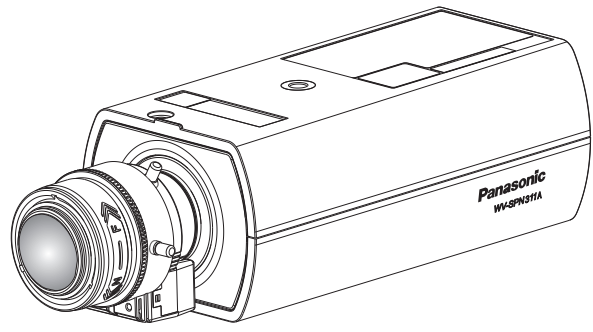


Network Camera

Model No. **WV-SPN531A / WV-SPN311A / WV-SPN310A**



* This illustration represents WV-SPN311A (Please purchase the recommended lens separately.)



- This manual describes the installation procedures, cable connections, and the angle of view adjustment of this product.
- Before reading this manual, be sure to read the Important Information.
- This manual describes how to install the network camera using model WV-SPN311A as an example.

For U.S. and Canada:

Panasonic System Communications Company of North America, Unit of Panasonic Corporation of North America
www.panasonic.com/business/
For customer support, call 1.800.528.6747
Two Riverfront Plaza, Newark, NJ 07102-5490

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

© Panasonic System Networks Co., Ltd. 2015

For Europe and other countries:

Panasonic Corporation
http://www.panasonic.com

Panasonic System Networks Co., Ltd.
Fukuoka, Japan

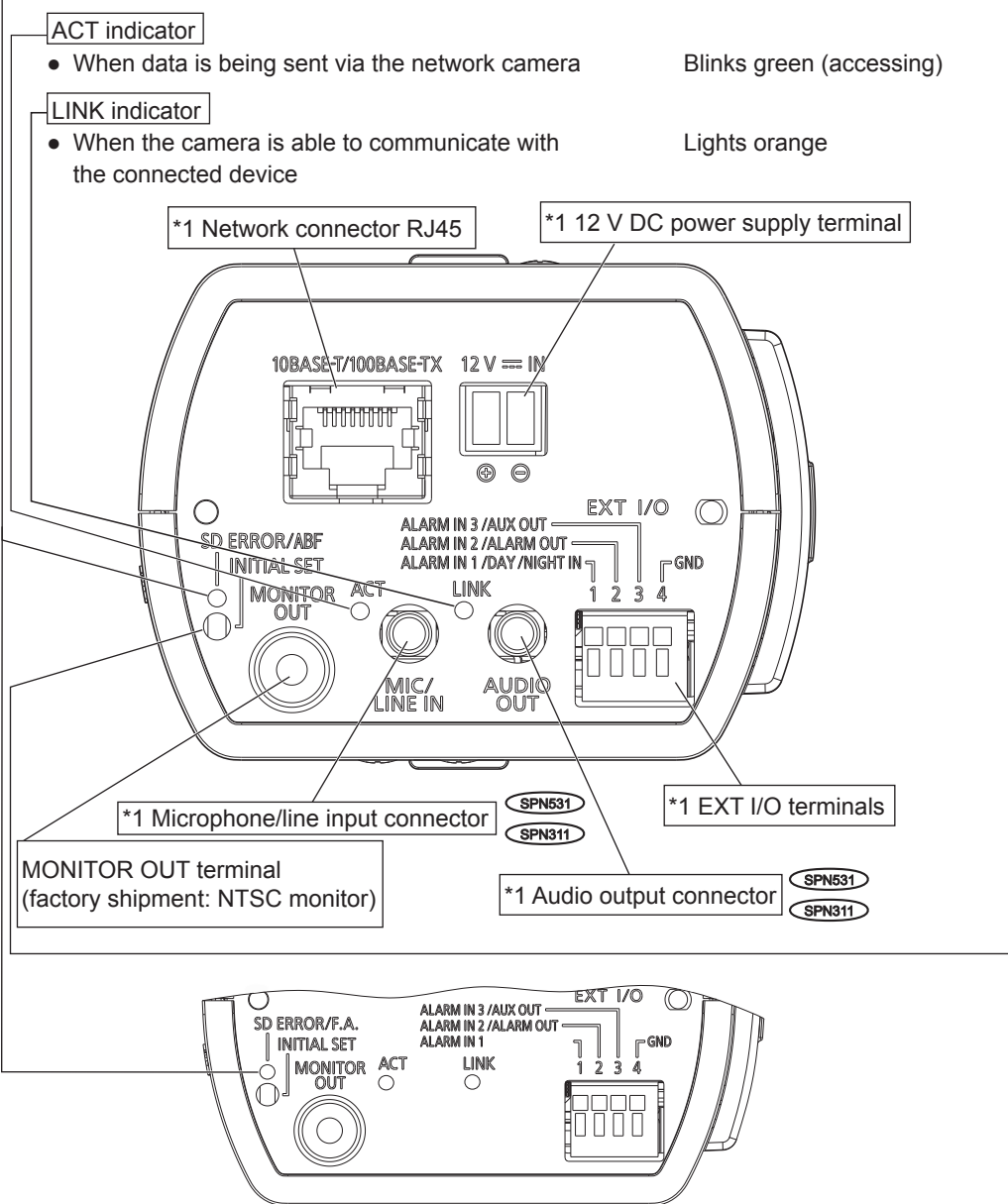
Authorised Representative in EU:

CE
Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Wilsbergstr. 15, 22525 Hamburg, Germany

sL0915-1105 PGQX1973YA Printed in China

Parts and functions

The component names of the camera are as follows. Refer to the illustration when installing or adjusting the camera.



*1 The detailed specifications on the right describe terminals with markings.

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

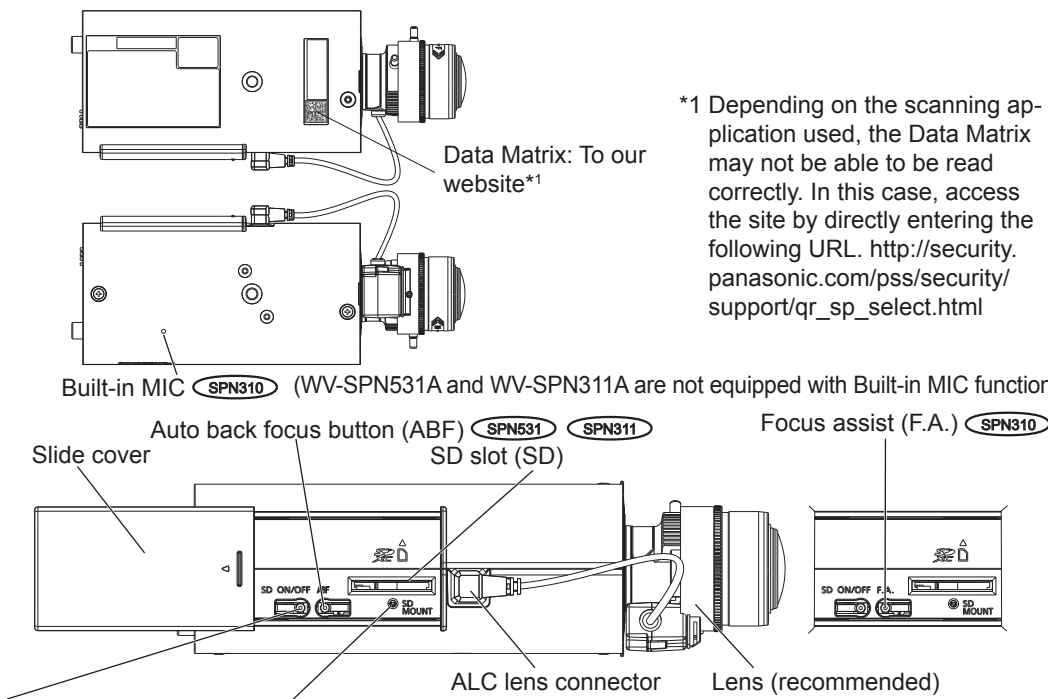
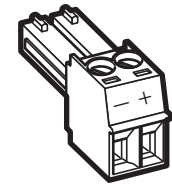
Standard accessories

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

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

The following parts are used during installation procedures.

- (A) Tripod mount base 1 pc.
- (B) Power cable plug 1 pc.
- (C) Safety wire lug 1 pc.
- (D) Wire lug fixing screws (M2.5 × 8 mm {5/16 inches}) 2 pcs. (of them, 1 for spare)
- (E) Safety wire 1 pc.
- (F) Washer 1 pc.
- (G) Spring washer 1 pc.



- SD MOUNT indicator**
- When an SD memory card² is inserted and could be recognized: Lights off → Blinks green → Lights off
 - When data can be saved after the SD memory card is inserted and the SD ON/OFF button is pressed (less than 1 second): Lights off → Lights green
 - When data can be saved to the SD memory card: Lights green
 - When the SD memory card is removed after holding down the SD ON/OFF button (about 2 seconds): Lights green → Blinks green → Lights off (recording) → Lights off → Lights off (waiting for recording) → Lights off
- Note:**
- Lighting/blinking LED can be turned off with the software settings at any time. (The initial state is lighting or blinking.) Set the LED to be solid off if necessary, depending on the installation conditions. (*2) Operating instructions included in the CD-ROM

- SD ON/OFF button**
- When the SD ON/OFF button is pressed (less than 1 second), the SD MOUNT indicator lights up in green and data can be saved to the SD memory card.
 - When the SD ON/OFF button is held down (about 2 seconds), the SD MOUNT indicator lights off and the SD memory card can be removed.

- SD ERROR/ABF indicator** (SPN531 SPN311) **SD ERROR/F.A. indicator** (SPN310)
- When ABF (Auto Back Focus) operation is being executed: Blinks red (Interval of 1 time/ second)
 - When the focus assist function is activated: Blinks red (1 time)
 - When the focus ring is positioned near the best focus position: Lights red
 - When the set is being started: Lights red
 - When an SD memory card is recognized normally: Lights red → Lights off
 - When the SD card slot is not used or an abnormality is detected in SD card after the camera has started: Lights red → Stays red

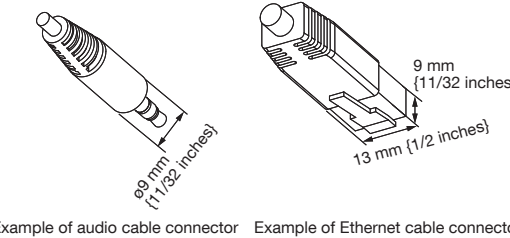
- INITIAL SET button (Initializing / NTSC ↔ PAL switch button)**
- How to initialize the camera
 - Follow the steps below to initialize the network camera.
 - Turn off the power of the camera. When using a PoE hub, disconnect the Ethernet cable from the camera. When using an external power supply, disconnect the power cable plug (B: accessory) from the 12 V DC power supply terminal.
 - Turn on the power of the camera while holding down the INITIAL SET button, and keep the INITIAL SET button held down till the SD MOUNT indicator is lit in green (more than 10 seconds). In about 2 minutes after releasing the INITIAL SET button, the camera will start up and the settings including the network settings will be initialized.

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

- When the INITIAL SET button (i.e. the initializing button) is pressed (less than 1 second) to switch the output signal of the MONITOR OUT terminal (NTSC ↔ PAL output), the MONITOR OUT terminal can be switched for the NTSC monitor/PAL monitor.

Making connections

Turn off each system's power supply before making a connection. Before making connections, prepare the required peripheral devices and cables.

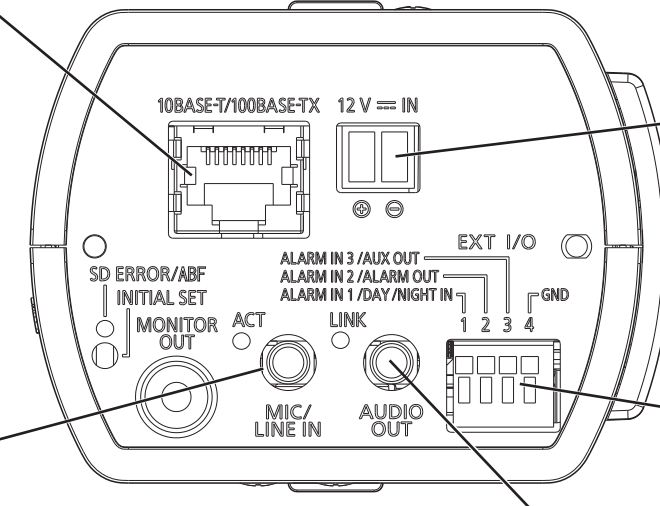


Example of audio cable connector Example of Ethernet cable connector

Connect an Ethernet cable (category 5e or better, straight)

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 cable length is 100 m (328 feet).
 - Make sure that the PoE device in use is compliant with IEEE802.3af standard.
 - When connecting both the 12 V DC power supply and the PoE device for power supply, 12 V DC will be used for power supply.*
 - If a 12 V DC power supply and a PoE hub or router are used at the same time, network connections may not be possible. In this case, disable the PoE settings. Refer to the operating instructions of the PoE hub or router in use.
 - Depending on the PoE device used, if you disconnect 12 V DC while 12 V DC power supply and a PoE hub or router are used at the same time, the power supply may stop, causing the camera to restart.
 - 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.



Connect an external amplifier-embedded speaker to the audio output cable

- Connect a stereo mini plug (ø3.5 mm).
- Output impedance: Approx. 600 Ω (unbalanced)
 - Recommended cable length: Less than 10 m (32.8 feet)
 - Output level: -20 dBV

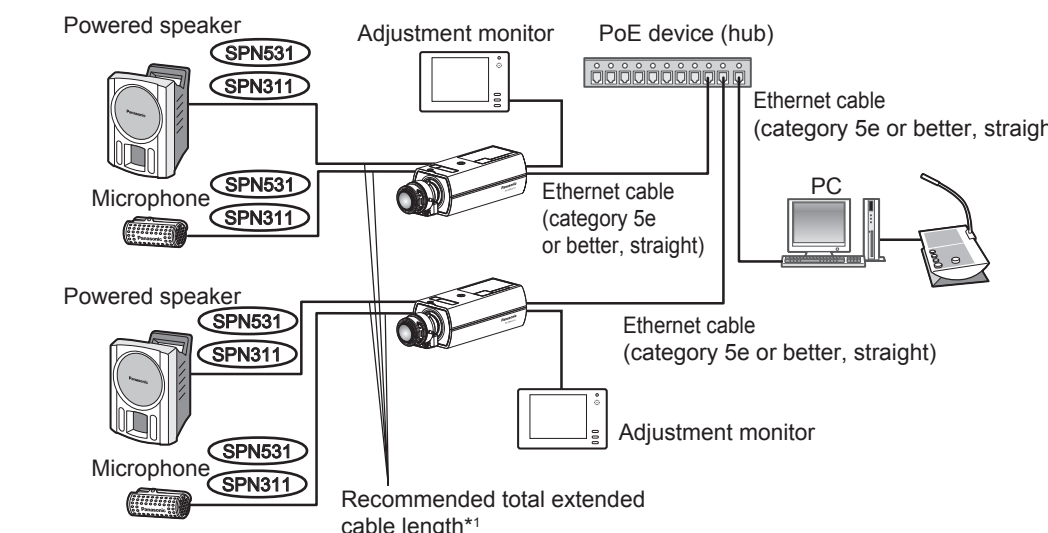
- IMPORTANT:**
- Connect/disconnect the audio cables and turn on the power of the camera after turning off the power of the audio output devices. Otherwise, loud noise may be heard from the speaker.
 - Make sure that the stereo mini plug is connected to this cable. When a monaural mini plug is connected, audio may not be heard. When connecting a monaural speaker with amplifier, use a locally procured conversion cable (mono-stereo).

Microphone/line input cable

- Connect a stereo mini plug (ø3.5 mm).
- Input impedance: Approx. 2 kΩ (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 (option) • Supply voltage: 2.5 V ± 0.5 V
 - Input level for the line input: Approx. -10 dBV
 - Recommended sensitivity of microphone: -48 dB ± 3 dB (0 dB=1 V/Pa, 1 kHz)

When connecting to a network using a PoE hub

Before starting the installation, check the entire system configuration. The following illustration gives a wiring example of how to connect the camera to the network via a PoE device (hub).



*1 Recommended cable length from the speaker: less than 10 m (32.8 feet)
Recommended cable length from the microphone: less than 1 m (3.28 feet)

Connect the power cable

- Caution:**
- A READILY ACCESSIBLE DISCONNECT DEVICE SHALL BE INCORPORATED TO THE EQUIPMENT POWERED BY 12 V DC POWER SUPPLY.
 - ONLY CONNECT 12 V DC CLASS 2 POWER SUPPLY (UL 1310/CSA 223) or LIMITED POWER SOURCE (IEC/EN/UL/CSA 60950-1).

Connect the output cable of the DC power supply to the power cable plug (B: accessory).

- Loosen the screw of the power cable plug (B: accessory), strip 3 mm to 7 mm {1/8 inches to 9/32 inches} from the end of the wire, twist the stripped part of the wire sufficiently to avoid short circuit, and then connect the output cable to the power cable plug (B: accessory).
- Tighten the screw of the power cable plug (B: accessory). (Recommended tightening torque: 0.34 N·m {0.25 lbf·ft})

- Note:**
- Check whether the stripped part of the wire is not exposed and is securely connected.
 - When connecting an external power supply to the camera, use the AWG 16 to AWG 24 single-wired or stranded wired cables.

IMPORTANT:

- The 12 V DC power supply shall be insulated from the commercial AC power.
- Be sure to use the power cable plug (B: accessory) provided with this product.
- Be sure to fully insert the power cable plug (B: accessory) into the 12 V DC power supply terminal. 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 AC adaptor compliant with the Specifications (written in the indication label on the bottom side of this unit) regarding power source and power consumption.

Connect the alarm input/output cable

- Connect the cables of external devices to the EXT I/O terminal plug.
- When connecting an external device, remove 8 mm - 9 mm of the outer jacket of the cable and twist the cable core to prevent the short circuit first. Specification of cable (wire): AWG 20 - AWG 26, Single core, twisted
 - Push down the button of the desired terminal on the external I/O terminal plug with a ball-point pen, and release the button when the cable of the external device is fully inserted into the terminal hole.

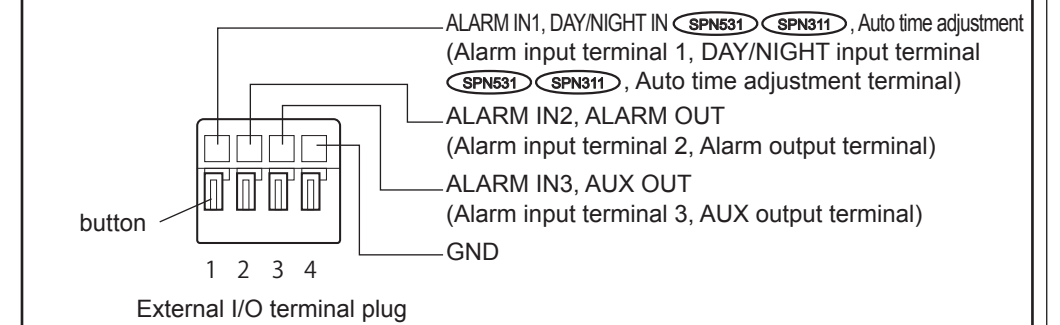
- Note:**
- Check whether the stripped part of the wire is not exposed and is securely connected.

<Ratings>

- ALARM IN1 (DAY/NIGHT IN (SPN531 SPN311), Auto time adjustment), 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)

* The default of EXT I/O terminals is "Off".



IMPORTANT:

- Do not connect 2 wires or more directly to a terminal. When it is necessary to connect 2 or more wires, use a splitter.
- Off, input, and output of the external 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").
- 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.

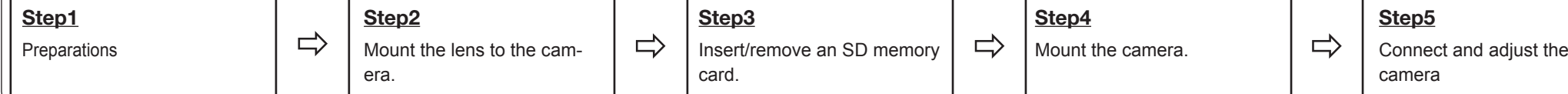
<Required cable>
Ethernet cable (category 5e or better, straight)
Use an Ethernet cable (category 5e or better, cross) when directly connecting the camera to a PC.

IMPORTANT:

- The adjustment monitor is used for checking the adjustment of the angular field of view when installing the camera or when servicing. It is not provided for recording/monitoring use.
- Depending on the monitor, some characters (camera title, preset ID, etc.) may not be displayed on the screen.
- 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 12 V DC power supply.
- When using 12 V DC, power supply from a PoE hub or router is not required.

Installation

The installation tasks are explained using 5 steps.



Step1 Preparations

To install the camera to a ceiling or wall, prepare the required mount bracket and the screws that secure the bracket, or the anchor bolt for each installation method before starting the installation. The following are requirement examples for the various installation methods.

Installation method	Recommended screw	Minimum pull-out strength (per 1 pc.)
[1] For mounting on ceiling¹ (Mount bracket: approx. 260 g {0.57 lbs}, camera: 350 g {0.77 lbs} SPN310 SPN311 , lens: 40 g {0.09 lbs})	M6 or M8 screws × 4 ¹	562 N {126 lbf} ²
	M4 × 1 (for the safety wire)	24.5 N {5.5 lbf}
[2] For mounting on wall¹ (Mount bracket: approx. 420 g {0.93 lbs}, camera: 350 g {0.77 lbs} SPN310 SPN311 , lens: 40 g {0.09 lbs})	M6 or M8 screws × 4 ¹	724 N {163 lbf} ²
	M4 × 1 (for the safety wire)	24.5 N {5.5 lbf}
[3] When using the tripod mount base (A: accessory)³	—	—

¹The number of required screws or anchor bolts varies depending on the specifications of the mount bracket (locally procured). Refer to the operating instructions of the mount bracket (locally procured) for information about how to mount the mount bracket.

²Make sure that the screws or anchor bolts separately procured when locally procuring a mount bracket for the ceiling or wall are capable of supporting the total weight (including the moment force when mounting to a wall).

³Size of the bracket mounting hole: "1/4-20UNC camera tripod mounting hole (depth 9 mm {11/32 inches})"

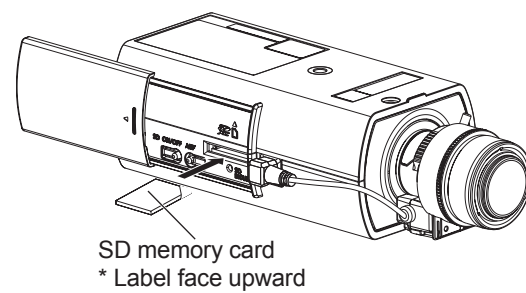
IMPORTANT:

- The installation area shall be strong enough to hold the camera and camera mount bracket.
- The camera mount bracket (locally procured) shall be mounted on the foundation part of the construction or a part with adequate strength.
- Select screws according to the material of the ceiling that the camera will be mounted to. In this case, wood screws and nails should not be used.
- If a ceiling board such as plaster board is too weak to support the total weight, the area shall be sufficiently reinforced.

Step3 Insert/remove an SD memory card

When using an SD memory card, go through the following procedure before installing the camera. When removing an SD memory card, reverse the procedure. Refer to the Operating Instructions on the provided CD-ROM for further information about the SD memory card settings.

- [1]** Open the slide cover on the side of the camera, insert an SD memory card fully into the SD memory card slot until a click is heard.
- Insert the SD memory card with its label facing up.



- [2]** Close the slide cover on the side of the camera.

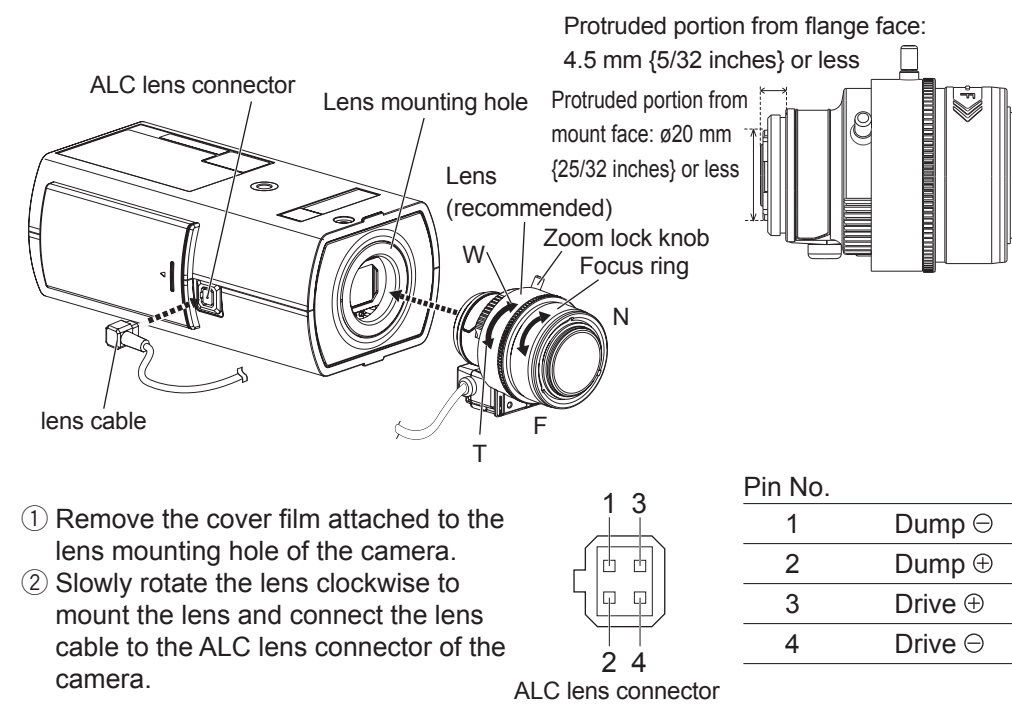
- To remove the SD memory card, hold down the SD ON/OFF button for about 2 seconds. When the flashing SD MOUNT indicator goes out, you can remove the SD memory card.
- After the SD memory card has been replaced, press the SD ON/OFF button, and make sure the SD MOUNT indicator is continually lit.
- If you do not press the SD ON/OFF button after replacing the SD memory card, the SD MOUNT indicator is continually lit approximately 5 minutes later.

Step2 Mount the lens to the camera

The lens section is not included with the camera. It is possible to mount a 1/3 type video camera lens to the camera. It is recommended to use a recommended high-resolution lens especially when the illuminance level of the photographic subject is low and the camera is used with the lens iris open. If a lens other than the recommended lens below is mounted and the camera is used at a resolution of 1280 × 720 or higher, the camera cannot achieve full performance of high resolution.

Refer to our website (<http://security.panasonic.com/ps/security/support/info.html>) for further information about the recommended lenses.

* When using a lens made by other companies, use a lens that has a protruded portion from the mount face of ø20 mm {25/32 inches} or less and a protruded portion from the flange face of 4.5 mm {5/32 inches} or less. Lenses without a focus adjustment mechanism and zoom lenses cannot be used.



- Remove the cover film attached to the lens mounting hole of the camera.
- Slowly rotate the lens clockwise to mount the lens and connect the lens cable to the ALC lens connector of the camera.

Step4 Mount the camera (Continued)

For mounting on ceiling

- [1]** Mark the position of holes to be made for the ceiling mount bracket (locally procured) on the attachment position of the ceiling, and make those holes for attachment. Determine the hole diameter and hole depth according to the specifications of the screws or anchor bolts to be used.

- [2]** Secure the ceiling mount bracket (locally procured) using separately procured attachment fixing screws or anchors.

- [3]** Loosen the camera mount bracket fixing mechanism to freely move the camera mount bracket.

- Align the screw thread with the fixing screw hole of the camera, and rotate the camera mount bracket to secure the camera.

- Tighten the camera mount bracket fixing mechanism and secure the camera mount bracket.

* The tripod mount base (A: accessory) is not used.

- [4]** Attach the safety wire (E: accessory) to the foundation area of the architecture or where sufficient strength is assured. Prepare the fixing screws according to the material of the area where the safety wire (E: accessory) is to be installed.

IMPORTANT:

- Be sure to rotate and secure the camera mount bracket. Rotating the camera places a large burden on the camera mount bracket, and may cause damage.
- The safety wire (E: accessory) shall be adjusted to remove slack.
- The distance from the camera to the ceiling changes depending on the tilt angle of the camera. Attach the safety wire (E: accessory) in a position according to the tilt angle of the camera.

For mounting on wall

- [1]** Mark the position of holes to be made for the wall mount bracket (locally procured) on the attachment position of the wall, and make those holes for attachment. Determine the hole diameter and hole depth according to the specifications of the screws or anchor bolts to be used.

IMPORTANT:

- Mount the bracket in a position higher than 2.7 m {8.86 feet} from the floor.

Step5 Connect and adjust the camera (Continued)

If the camera angle is changed when the camera mount bracket fixing mechanism is tightened, excessive force is applied to the camera mount bracket and camera, which may damage them.

After adjusting the camera angle, make sure to tighten the camera mount bracket fixing mechanism securely again.

- [3]** Adjusting the focus **SPN310** **SPN311**

- First, reset the back focus position by holding down the auto back focus button for 5 seconds or more when the power is on. (This operation can also be performed on the setup menu. Refer to the Operating Instructions (included in the CD-ROM).) **SPN310** **SPN311**
- Manually adjust the angle of view and focus coarsely by adjusting the zoom and focus of the lens, and then press the auto back focus button on the side of the camera (page 1) or perform the auto back focus function from the setup menu. **SPN310** **SPN311**

Refer to the Operating Instructions (included in the CD-ROM) for how to perform the auto back focus function from the setup menu.

* How to take a wide depth of field: When focus is desired on entire near or distant subjects, select indoor scene mode, or adjust the focus to the midrange position using manual focus adjustment.

Adjusting the focus **SPN310**

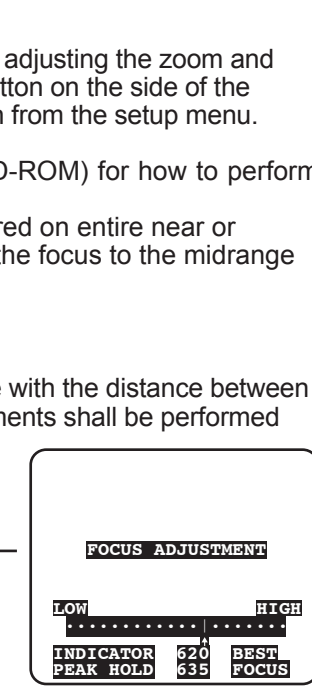
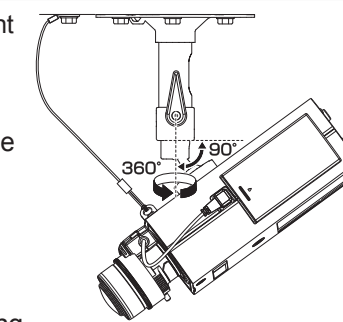
The focus is adjusted using the focus assist function. The angle of view and focus can be adjusted in accordance with the distance between the camera lens and a photographic subject. These adjustments shall be performed together with the camera angle adjustment.

- Loosen the zoom lock knob, and adjust the angle of view (angular field of view) in accordance with the photographic subject by moving the zoom lock knob and focus ring.

Note:

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

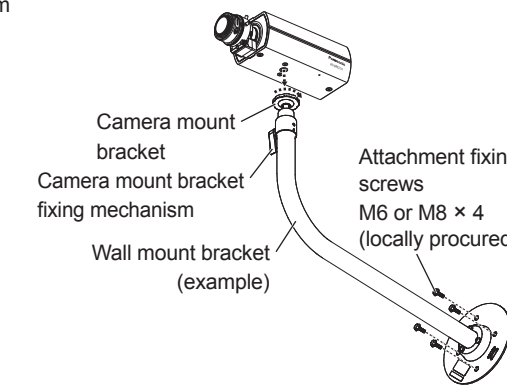
- Fasten the zoom lock knob.
- Press the focus assist button.
→ "FOCUS ADJUSTMENT" menu will be displayed.
- The focus assist function will be activated to perform the optimum adjustment.
- When the focus ring is positioned near the best focus position, the position will automatically be memorized as the "PEAK HOLD" position.
- Loosen the focus lock knob and move the focus ring, the current focus position will be indicated on "INDICATOR". Adjust the focus position so that the indicator value goes close to the "PEAK HOLD" position.
- When the indicator value goes to the best focus position, "BEST FOCUS" will be displayed at the lower right corner of the screen, then fasten the focus lock knob.
- Press the focus assist button again to close the "FOCUS ADJUSTMENT" menu. (No operation for 3 seconds also closes the menu.)



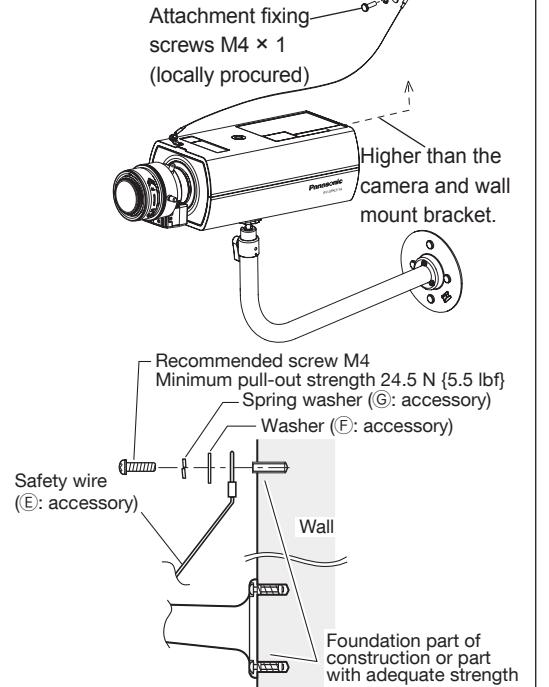
- [2]** Secure the wall mount bracket (locally procured) using separately procured screws or anchors.

- [3]** Loosen the camera mount bracket fixing mechanism to freely move the camera mount bracket. Align the screw thread with the fixing screw hole of the camera, and rotate the camera mount bracket to secure the camera. Tighten the camera mount bracket fixing mechanism and secure the camera mount bracket.

* The tripod mount base (A: accessory) is not used.



- [4]** Attach the safety wire (E: accessory) to the foundation area of the architecture or where sufficient strength is assured. Prepare the fixing screws according to the material of the area where the safety wire (E: accessory) is to be installed.



IMPORTANT:

- Be sure to rotate and secure the camera mount bracket. Rotating the camera places a large burden on the camera mount bracket, and may cause damage.
- Attach the safety wire (E: accessory) in a position higher than the camera and the mount bracket.
- Attach the safety wire (E: accessory) so that if the camera were to become detached, it would not fall on nearby people.

Step5 Connect and adjust the camera

- [1]** Connecting wires

Connect the necessary cables/lead wires according to the procedure of "Making connections". (When power is supplied by PoE, the camera is turned on when an Ethernet cable is connected. Make sure to connect the Ethernet cable after turning off the power of hub and router.)

- [2]** Adjusting the camera angle

Connect the adjustment monitor to the MONITOR OUT terminal of the camera with the RCA pin cable (locally procured). Loosen the camera mount bracket fixing mechanism on the camera mount bracket, and then check the adjustment monitor to adjust the camera angle. When adjusting the camera angle, make sure to loosen the camera mount bracket fixing mechanism on the camera mount bracket before making adjustments.

Note:

- The most common use of a varifocal lens and a zoom lens. Note that the adjustment method is different depending on the type. For further information, refer to the operating instructions for the lens to be used. When using 8x or 10x lens, adjust the back focus after positioning the zoom ring at the "W" end and positioning the focus ring at a step short of the "F" end. **SPN310** **SPN311**
- When using 2x or 3x lens, adjust the back focus after positioning the zoom ring at the "T" end and positioning the focus ring at a step short of the "F" end. **SPN310** **SPN311**
- Depending on the lens to be used, if the zoom ring is fully rotated in the "W" direction, the periphery may become dark. In such a case, rotate the zoom ring in the "T" direction for readjustment.
- When images in the near-infrared light area change from the color mode to the black & white mode, out-of-focus may be occurred according to the nature of optical property. In this case, the focus can be corrected by selecting "Auto" or "Pre-set" for "Adjusting method" on the setup menu (The focus will not automatically be adjusted according to the illumination level change once the focus is corrected.) Refer to the Operating Instructions (included in the CD-ROM) for how to configure the "Adjusting method" setting on the setup menu. **SPN310** **SPN311**
- When shooting the following subjects, it may have difficulty adjusting the back focus position automatically. In this case, adjust the back focus position manually from the setup menu. Refer to the Operating Instructions (included in the CD-ROM) for how to perform the auto back focus function from the setup menu. **SPN310** **SPN311**
- When shooting the following subjects or in the following places, close the "FOCUS ADJUSTMENT" menu by pressing the focus assist (F.A.) button, and adjust the focus to obtain the best focus position while monitoring images from the camera. **SPN310**
 - Subj. moves frequently
 - Subj. with large illuminance change
 - Subj. with low illuminance
 - Subj. through a window
 - Subj. with less contrast such as white wall
 - Subj. with heavy flicker
- "BEST FOCUS" display may generate misjudgment according to shooting environment. Misjudgment can be lessened by switching camera mode to 30 fps mode (SD OFF). Refer to the Operating Instructions (included in the CD-ROM) for switching methods of camera mode. **SPN310**
- In case the angular field of view has changed during adjustment, close the "FOCUS ADJUSTMENT" menu by pressing the focus assist (F.A.) button. (When the angular field of view changes, the indicator values of "PEAK HOLD" and "INDICATOR" also change.) After fixing the angular field of view, open the "FOCUS ADJUSTMENT" menu by pressing the focus assist (F.A.) button, then adjust the focus again. **SPN310**

IMPORTANT:

- After performing basic adjustments, make sure to press the auto back focus button once to perform detailed adjustments. **SPN310** **SPN311**

- After connecting the camera, refer to "Configure the settings of the camera" (leaflet) and perform the camera settings.