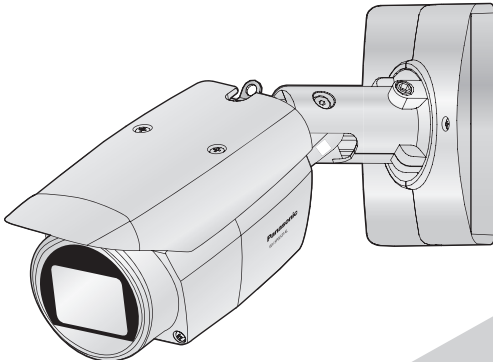


# Panasonic®

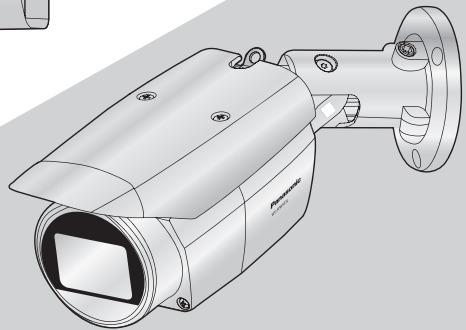
## Important Information

### Network Camera

Model No. **WV-SPW531AL / WV-SPW532L**  
**WV-SPW311AL / WV-SPW312L**



WV-SPW531AL



WV-SPW532L

(This illustration represents WV-SPW531AL and WV-SPW532L)

\* 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.



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

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

**WARNING:**

- To prevent injury, this apparatus must be securely attached to the wall/ceiling in accordance with the installation instructions.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- The installation shall be carried out in accordance with all applicable installation rules.
- The connections should comply with local electrical code.
- Batteries (battery pack or batteries installed) shall not be exposed to excessive heat such as sunlight, fire or the like.

**CAUTION:**

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- The network camera is only intended for a connection to an ethernet or PoE network without routing to the outside plant.

For Canada

CAN ICES-3(A)/NMB-3(A)

For U.S.A.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

For U.S.A.

The model number and serial number of this product may be found on the surface of the unit.

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

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

For Europe

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standard or other normative document following the provisions of Directive 2004/108/EC.

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

Nous déclarons sous notre propre responsabilité que le produit auquel se réfère la présente déclaration est conforme à la norme spécifiée ou à tout autre document normatif conformément aux dispositions de la directive 2004/108/CE.

Nosotros declaramos bajo nuestra única responsabilidad que el producto a que hace referencia esta declaración está conforme con la norma u otro documento normativo siguiendo las estipulaciones de la directiva 2004/108/CE.

Noi dichiariamo sotto nostra esclusiva responsabilità che il prodotto a cui si riferisce la presente dichiarazione risulta conforme al seguente standard o altro documento normativo conforme alle disposizioni della direttiva 2004/108/CE.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende norm of ander normatief document, overeenkomstig de bepalingen van Richtlijn 2004/108/EC.

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

Vi deklarerar härmed vårt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med standarddokument eller annat normativt dokument som framställs i direktiv 2004/108/EC.

Ilmoitamme yksinomisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavaa standardia tai muuta ohjeellista asiakirjaa, jotka noudattavat direktiivin 2004/108/EC sääöksiä.

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

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

## 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.



- 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.

## Limitation of liability

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## Disclaimer of warranty

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

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- (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;
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- (5) ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
- (6) ANY CLAIM OR ACTION FOR DAMAGES, BROUGHT BY ANY PERSON OR ORGANIZATION BEING A PHOTOGENIC SUBJECT, DUE TO VIOLATION OF PRIVACY WITH THE RESULT OF THAT SURVEILLANCE-CAMERA'S PICTURE, INCLUDING SAVED DATA, FOR SOME REASON, BECOMES PUBLIC OR IS USED FOR ANY PURPOSE;
- (7) LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE.

# Preface

The box type network cameras WV-SPW531AL / WV-SPW532L / WV-SPW311AL / WV-SPW312L are designed to operate using a PC on a network (10BASE-T/100BASE-TX). By connecting to a network (LAN) or the Internet, images and audio from the camera can be monitored on a PC via a network.

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**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.

**<Outdoor waterproof box type Full-HD model>**

**SPW531L** The functions with this notation are available when using the model WV-SPW531AL.

**<Outdoor waterproof box type Full-HD PoE only model>**

**SPW532L** The functions with this notation are available when using the model WV-SPW532L.

**<Outdoor waterproof box type HD model>**

**SPW311L** The functions with this notation are available when using the model WV-SPW311AL.

**<Outdoor waterproof box type HD PoE only model>**

**SPW312L** The functions with this notation are available when using the model WV-SPW312L.

# Main functions

## With the new codec engine

Codec Engine has been redesigned to provide up to 60 frames/sec Full-HD (SPW531L) or HD (SPW311L) image quality output.

## Enhanced with Super Dynamic function enables a dynamic range of 133 dB. (SPW531L) (SPW311L)

By image synthesis at different shutter speeds, and to a great difference in brightness even if the object to be photographed in pixels Brightness compensation, which captured more natural images.

\* When "Frame rate" is set to 60 fps, super dynamic function will change to "Off."

## Equipped with a high-sensitivity MOS sensor and noise reduction (MNR)

The high-sensitivity sensor and new method of noise reduction (MNR: Multi-process Noise Reduction)\*1 make it possible to take easy-to-view images even under low illumination conditions.

## IR LED equipped

The equipped infrared LED makes it possible to take pictures at zero lx of objects as far as 30 m {98.43 feet} away.

## Equipped with SD memory card\*2 slot

It is possible to save 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.

## Support the extensions software

Install extensions to increase the use of software\*3 features image data.

## The camera conforms to the IP66\*4 and Type 4X (UL50)\*5, is compliant with NEMA 4X\*6 ratings, and provides high dust resistance and waterproof performance.

Waterproofing treatment is not required for the camera body (waterproofing treatment is required for cable connections).

\*1 With the multi-process noise reduction that prioritizes noise reduction for central areas and resolution for edge areas where noise is prominent, MNR is able to produce clear images while limiting noise across the entire image.

\*2 The SDXC/SDHC/SD memory card is referred to as an SD memory card.

\*3 About this product extensions corresponding software, please visit our Website <http://security.panasonic.com/pss/security/support/info.html> (English website)

\*4 IP66: The applicable product has "Dust tight (6)" protection against foreign solids and has "Powerful water jets (6)" protection against water (IEC60529).

\*5 Type 4X (UL50): 4X indicates the rank in the UL waterproof standard.

\*6 NEMA: Dust resistance and waterproof performance standards set by National Electrical Manufacturers Association (United States).

## About the user manuals

There are 3 sets of operating instructions for the WV-SPW531AL / WV-SPW532L / WV-SPW311AL / WV-SPW312L as follows.

- Important Information (this document): Provides information about the cautions required for safely using and installing this camera.
- Installation Guide: Explains how to install 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.

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.

English screens are used in these operating instructions and leaflets.

## System requirements for a PC

CPU:	Intel® Core™ 2 Duo 2.4 GHz 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 when using Microsoft® Windows® 8.1, Microsoft® Windows® 8, Microsoft® Windows® 7. A minimum of 1 GB or more memory is required when using Microsoft® Windows Vista®.
Network interface:	10BASE-T/100BASE-TX 1 port
Audio interface:	Sound card (when using the audio function)
Monitor:	Image capture size: 1024 x 768 pixels or more Color: 24-bit True color or better
OS:	Microsoft® Windows® 8.1 Microsoft® Windows® 8 Microsoft® Windows® 7 Microsoft® Windows Vista®
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) Windows® Internet Explorer® 7 (32-bit)
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.)



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**IMPORTANT:**

- For information on the operation verification of the supported operating systems and web browsers, refer to our website at <http://security.panasonic.com/pss/security/support/index.html>.
  - 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.
- 

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**Note:**

- For further information about PC system requirements and precautions for when using Microsoft Windows 8.1, Microsoft Windows 8, 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”.
- 

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- Android is a trademark of Google Inc.
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## 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.).
- 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 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.

### **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.**

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.

### **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.

**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 or corrosive gas is produced.**

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

**The exclusively designed mount bracket shall be used.**

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

**The 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.

**The screws and bolts must be tightened to the specified torque.**

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

**Do not install this product in locations subject to vibration.**

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

**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 install or clean the camera, or touch this product, the power cable (SPW531L) (SPW311L) or the connected cables during thunder storms.**

Failure to observe this may cause electric shock.

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

Failure to observe this may cause injury.

**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.**

(SPW531L) (SPW311L)

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.

**Correctly perform all wiring**

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

**The measures of protection against snowfall 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.

**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 {196.85 feet} or more per second may cause a fall of the product resulting in injury or accidents.

**When adjusting the angle, do not touch the movable parts by hand.**

Doing so may cause fingers to get caught, resulting in an injury.

**Turn the power off when cleaning this product.**

Failure to observe this may cause injury.

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

Failure to observe this may cause injury.

**[Precautions for use]**

**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.**

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**SPW531L** **SPW311L**

When turning off the power, disconnect the power supply from the 12 V DC power supply or the PoE device.

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**SPW532L** **SPW312L**

When turning off the power, disconnect the power supply from the PoE device.

---

Before turning off the camera power switch, make sure that the SD MOUNT indicator (green) is turned off. If you turn off the camera power switch while the SD MOUNT indicator (green) is lit or flashing, the recorded data may be corrupted or damaged.

**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 front cover to strong impact.**

Doing so may cause damage or immersion.

**About the PC monitor**

When displaying the same image on the monitor for a long time, the monitor may be damaged. It is recommended to use a screen-saver.

**When an error is detected, this product will restart automatically.**

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

**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.

**Transmission interval**

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

**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 SD memory card

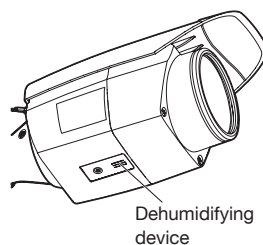
- To remove the SD memory card from the unit, press the [Setup] button on the “Live” page, select the [SD memory card] tab, and set the SD memory card operation to “Not use”. Then, remove the SD memory card. Alternatively, hold down the SD ON/OFF button for about 2 seconds. When the flashing SD MOUNT lamp goes out, you can remove the SD memory card.
- 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 in page 28.
- When using an SD memory card supporting Class 10 of the speed class, use a UHS-I (Ultra High Speed-I) compliant card.

**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 dehumidifying device

**SPW531L** **SPW311L**

- 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.
- Do not cover the surface of the dehumidifying device.



## 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. Wait until the internal temperature of the camera rises (for around 2 hours or more in temperatures below -20 °C {-4 °F}), turn the power off once, then turn it back on again.

## About desiccant

**SPW532L** **SPW312L**

Desiccant should be replaced after about 3 years. The effective period may be shortened according to environment. Besides, when removing the front cover to adjust the camera or process other operations, replace the desiccant with a new one.

Model No. of replacement part Desiccant  
3CJ001261AAA

### **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 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.

### **Cleaning the lens**

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

### **Cleaning inside the front cover**

Dirt or fingerprints on the inside of the front cover may reflect infrared rays from the IR LED, which can greatly reduce the quality of pictures taken at night.

Therefore, remove any dirt from the inside by using lens cleaning paper or other cleaning products.

Traces of rubber may remain inside the front cover. In the same way, remove any such traces using lens cleaning paper or other cleaning products.

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SEE [HTTP://WWW.MPEGLA.COM](http://www.mpegla.com)

### **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.

### **Equipment classification and power source indication label**

Refer to the indication label on the side of this unit for the equipment classification, power source, and other information.

### : Direct current symbol

### **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.

# 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.**

## Power supply

This product has no power switch.

When turning off the power, turn off a power supply or remove a power cable. When the power cable of the product is connected to the power supply device, the power will be supplied to the product.

Before cleaning the product, make sure that the power cable is not connected to 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.

- 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.

## 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 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 22)
- Locations subject to vibrations, such as on vehicles, marine vessels, or above product lines (This product is not designed for on-vehicle use.)



## Check before installation

Compatibility of devices is restricted. Before installation, check the ratings and dimensions of the devices to be used. Contact your dealer for details.

## Before installation

Directly secure the camera mount bracket or use WV-Q120A (adapter box : **SPW531L** **SPW311L**).

- Anchor bolts and screws used to mount the camera on the ceiling or wall are not supplied. Prepare bolts and screws that match the structure and materials of the installation location and satisfy the performance and reliability specifications shown below.

**SPW531L** **SPW311L**

Required screws: M5 (4 pcs.)

Minimum pull-out strength: 724 N {163 lbf} (per 1 pc.)

\* Please prepare four M4 screws if you are installing it in a metal switch box.

**SPW532L** **SPW312L**

Required screws: M4 (3 pcs.)

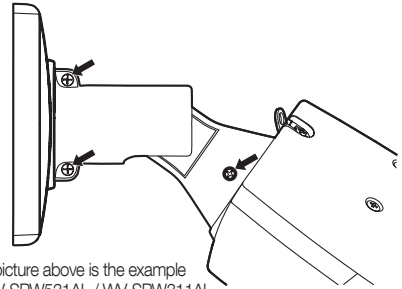
Minimum pull-out strength: 724 N {163 lbf} (per 1 pc.)

## 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.

## Do not remove or loosen the screws on the bottom of this product.

If the screws (3 pcs.) are loosened, the camera may fall, resulting in accidents.



\* The picture above is the example of WV-SPW531AL / WV-SPW311AL. WV-SPW532L / WV-SPW312L also use the screws at the same locations on the picture.

## 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 front cover.

### **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 around 0 °C {32 °F}. However, in an extremely low-temperature environment below -20 °C {-4 °F}, snow and frost may not be defrosted from the dome 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 -20 °C {-4 °F}, normal images may not be obtained immediately after startup. In such a case, wait until the internal temperature of the camera rises (for around 2 hours or more in temperatures below -20 °C {-4 °F}), turn the power off once, then turn it back on again.

### **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.

### **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 may be produced.

### **PoE (Power over Ethernet)**

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

### **Router**

When connecting this product to the Internet, use a broadband router with the port forwarding function (NAT, IP masquerade). Refer to the Operating Instructions on the provided CD-ROM for further information about the port forwarding function.

### **Ethernet cable**

Shielded (STP) Ethernet cables must be used with this unit to ensure compliance with CE standards.

### **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.**

# 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.

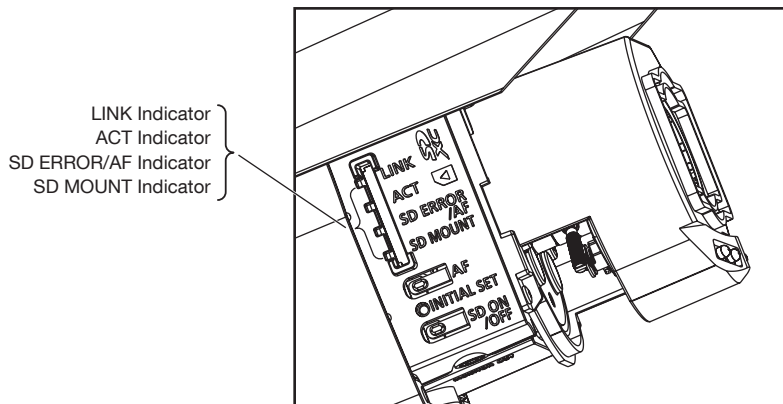
Symptom	Cause/solution	Reference pages
<p><b>Power is not turned on.</b></p>	<p><b>When using a PoE device for power supply</b></p> <ul style="list-style-type: none"> <li>• Are the PoE device and the network connector connected using an Ethernet cable (category 5e or better)? Check whether the connection is appropriately established.</li> <li>• 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.</li> <li>• When connecting both of the 12 V DC power supply and the PoE device for power supply, the network connection may not be established. Turn down the power supply from the PoE device.</li> </ul> <p><b>SPW531L</b> <b>SPW311L</b></p>	<p>Installation Guide</p>
	<p><b>When using DC power supply</b> <b>SPW531L</b> <b>SPW311L</b></p> <ul style="list-style-type: none"> <li>• Is the 12 V DC power cable plug (accessory) firmly inserted into the 12 V DC power terminals of the camera? Confirm the power plug is firmly connected.</li> <li>• Is the AC adaptor in use compliant with the Specifications? Check the Specifications regarding AC adaptor.</li> </ul>	
<p><b>The LINK indicator does not light in orange even when the network cable is connected to the camera.</b></p>	<ul style="list-style-type: none"> <li>• Is the Ethernet cable connected appropriately? Connect the Ethernet cable appropriately.</li> <li>• Is the hub or router connected to the camera operating appropriately? Check if the hub or router in use is operating appropriately.</li> <li>• Isn't the Ethernet cable connected to the camera broken? Replace the cable with another one.</li> </ul>	<p>Installation Guide</p>

Symptom	Cause/solution	Reference pages
<p><b>The SD ERROR/AF indicator lights up red.</b></p>	<p>This indicator lights up red when data cannot be saved on the SD memory card.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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 (<a href="http://security.panasonic.com/pss/security/support/info.html">http://security.panasonic.com/pss/security/support/info.html</a>) for further information about the supported software.</li> <li>• Isn't the inserted SD memory card faulty? Replace the card with a normal one.</li> </ul>	<p>Operating Instructions (included in the CD-ROM)</p>
<p><b>Audio input contains noise.</b></p> <p> </p>	<ul style="list-style-type: none"> <li>• Check the following. <ul style="list-style-type: none"> <li>• Grounding of the camera, a switching hub or peripheral devices are not done.</li> <li>• The camera is used near an electrical power line.</li> <li>• 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.)</li> </ul> </li> </ul> <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>	<p>18</p>
<p><b>When the IR LED lights, a part or all of the screen appears blurred.</b></p>	<ul style="list-style-type: none"> <li>• Is there a wall or other reflecting surface or object near the camera (including areas not displayed in images)? Adjust the camera angle so that light from the IR LED is not reflected.</li> </ul>	<p>Installation Guide</p>
<p><b>When the IR LED lights, the camera switches between color mode and black-and-white mode.</b></p>	<ul style="list-style-type: none"> <li>• The subject may be too close to the camera. Adjust the distance between the camera and the subject.</li> </ul>	<p>Installation Guide</p>

## About the indicator

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

Indicator type and operation state	Change of indicator indication
<b>ACT indicator</b>	
When data is being sent via the network camera	Blinks green (accessing)
<b>LINK indicator</b>	
When the camera is able to communicate with the connected device	Lights orange
<b>SD MOUNT indicator</b>	
<ul style="list-style-type: none"> <li>When an SD memory card is inserted and could be recognized</li> </ul>	Lights off → Blinks green → Lights off
<ul style="list-style-type: none"> <li>When data can be saved after the SD memory card is inserted and the SD ON/OFF button is pressed (for 1 second or less)</li> </ul>	Lights off → Lights green
<ul style="list-style-type: none"> <li>When data can be saved to the SD memory card</li> </ul>	Lights green
<ul style="list-style-type: none"> <li>When the SD memory card is removed after holding down the SD ON/OFF button for about 2 seconds</li> </ul>	Lights green → Blinks green → Lights off (recording) Lights green → Lights off (waiting for recording)
<ul style="list-style-type: none"> <li>When data cannot be saved to the SD memory card because an abnormality was detected or the SD memory card is configured not to be used</li> </ul>	Lights off
<b>SD ERROR/AF indicator</b>	
<ul style="list-style-type: none"> <li>When AF (Auto Focus) operation is being executed</li> </ul>	Blinks red (Interval of 1 time/second)
<ul style="list-style-type: none"> <li>The camera is active.</li> </ul>	Lights red
<ul style="list-style-type: none"> <li>When an SD memory card is recognized normally</li> </ul>	Lights red → Lights off
<ul style="list-style-type: none"> <li>When the SD memory card slot is not used or if an SD memory card error is detected after start-up:</li> </ul>	Lights red → Stays red



# Specifications

## • Basic

	WV-SPW531AL / WV-SPW532L	WV-SPW311AL / WV-SPW312L
Power source *1:	<p><b>SPW531L</b> <b>SPW311L</b> DC 12 V, PoE (IEEE802.3af compliant)</p> <p><b>SPW532L</b> <b>SPW312L</b> PoE (IEEE802.3af compliant)</p>	
Power consumption *1:	<p><b>SPW531L</b> DC 12 V : 770 mA/Approx. 9.24 W PoE : DC 48 V : 200 mA/Approx. 9.6 W (Class 0 device)</p> <p><b>SPW532L</b> PoE : DC 48 V : 190 mA/Approx. 9.12 W (Class 0 device)</p>	<p><b>SPW311L</b> DC 12 V : 770 mA/Approx. 9.24 W PoE : DC 48 V : 200 mA/Approx. 9.6 W (Class 0 device)</p> <p><b>SPW312L</b> PoE : DC 48 V : 190 mA/Approx. 9.12 W (Class 0 device)</p>
Operating environment Ambient operating temperature:	<p><b>SPW531L</b> <b>SPW311L</b> -40 °C to +50 °C {-40 °F to 122 °F} (Power on range: -20 °C to +50 °C {-4 °F to 122 °F})</p> <p><b>SPW532L</b> <b>SPW312L</b> -30 °C to +50 °C {-22 °F to 122 °F} (Power on range: -20 °C to +50 °C {-4 °F to 122 °F})</p>	
Ambient operating humidity:	10 % to 90 % (no condensation)	
Storage environment Storage temperature: Storage humidity:	<p>-30 °C to +60 °C {-22 °F to 140 °F}</p> <p>10 % to 95 % (no condensation)</p>	
Monitor output (for adjustment):	<p>VBS: 1.0 V [p-p]/75 Ω, composite RCA jack</p> <p>An NTSC or PAL signal can be outputted from camera (either press the INITIAL SET switch quickly (within 1 second) or use software to select either NTSC or PAL signal).</p>	
External I/O terminals:	<p><b>SPW531L</b> <b>SPW311L</b> ALARM IN 1 (DAY/NIGHT IN, Auto time adjustment) (×1) ALARM IN 2 (ALARM OUT) (×1) ALARM IN 3 (AUX OUT) (×1)</p>	
Microphone/line input: For microphone input:	<p><b>SPW531L</b> <b>SPW311L</b> ø3.5 mm stereo mini jack Input impedance: Approx. 2 kΩ (unbalanced) Recommended applicable microphone: Plug-in power type Supply voltage: 2.5 V±0.5 V Recommended sensitivity of microphone: -48 dB±3 dB (0 dB=1 V/Pa, 1 kHz)</p>	
For line input:	Input level: Approx. -10 dBV	
Audio output:	<p><b>SPW531L</b> <b>SPW311L</b> ø3.5 mm stereo mini jack Output impedance: Approx. 600 Ω (unbalanced) Output level: -20 dBV Can be used as the monitor output by switching the audio/monitor output plug.</p>	

	<b>WV-SPW531AL / WV-SPW532L</b>	<b>WV-SPW311AL / WV-SPW312L</b>
Waterproof *2:	Main body: IP66 (IEC60529), Type 4X (UL50), NEMA 4X compliant	
Dimensions:	<p><b>SPW531L</b> <b>SPW311L</b>  95 mm {3-3/4 inches} (W),  99 mm {3-57/64 inches} (H),  334.5 mm {1ft 1-11/64 inches} (L)</p> <p><b>SPW532L</b> <b>SPW312L</b>  95 mm {3-3/4 inches} (W),  99 mm {3-57/64 inches} (H),  326 mm {1ft 27/32 inches} (L)</p>	
Mass:	<p><b>SPW531L</b> <b>SPW311L</b>  Approx. 1.6 kg {3.5 lbs}</p> <p><b>SPW532L</b> <b>SPW312L</b>  Approx. 1.4 kg {3.1 lbs}</p>	
Finish:	<p><b>Main body:</b>  Aluminum die cast and resin, metallic silver</p> <p><b>Transparent section of front cover:</b>  Polycarbonate resin  Clear</p>	

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

\*2 Only when installation work is properly performed according to the instructions in this book and appropriate waterproof treatment is performed.

• Camera

	<b>WV-SPW531AL / WV-SPW532L</b>	<b>WV-SPW311AL / WV-SPW312L</b>
Image sensor:	Approx. 1/3 type MOS image sensor	
Effective pixels:	Approx. 2.35 mega pixels	Approx. 1.35 mega pixels
Scanning area:	5.35 mm (H) × 3.34 mm(V) {7/32 inches (H) × 1/8 inches (V)}	4.86 mm (H) × 3.89 mm(V) {3/16 inches (H) × 5/32 inches (V)}
Scanning system:	Progressive	
Minimum illumination:	<p><b>SPW531L</b> <b>SPW532L</b></p> <p>Color: 0.07 lx {0.0065 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: High) 0.005 lx {0.00046 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: High)*</p> <p>BW : 0 lx {0.000 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: High, when the IR LED is lit) 0.01 lx {0.00093 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: High) 0.0007 lx {0.00007 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: High)*</p> <p><b>SPW311L</b> <b>SPW312L</b></p> <p>Color: 0.02 lx {0.00186 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: High) 0.0013 lx {0.00012 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: High)*</p> <p>BW : 0 lx {0.000 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: High, when the IR LED is lit) 0.006 lx {0.00056 footcandle} (F1.6, Maximum shutter: Off (1/30 s), AGC: High) 0.0004 lx {0.00004 footcandle} (F1.6, Maximum shutter: max. 16/30 s, AGC: High)*</p> <p>* Converted value</p>	
Super Dynamic (Abbreviated as SD)* <sup>1</sup> : <b>SPW531L</b> <b>SPW311L</b>	On (High)/ On (Normal)/ Off * When 60 fps is selected, the Super Dynamic function is automatically set to off.	
Wide dynamic range (Abbreviated as WDR)* <sup>1</sup> : <b>SPW532L</b> <b>SPW312L</b>	On (High)/ On (Normal)/ Off	
Dynamic range:	133 dB typ. ( SD or WDR : On)	
Face SD (Super Dynamic):	On/ Off (only when SD or WDR : On)	
Gain (AGC):	On (High)/ On (Mid)/ On (Low)/ Off	
Adaptive black stretch:	On/ Off (only when SD or WDR : Off)	
Back light compensation (BLC):	On/ Off (only when SD or WDR : Off)	
Fog compensation:	On/ Off (only when SD or WDR : Off and adaptive black stretch : Off)	
High light compensation (HLC):	On/ Off (only when SD or WDR : Off and back light compensation (BLC) : Off)	
Light control mode setting:	Outdoor scene/ Indoor scene (50 Hz)/ Indoor scene (60 Hz)/ Fix shutter	



Shutter speed:	<b>2 mega pixel [16:9](60 fps mode) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">SPW531L</span> / 1.3 mega pixel [16:9](60 fps mode) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">SPW311L</span></b> Off (1/60), 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 <b>Other than</b> <b>2 mega pixel [16:9](60 fps mode) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">SPW531L</span> / 1.3 mega pixel [16:9](60 fps mode) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">SPW311L</span></b> Off (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
Maximum shutter:	max. 1/1000 s, max. 1/500 s, max. 1/250 s, max. 1/120 s, max. 1/100 s, max. 1/60 s, max. 1/30 s, max. 2/120 s, max. 2/100, max. 2/30 s, max. 4/30 s, max. 6/30 s, max. 10/30 s, max. 16/30 s
Color/BW:	Off/ On/ Auto1 (Normal)/ Auto2 (IR Light)/ Auto3 (SCC)
IR LED Light:	Off/ Auto (High/ Mid/ Low), Irradiation distance: 30 m [98.43 feet] (High)
White balance:	ATW1/ ATW2/ AWC
Digital noise reduction:	High/ Low
Privacy zone:	On/ Off (up to 8 zones available)
VIQS:	On/ Off (Max. 8 locations)
Camera title on screen:	On/ Off Up to 20 characters (alphanumeric characters, marks)
Video Motion Detection (VMD):	On/ Off, 4 areas available

\*1 Super dynamic: This function can clearly display light and dark pictures with image synthesis technology by using image data of various shutter speeds.

Wide dynamic range: This function can clearly display light and dark pictures with image processing technology.

#### • Lens

	<b>WV-SPW531AL / WV-SPW532L</b>	<b>WV-SPW311AL / WV-SPW312L</b>
Zoom ratio:	3.6x Varifocal Lens 10.8x Extra optical zoom is available* * 16:9 mode must be selected	3.6x Varifocal Lens 7.2x Extra optical zoom is available* * 16:9 mode must be selected
Digital (electronic) zoom:	Choose from 3 levels of ×1, ×2, ×4	
Focal length ( f ):	2.8 mm – 10 mm {1/8 inches – 13/32 inches}	
Maximum aperture ratio (F):	1:1.6 (WIDE) – 1:3.4 (TELE)	
Focus range:	0.3 m – ∞	
Aperture range:	F1.6 – T405	
Angular field of view:	[16:9 mode] Horizontal: 31° (TELE) – 112° (WIDE) Vertical: 17° (TELE) – 60° (WIDE) [4:3 mode] Horizontal: 26° (TELE) – 91° (WIDE) Vertical: 19° (TELE) – 67° (WIDE)	[16:9 mode] Horizontal: 28° (TELE) – 102° (WIDE) Vertical: 16° (TELE) – 55° (WIDE) [4:3 mode] Horizontal: 28° (TELE) – 102° (WIDE) Vertical: 21° (TELE) – 74° (WIDE)

## • Camera mount bracket

Adjustment angle:	<p>Ceiling mounting</p> <p>Horizontal: <math>\pm 180^\circ</math> (PAN rotation part)</p> <p>Vertical: <math>0^\circ</math> to <math>90^\circ</math> (TILT rotation part)</p> <p>Yaw: ..... from <math>-190^\circ</math> to <math>+100^\circ</math> (YAW rotation part)</p> <p>-----</p> <p>Wall mounting</p> <p>Horizontal: <math>\pm 90^\circ</math> (TILT rotation part)*</p> <p>Vertical: <math>\pm 90^\circ</math> (TILT rotation part)*</p> <p>Yaw: ..... from <math>-190^\circ</math> to <math>+100^\circ</math> (YAW rotation part)</p> <p>* You can change between horizontal and vertical angles by adjusting the PAN rotation part.</p>
Dimensions:	<p>125 mm (W) {4-15/16 inches}, 125 mm (H) {4-15/16 inches} <b>SPW531L</b> <b>SPW311L</b></p> <p><math>\varnothing 90</math> mm {3-17/32 inches}, <b>SPW532L</b> <b>SPW312L</b></p> <p>(Camera mount bracket installation section)</p>
Finish:	Aluminum die cast, metallic silver

## • Network

Network:	10BASE-T/100BASE-TX, RJ45 connector
Resolution: H.264 JPEG (MJPEG)	<p><b>SPW531L</b> <b>SPW532L</b></p> <p><b>2 mega pixel [16:9](30 fps mode)</b></p> <p>H.264(1), H.264(2)</p> <p>1920 × 1080 / 1280 × 720 / 640 × 360 / 320 × 180 / 160 × 90</p> <p>H.264(3), H.264(4)</p> <p>1280 × 720 / 640 × 360 / 320 × 180 / 160 × 90</p> <p><b>2 mega pixel [16:9](60 fps mode) * WW-SPW531AL only</b></p> <p>H.264(1)</p> <p>1920 × 1080 / 1280 × 720</p> <p>H.264(2)</p> <p>1920 × 1080 / 1280 × 720 / 640 × 360 / 320 × 180 / 160 × 90</p> <p>H.264(3), H.264(4)</p> <p>1280 × 720 / 640 × 360 / 320 × 180 / 160 × 90</p> <p><b>2 mega pixel [4:3](30 fps mode)</b></p> <p>H.264(1), H.264(2)</p> <p>1600 × 1200 / 1280 × 960 / 800 × 600 / VGA / 400 × 300 / QVGA / 160 × 120</p> <p>H.264(3), H.264(4)</p> <p>1280 × 960 / 800 × 600 / VGA / 400 × 300 / QVGA / 160 × 120</p> <p><b>3 mega pixel [4:3](30 fps mode) * Used by super resolution techniques</b></p> <p>H.264(1), H.264(2)</p> <p>2048 × 1536 / 1280 × 960 / 800 × 600 / VGA / 400 × 300 / QVGA / 160 × 120</p> <p>H.264(3), H.264(4)</p> <p>1280 × 960 / 800 × 600 / VGA / 400 × 300 / QVGA / 160 × 120</p> <p>-----</p> <p><b>SPW311L</b> <b>SPW312L</b></p> <p><b>1.3 mega pixel [16:9](30 fps mode)</b></p> <p>H.264(1), H.264(2), H.264(3), H.264(4)</p> <p>1280 × 720 / 640 × 360 / 320 × 180 / 160 × 90</p>

<p>Resolution: H.264 JPEG (MJPEG) (continued)</p>	<p><b>1.3 mega pixel [16:9](60 fps mode)</b> * WV-SPW311AL only H.264(1) 1280 × 720 H.264(2), H.264(3), H.264(4) 1280 × 720 / 640 × 360 / 320 × 180 / 160 × 90</p> <p><b>1.3 mega pixel [4:3](30 fps mode)</b> H.264(1), H.264(2), H.264(3), H.264(4) 1280 × 960 / 800 × 600 / VGA / 400 × 300 / QVGA / 160 × 120</p> <p><b>2 mega pixel [16:9](30 fps mode)</b> * Used by super resolution techniques H.264(1), H.264(2) 1920 × 1080 / 640 × 360 / 320 × 180 / 160 × 90 H.264(3), H.264(4) 640 × 360 / 320 × 180 / 160 × 90</p>
<p>Image compression method: H.264*<sup>1</sup></p>	<p><b>Transmission priority:</b> Constant bit rate / Variable bit rate / Frame rate / Best effort / Advanced VBR</p> <p><b>Frame rate:</b> &lt;When Variable bit rate, Frame rate, or Advanced VBR is selected&gt; 1 fps / 3 fps / 5 fps* / 7.5 fps* / 10 fps* / 12 fps* / 15 fps* / 20 fps* / 30 fps* / 60 fps* <b>SPW531L</b> <b>SPW311L</b></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><b>Bit rate per client:</b> 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* / 30720 kbps* / 40960 kbps*</p> <p>* The available range of the H.264 bit rate varies depending on the setting selected for “image capture size”.</p> <p><b>Image quality:</b> &lt;When Constant bit rate or Best effort is selected&gt; Low/Normal/Fine &lt;When Variable bit rate is selected&gt; 0 SUPER FINE/1 FINE/2/3/4/5 NORMAL/6/7/8/9LOW</p> <p><b>Transmission type:</b> Unicast/Multicast</p>
<p>JPEG (MJPEG)</p>	<p><b>Image quality:</b> 0 SUPER FINE/ 1 FINE/ 2/ 3/ 4/ 5 NORMAL/ 6/ 7/ 8/ 9 LOW (10 steps: 0-9)</p> <p><b>Transmission type:</b> Pull/ Push</p> <p><b>Refresh interval:</b> 0.1 fps – 30 fps (JPEG frame rate will be restricted when displaying both JPEG and H.264 images.)</p>
<p>Cropping function*<sup>2</sup>:</p>	<p>Off/ JPEG(1)/ JPEG(2)/ JPEG(3)/ H.264(1)/ H.264(2)/ H.264(3)/ H.264(4)/ H.264(all) Alarm action On/ Off</p>

Audio compression method: <b>SPW531L</b> <b>SPW311L</b>	G.726 (ADPCM) 32 kbps/ 16 kbps, G.711 64 kbps, AAC-LC* <sup>3</sup> 64 kbps AAC-LC (HIGH QUALITY) 64 kbps/ 96 kbps/ 128 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* <sup>4</sup> :	Microsoft Windows 8.1 Microsoft Windows 8 Microsoft Windows 7 Microsoft Windows Vista
Browser* <sup>4</sup> :	Windows Internet Explorer 11 (32-bit) Windows Internet Explorer 10 (32-bit) Windows Internet Explorer 9 (32-bit) Windows Internet Explorer 8 (32-bit) Windows Internet Explorer 7 (32-bit)
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* <sup>5</sup> * <sup>6</sup> * <sup>7</sup> :	Manufactured by Panasonic (SD speed class 4 or higher) SDXC memory card: 64 GB, 128 GB SDHC memory card: 4 GB, 8 GB, 16 GB, 32 GB SD memory card: 2 GB (except miniSD card and microSD card)
Cellular phone compatibility:	JPEG image, AUX control (by access level)
Mobile terminal compatibility: (As of July, 2015)* <sup>8</sup>	iPad, iPhone, iPod touch (iOS 4.2.1 or later) Android™ mobile terminals

\*1 Transmission for 4 streams can be individually set.

\*2 When the maximum image capture size is selected, cropping settings are not available.

\*3 AAC-LC (Advanced Audio Coding - Low Complexity) is only used when recording audio on an SD memory card. Besides, when choosing AAC-LC (HIGH QUALITY), SD card cannot be used.

\*4 For further information about PC system requirements and precautions for when using Microsoft Windows 8.1, Microsoft Windows 8, 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".

\*5 Refer to our website (<http://security.panasonic.com/pss/security/support/info.html>) for latest information about the compatible SD memory cards.

\*6 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.

\*7 Use the SD memory card that complies with UHS-1 (Ultra High Speed-1) in the case of SD Speed Class 10.

\*8 For further information about compatible devices, refer to our website (<http://security.panasonic.com/pss/security/support/info.html>).

## Standard accessories

Important Information (this document) .....	1 pc.
Installation Guide .....	1 set
Warranty card*1 .....	1 set
CD-ROM*2 .....	1 pc.
Code label*3 .....	1 pc.

The following parts are used during installation procedures.

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<b>SPW531L</b>	<b>SPW311L</b>
Camera mount bracket cover .....	2 pcs.
Camera mount bracket cover fixing screw (M3 x 6 mm{1/4 inches}).....	3 pcs. (of them, 1 for spare)
Waterproof tape.....	1 pc.
LAN connector cover.....	1 pc.
4P alarm cable .....	1 pc.
2P power cable .....	1 pc.
Safety wire.....	1 pc.
Wire lug fixing screw (M3 x 10 mm {3/8 inches}).....	2 pcs. (of them, 1 for spare)
Safety wire lug .....	1 pc.
Auxiliary handle.....	1 pc.

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<b>SPW532L</b>	<b>SPW312L</b>
Template.....	1 Sheet.
LAN connector cover.....	1 pc.
Safety wire.....	1 pc.
Wire lug fixing screw (M3 x 10 mm {3/8 inches}) .....	2 pcs. (of them, 1 for spare)
Safety wire lug .....	1 pc.
Auxiliary handle.....	1 pc.
Desiccant .....	1 Sheet.
Waterproof tape.....	1 pc.

\*1 This product comes with several types of warranties. Each warranty is only applicable to the products purchased in the regions indicated on the relevant warranty.

\*2 The CD-ROM contains the operating instructions and different kinds of tool software programs.

\*3 This label may be required for network management. The network administrator shall retain the code label.

## Optional accessories

User License Accessory (For H.264):	BB-HCA8A BB-HCA8CE
Adapter Box:	WV-Q120A  



## Disposal of Old Equipment and Batteries

### Only for European Union and countries with recycling systems



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries must 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.

By disposing of them correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment.

For more information about collection and recycling, please contact your local municipality.

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



#### **Note for the battery symbol (bottom symbol)**

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/](http://www.panasonic.com/business/)

For customer support, call 1.800.528.6747

Two Riverfront Plaza, Newark, NJ 07102-5490

### **Panasonic Canada Inc.**

5770 Ambler Drive, Mississauga,  
Ontario, L4W 2T3 Canada

(905)624-5010

[www.panasonic.ca](http://www.panasonic.ca)

#### **For Europe and other countries:**

### **Panasonic Corporation**

<http://www.panasonic.com>

Panasonic System Networks Co., Ltd.  
Fukuoka, Japan

Authorised Representative in EU:

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

