

Network Camera

Model No. **WV-SFV781L**



- This manual describes the installation procedures, network camera installation, cable connections, and the angle of view adjustment.
- Before reading this manual, be sure to read the Important Information.

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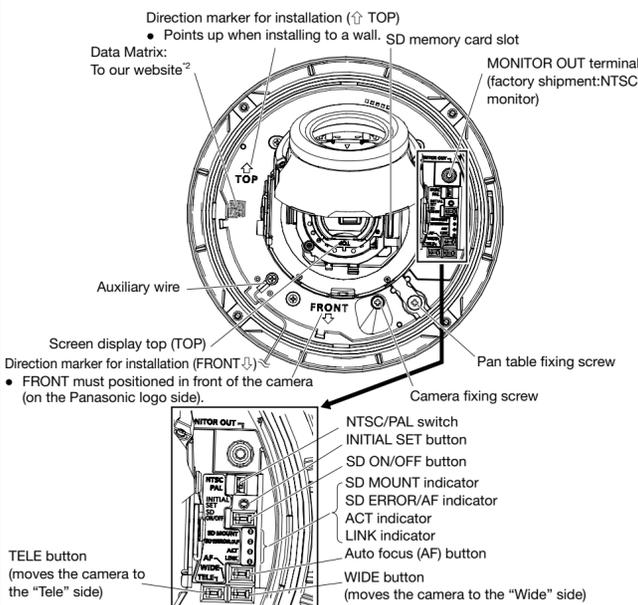
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PGQX1816VA Cs0415-4109 Printed in China

Major operating controls

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

<Inside the dome cover (with IR LED mounting section opened)>



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

*2 Data Matrix is our website address converted into a two-dimensional barcode. Depending on the scanning application used, the Data Matrix may not be able to be read correctly. In such a case, directly enter the following URL.
http://security.panasonic.com/ps/security/support/qr_sp_select.html

Note:

- The ACT indicator, LINK indicator, SD ERROR/AF indicator, and SD MOUNT indicator are visible from underneath the camera. These LED indicators may light or blink when the camera is operating and can be kept turned off by the software settings. (Indicators are set to light or blink in the default settings.) Turn off the indicators as required according to the installation environment. (See Operating Instructions (included in the CD-ROM))

Standard accessories

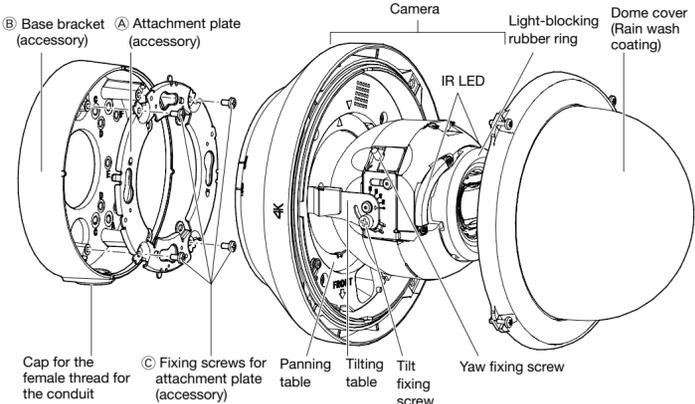
Important Information	1 pc.	CD-ROM ¹	1 pc.
Installation Guide (this document)	1 set	Code label ²	1 pc.
Warranty card	1 set	Camera caution label	1 pc.

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

The following parts are used during installation procedures.

Ⓐ Attachment plate	1 pc.	Ⓕ Bit (Hex wrench, screw size 6.35 mm {1/4 inches} T20)	1 pc.
Ⓑ Base bracket	1 pc.	Ⓖ Waterproof tape	1 pc.
Ⓒ Fixing screws for attachment plate (M4 x 8 mm {5/16 inches})	5 pcs. (incl. 1 spare)	Ⓗ 4P alarm cable	1 pc.
Ⓓ Template A (for the attachment plate)	1 sheet	Ⓘ 2P power cable	1 pc.
Ⓔ Template B (for the base bracket)	1 sheet	Ⓚ LAN connector cover	1 pc.
Ⓕ Bit (Hex wrench, screw size 6.35 mm {1/4 inches} T20)	1 pc.	Ⓛ MONITOR OUT conversion plug *3	1 pc.
Ⓖ Waterproof tape	1 pc.	Ⓜ Protection cover	1 pc.
Ⓗ 4P alarm cable	1 pc.	Ⓝ Extended safety wire	1 pc.
Ⓘ 2P power cable	1 pc.		
Ⓚ LAN connector cover	1 pc.		
Ⓛ MONITOR OUT conversion plug *3	1 pc.		
Ⓜ Protection cover	1 pc.		
Ⓝ Extended safety wire	1 pc.		

*3 This can be used as MONITOR OUT by switching the audio/monitor output cable of the unit using software switching. Connect the MONITOR OUT conversion plug to the audio/monitor output cable and use it when converting the ø3.5 mm {1/8 inches} stereo mini jack to the RCA pin jack output.



NTSC/PAL switch

- The output of the MONITOR OUT terminal can be switched to that for NTSC monitor or PAL monitor.

INITIAL SET button

- How to initialize the camera
- Follow the steps below to initialize the network camera.
- ① Turn off the power of the camera. When using a PoE hub, disconnect the LAN cable from the camera. When using an external power supply, disconnect the 2P power cable plug from the camera.
- ② Turn on the power of the camera while holding down the INITIAL SET button, and then keep holding down the button for 5 seconds or more. The camera will start up after about 2 minutes of taking off the INITIAL SET button 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.

SD ON/OFF button

- ① If the SD ON/OFF button is pressed (for 1 second or less), the SD MOUNT indicator lights up green, and data can be saved on the SD memory card*1.
- ② When the SD ON/OFF button is held down for about 2 seconds, the SD MOUNT indicator goes out, and the SD memory card can be removed.

SD MOUNT indicator

- When an SD memory card is inserted and could be recognized
- 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)
- When data can be saved to the SD memory card
- When the SD memory card is removed after holding down the SD ON/OFF button for about 2 seconds
- 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

SD ERROR/AF indicator

- When AF (Auto Focus) operation is being executed
- When the set is being started
- When an SD memory card is recognized normally
- When the SD memory card slot is not used or an abnormality is detected in SD memory card after the camera has started

ACT indicator

- When data is being sent via the network camera

LINK indicator

- When the camera is able to communicate with the connected device

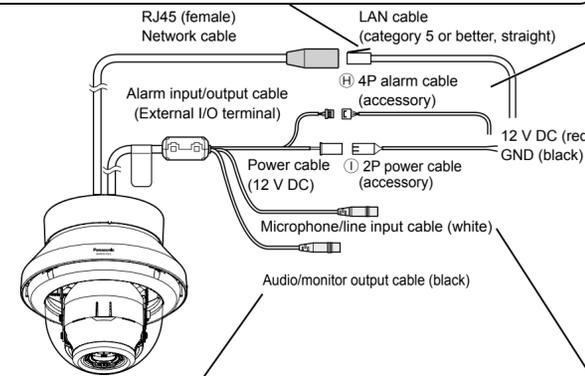
Making connections

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

Connect a LAN cable

IMPORTANT:

- Use all 4 pairs (8 pins) of the LAN cable (category 5 or better, straight, STP).
- 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 stop the 12 V DC power supply after operating it and a PoE hub or router at the same time, the power supply may stop, causing the camera to restart.
- When the LAN 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.
- When cables are used outdoors, there is a chance that they may be affected by lightning. In this case, install a lightning arrester just before where the cables connect to the camera.



Connect the audio/monitor output cable to an external speaker with an amplifier.

- Connect a stereo mini plug (ø3.5 mm {1/8 inches}).*
- Output impedance: Approx. 600 Ω (unbalanced)
- Recommended cable length: Less than 10 m {32.8 feet}
- Output level: -20 dBV (can switch to monitor output)
- * Use an external powered speaker.

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).

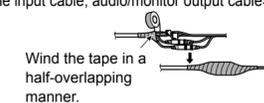
Waterproof treatment for the cable joint sections

Adequate waterproof treatment is required for the cables when installing the camera with cables exposed or installing it under the eaves. The camera body is waterproof, but the cable ends are not waterproof. Be sure to use the supplied waterproof tape at the points where the cables are connected to apply waterproof treatment in the following procedure. Failure to observe this or use of a tape other than the provided waterproof tape (such as a vinyl tape) may cause water leakage resulting in malfunction.

<LAN cable>

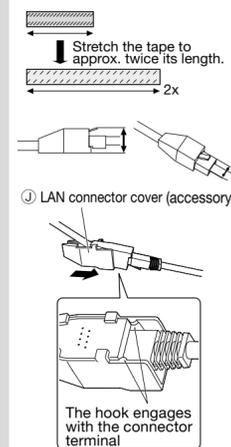


<Alarm input/output cable, power cable, microphone/line input cable, audio/monitor output cable>



IMPORTANT:

- How to wind the supplied waterproof tape
- Also waterproof the Ⓘ 2P power cable (accessory), Ⓗ 4P alarm cable (accessory), and external connections in the same way.
- Stretch the tape to approx. twice its length (see the illustration) and wind it around the cable. Insufficient tape stretch causes insufficient waterproofing.
- To prevent the LAN cable hook from coming loose easily, fit the Ⓚ LAN connector cover (accessory) onto the pigtail cable as illustrated, and then slide it in the direction indicated by the arrow.
- The connector of the LAN connector used with this camera must meet the following restrictions. Height when inserted (From bottom to hook.): Max. 16 mm {5/8 inches} Connector width: Max. 14 mm {9/16 inches}
- To install this product outdoors, be sure to waterproof the cables. Waterproof grade (IEC IP66 or equivalent) is applied to this product only when it is installed correctly as described in these operating instructions and appropriate waterproof treatment is applied. The internal parts of Ⓑ base bracket (accessory) are not waterproofed.



Connect the alarm input/output cable



<Ratings>

- ALARM IN1 (DAY/NIGHT IN), 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, DAY/NIGHT OUT
- Output specification: Open collector output (maximum applied voltage: 20 V DC)
- Open: 4 V - 5 V DC by internal pull-up
- Close: Output voltage 1 V DC or less (maximum drive current: 50 mA)
- * The default of EXT I/O terminals is "OFF".

IMPORTANT:

- Be sure to use the Ⓗ 4P alarm cable (accessory) provided with this product.
 - Install external devices so that they do not exceed the ratings above.
 - When using the external I/O terminals as the output terminals, ensure they do not cause signal collision with external signals.
- Note:**
- 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 external I/O terminal 2 and 3 (ALARM IN2, 3) settings ("Off", "Alarm input", "Alarm output", "AUX output" or "DAY/NIGHT switching output").

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).

Power cable	12 V DC
Red	Positive
Black	Negative

Connect the output cable of the AC adaptor to the Ⓘ 2P power cable (accessory).

IMPORTANT:

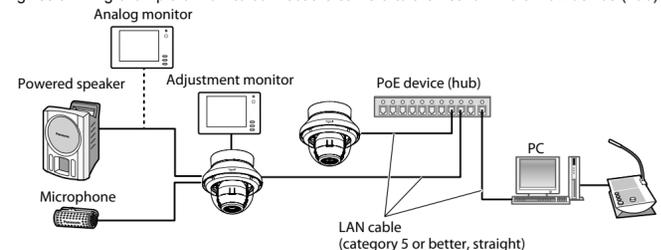
- Use 12 V DC power supply that is insulated from the commercial AC power.
- Be sure to use the Ⓘ 2P power cable (accessory) provided with this product.
- Be sure to fully insert the Ⓘ 2P power cable (accessory) into the 12 V DC power supply terminal. Otherwise, it may damage the camera or cause malfunction.
- 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.

Microphone/line input cable

- Connect a stereo mini plug (ø3.5 mm {1/8 inches}).
- 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
- *Recommended sensitivity of microphone: -48 dB ±3 dB (0 dB=1 V/Pa, 1 kHz)
- *Input level for the line input: Approx. -10 dBV

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).



<Required cable>

- LAN cable (category 5 or better, straight)
- Use a LAN cable (category 5 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.

Preparations

There are 3 methods to install the camera to a ceiling or wall as described below. Prepare the required parts for each installation method before starting the installation. The following are the requirements for the various installation methods.

Installation method	Recommended screw	Minimum pull-out strength
[1] Mount the camera onto the ceiling or wall using the Ⓑ base bracket (accessory) (when conduits are used for wiring, or when there is no space available for wiring in the ceiling or the wall). ¹	M4 screws x 4	539 N (121 lbf)/1 pc.
[2] Mount the camera on the two-gang junction box using the Ⓐ attachment plate (accessory).	M4 screws x 4	539 N (121 lbf)/1 pc.
[3] Directly mount the camera onto the ceiling or wall using the attachment plate (when wiring can be installed in the ceiling or wall).	M4 screws x 4	539 N (121 lbf)/1 pc.

*1 When securing the attachment plate to the base bracket, use the Ⓒ Fixing screws for attachment plate (accessory) (M4 x 8 mm {5/16 inches})

Installation

The installation tasks are explained using 3 steps.

Step1 Fixing the brackets

Step2 Mount the camera to the attachment plate

Step3 Adjustment

Step1 Fixing the brackets [1]

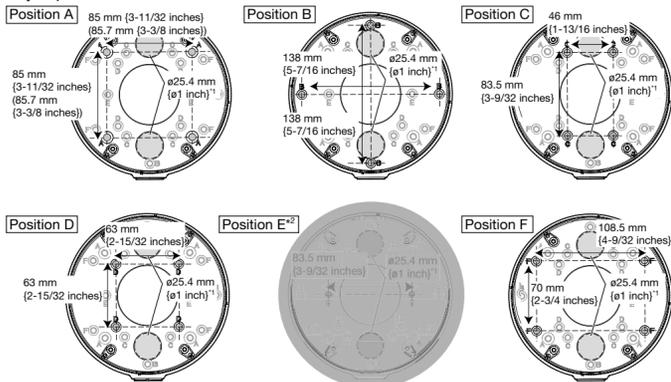
IMPORTANT:

- Procure 4 screws (M4) to secure the (A) attachment plate (accessory) or (B) base bracket (accessory) to a ceiling or a wall.
- When mounting the camera on a concrete ceiling, use an AY plug bolt (M4) for securing. (Recommended tightening torque: 1.6 N·m {1.18 lbf·ft})
- Select screws according to the material of the ceiling or wall 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.
- If open wiring is conducted, be sure to use conduits and run the cables inside the conduit to protect the cables from direct sunlight.
- Installation work shall be such that there is no exposure to water into the architecture through the conduits having been joined.

[1] Mount the camera to a ceiling or a wall using base bracket

<Mounting the base bracket>

The (B) base bracket (accessory) can be fixed in any of the following 5 screwing positions according to ceiling and wall conditions. Match the hole used when installing the camera to any of positions A to F.



*1 The wiring hole diameter is 25.4 mm {1 inch}. Select any of the 2 base bracket fixture holes of (E) template B (for the base bracket, accessory) when installing the base bracket.

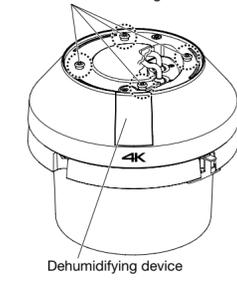
*2 When installing the WV-SFV781L, do not use Position E.

* For safety, a safety wire must be secured to a wall or ceiling. Refer to the "Securing a safety wire" leaflet for further information.

Step2 Mount the camera to the attachment plate

① Check the position of attachment mounting screws on the bottom side of the camera.

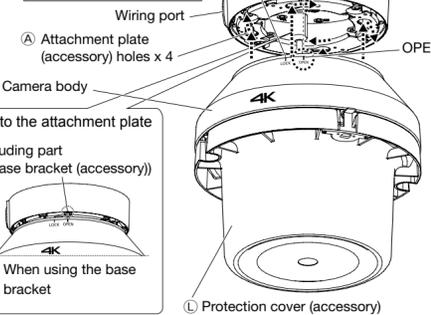
Attachment mounting screws x 4



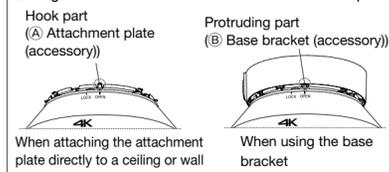
② Follow the instructions in "Making connections" to connect cables to the camera, then carry out waterproof treatment referring to "Waterproof Treatment for the Cable Joint Sections".

③ Align the 4 attachment mounting screws at the bottom of the camera with the holes in the (A) attachment plate (accessory), and mount the camera. You can adjust the mounting direction of the camera in 90° increments. Make sure to hold both the camera body and protection cover when attaching the camera to the bracket.

Rotate the camera approximately 15° so that the LOCK mark is aligned with the protruding part.



■ Image of the camera inserted into the attachment plate

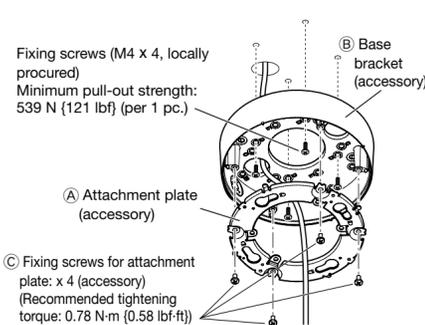


Note:

- After connecting the cables to the camera, align the OPEN mark on the camera body side panel with the protruding part of the (B) base bracket (accessory), insert 4 attachment mounting screws into the attachment plate, rotate the camera approximately 15° clockwise when looking up at it as illustrated, and move the LOCK mark toward the protruding part of the base bracket to temporarily secure the camera. (When directly mounting the attachment plate to a ceiling or wall, align the OPEN mark with the hook on the attachment plate.)

<Making holes and wiring from the back side of a ceiling or wall>

- Mount the (B) base bracket (accessory) to a ceiling or wall using 4 fixing screws (M4, locally procured). Refer to the installation example on the right and pass the wiring through the base bracket.
- Secure (A) attachment plate (accessory) to base bracket using 4 (C) attachment fixing screws (accessory). (Recommended tightening torque: 0.78 N·m {0.58 lbf·ft})



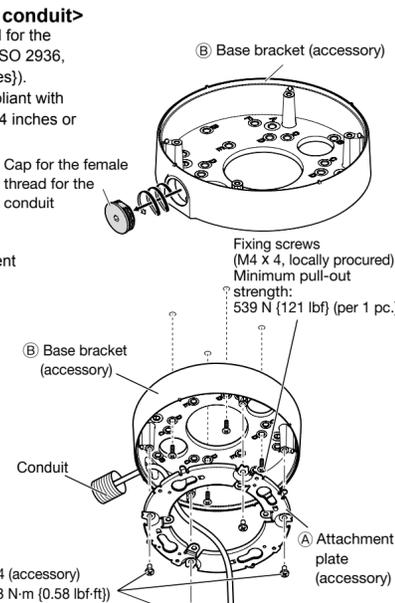
<Wiring using a ceiling or wall conduit>

① Remove the cap for the female thread for the conduit by using a hexagon wrench (ISO 2936, width across flats S=5 mm {3/16 inches}). The female thread for conduit is compliant with ANSI NPSM (parallel pipe threads) 3/4 inches or G3/4 of ISO 228-1.

* When making holes and wiring from a ceiling or wall, do not remove the cap for the female thread for the conduit.

② Attach the base bracket and attachment plate to a ceiling or wall.

- Mount the base bracket to a ceiling or wall using 4 fixing screws (M4, locally procured). Refer to the installation example on the right and pass the wiring through the base bracket.
- Secure attachment plate to base bracket using 4 attachment fixing screws. (Recommended tightening torque: 0.78 N·m {0.58 lbf·ft})

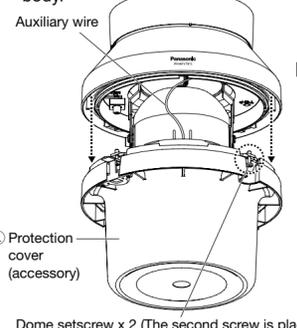


When installing using an attachment plate, refer to "A Fixing the brackets [2][3]" in the bottom right of this page.

④ Loosen the 2 dome fixing screws and remove the (L) Protection cover (accessory) from the camera with it still attached to the dome cover.

* The dome cover is temporarily fixed to the camera using 2 dome fixing screws at factory shipment. The temporarily fixed dome fixing screws are the screws not attached to the protection cover auxiliary part.

⑤ Remove the protective packaging and fixing tape from the camera body.



Dome setscrew x 2 (The second screw is placed at the opposing side of this screw.)

Note: Loosen the 2 dome fixing screws using the (F) bit (accessory).

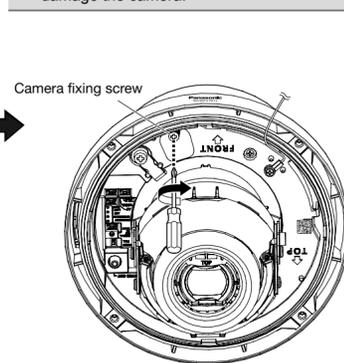
IMPORTANT:

- Disconnect the 12 V DC power source and PoE power source to prevent power from being supplied during mounting work.
- The dome cover protected by the (L) Protection cover (accessory) is connected to the camera body using the auxiliary wire. Do not disconnect it.
- For installations on the wall, to prevent water from accumulating on the surface of the dehumidifying device, install the camera so that the dehumidifying device does not face up. If water accumulates on the surface of the dehumidifying device, it cannot function properly.

⑥ Secure the camera using the camera fixing screws. (Recommended tightening torque: 0.78 N·m {0.58 lbf·ft})

IMPORTANT:

- Securely tighten the camera fixing screws. Failure to observe this may cause the camera to fall or water to seep in, which may cause a personal injury or damage the camera.



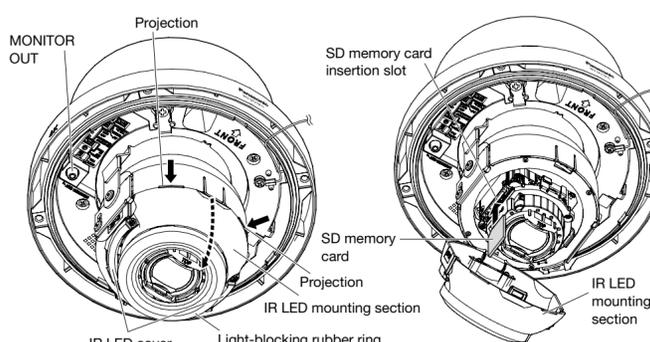
Step3 Adjustment

① Hook a finger on either one of the 2 projections (parts shown by the arrow below) at the head of the camera and open the IR LED mounting section of the camera.

- When opening the IR LED mounting section, be careful not to touch the light-blocking rubber, IR LED cover, or camera lens section. Fingerprints, etc. may cause the image quality to deteriorate.
- The IR LED mounting section can be temporarily secured by opening it to its fullest extent.

② Connect the monitor for adjustment to the MONITOR OUT terminal with an RCA pin cable (locally procured).

- The NTSC monitor for adjustment can be connected in the default settings of the camera.



Note:

- 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.
- When the replacement of the SD memory card is complete, press the SD ON/OFF button (for 1 second or less), and check that the SD MOUNT indicator lights up.
- If you do not press the SD ON/OFF button after replacing the SD memory card, the SD MOUNT indicator is automatically lit approximately 5 minutes later.

③ Turn on the camera. Make sure that the LINK indicator lights up orange, and the ACT indicator is blinking green. (Refer to the descriptions in "Major operating controls" for more information about the indicators.)

④ When using the SD memory card, follow the procedure below to mount it.

- Turn the label side of the SD memory card to face the lens side of the camera, and line it up with the SD memory card insertion slot.
- Insert the SD memory card into the socket, and push it in until a click sound is heard.

⑤ Loosen the pan table fixing screw, tilt table fixing screw, and yaw fixing screw to adjust the angle of the camera, and then adjust the viewing angle by pressing the WIDE or TELE button.

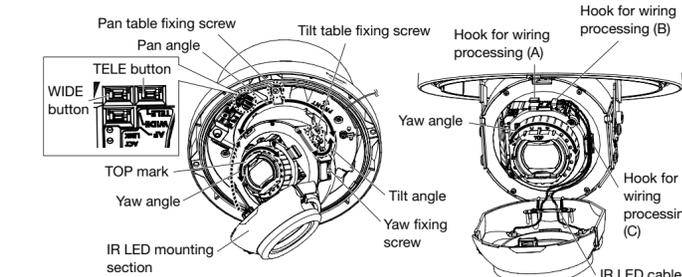
Pan angle: ±180°
Tilt angle: 0 to 85°
Yaw angle: -45° (left) to +300° (right)

- After completing the adjustment, process the IR LED cable using the hook for wiring processing (A) or (C). Do not remove the IR LED cable from the hook for wiring processing (B) when adjusting the yaw angle.

⑥ After adjusting the viewing angle, tighten each fixing screw.

- Pan table fixing screw (Recommended tightening torque: 0.59 N·m {0.44 lbf·ft})
- Tilt table fixing screw (Recommended tightening torque: 0.59 N·m {0.44 lbf·ft})
- Yaw fixing screw should be tightened firmly by hand.

⑦ Disconnect the monitor for adjustment from the MONITOR OUT terminal and finally close the IR LED mounting section.

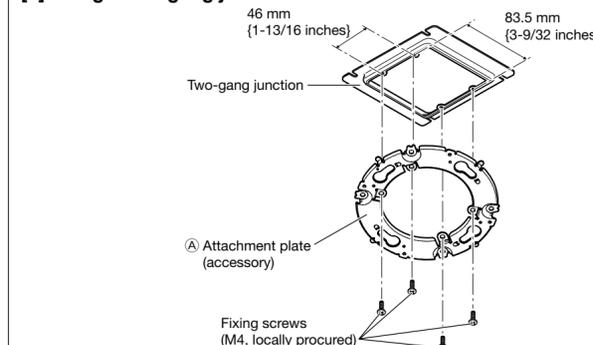


Note:

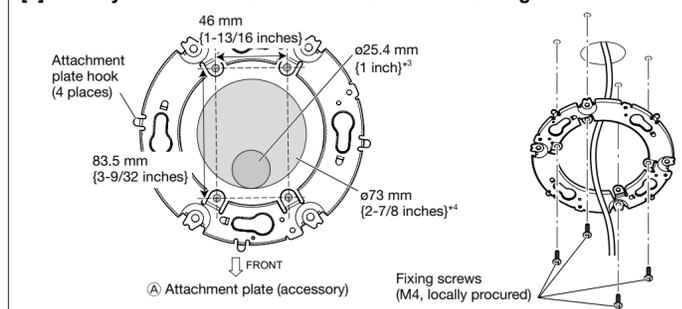
- When the screen size is adjusted using the WIDE⇄TELE button, the camera's focus is automatically adjusted with the basic focus adjustment function each time the WIDE button or TELE button is pressed.
- Note that the camera silhouette appears depending on the adjustable angle or zoom ratio.
- When mounting the camera, adjust the pan, tilt, and yaw angles so that the TOP mark of the lens always comes to the top side.
- When the camera is installed on a wall, the image is rotated 180° upside down in the default settings. To correct the way the image is displayed, rotate the PAN angle 180° clockwise, or select "On" for "Upside-down" from the setup menu. Refer to the "Operating Instructions" (included in the CD-ROM) for information on how to set "Upside-down" in the setup menu.
- Take care so that the IR LED cable does not get caught when closing the IR LED mounting section.
- The pan table fixing screw, tilt table fixing screw, and yaw fixing screw may fall off if they are loosened excessively.
- When using the camera at a position where the camera lens is nearly horizontal, part of an image may appear to be overlapped. In this case, decrease the vertical position angle or adjust the zoom ratio.

A Fixing the brackets [2][3]

[2] Using a two-gang junction box



[3] Directly attach the attachment bracket to the ceiling or wall



*3 When the camera attachment direction has been determined before installation Match the FRONT direction (the direction of the FRONT direction marker when the camera is installed) of (D) template A to the direction you want the camera to face and open a ø25.4 mm (1 inch)^{*3} hole before starting the installation.

*4 When the camera attachment direction has not been determined before installation or when changing the camera direction after installation To change the direction the camera faces, open a ø73 mm (2-7/8 inches)^{*4} hole. The camera mounting direction can be changed in 90° increments. Information on installing or adjusting the camera is continued from Step 2.

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