTP, SNMP, UPnP, IGMP, ICMP, ARP, IEEE 802.1X, DiffServ</p>
Security:	<p>User authentication / Host authentication / HTTPS* / Alteration detection of video file*</p> <p>* The certification is pre-installed.</p>

OS*5:	Microsoft Windows 10 Microsoft Windows 8.1 Microsoft Windows 8 Microsoft Windows 7
Browser*5, *6:	Windows Internet Explorer 11 (32-bit) Windows Internet Explorer 10 (32-bit) Windows Internet Explorer 9 (32-bit) Windows Internet Explorer 8 (32-bit) Microsoft Edge Firefox Google Chrome
Maximum concurrent access number:	14 (Number of sessions that can connect to cameras at the same time) * Depends on network conditions
FTP client:	Alarm image transmission, FTP periodic transmission (When the FTP transmission is failed, backup on an optional SD memory card is available.)
Multi-screen:	Up to 16 camera images can be displayed simultaneously on a multi-screen. (Including the camera itself)
Compatible SDXC/SDHC/SD memory card*7, *8:	Manufactured by Panasonic (SD speed class 4 or higher) SDXC memory card : 64 GB, 128 GB, 256 GB SDHC memory card : 4 GB, 8 GB, 16 GB, 32 GB SD memory card : 2 GB (except miniSD memory card and microSD memory card) * Use of cards above Class 10 is recommended.
Cellular phone compatibility:	JPEG image, AUX control (by access level)
Mobile terminal compatibility: (As of July, 2017)*9	iPad / iPhone (iOS 4.2.1 or later), Android™ mobile terminals

*1 H.265/H.264 can be selected for each stream.

*2 Used by super resolution techniques.

*3 Transmission for 4 streams can be individually set.

*4 Only use AAC-LC (Advanced Audio Coding - Low Complexity) when recording audio on an SD memory card.

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

*6 Refer to our website (<https://security.panasonic.com/support/info/>) for latest information about the browser.

*7 Refer to our website (<https://security.panasonic.com/support/info/>) for latest information about the compatible SD memory cards.

*8 When repeatedly recording images on an SD memory card using the auto overwrite function, make sure to use an SD memory card with high reliability and durability.

*9 For further information about compatible devices, refer to our website (<https://security.panasonic.com/support/info/>).

Optional accessories

Ceiling Mount Bracket:	WV-Q121B
Ceiling Mount Bracket (Heavy salt damage resistance):	WV-Q121BS*1
Wall Mount Bracket:	WV-Q122A
Wall Mount Bracket (Heavy salt damage resistance):	WV-Q122AS*1

*1 Make sure to use a mounting bracket with heavy salt damage resistance when installing WV-X6531NS (Heavy salt damage resistance).

For U.S. and Canada:

**Panasonic i-PRO Sensing Solutions
Corporation of America**

800 Gessner Rd, Suite 700 Houston, TX 77024
<https://www.security.us.panasonic.com/>

Panasonic Canada Inc.

5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 Canada
1-877-495-0580
<https://www.panasonic.com/ca/>

For Europe and other countries:

Panasonic Corporation

<http://www.panasonic.com>

Panasonic i-PRO Sensing Solutions Co., Ltd.
Fukuoka, Japan

Authorised Representative in EU:

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

