::i-PRO

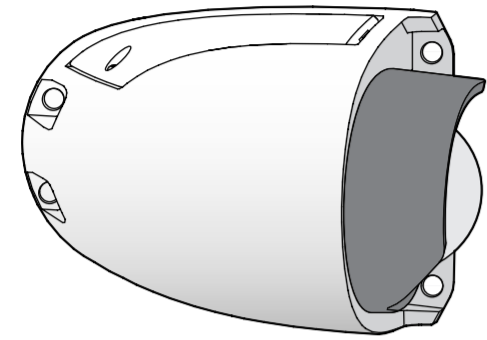## Installation Guide
Included Installation Instructions

Network Camera
Model No. WV-SBV131M/WV-SBV111M

(This illustration represents WV-SBV131M)

SDXC™

- 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.
- This manual describes how to install the network camera using model WV-SBV131M as an example.

Standard accessories

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

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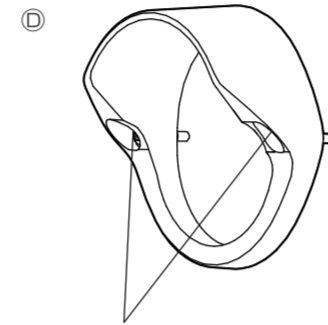*2 This label may be required for network management. The network administrator shall retain the code label.

The following parts are used during installation procedures.
Ⓐ Lens adjuster .... 1 pc.
Ⓑ Template .... 1 pc.
Ⓒ Bit.. 1 pc.
　(Hex wrench,
　screw size 6.35 mm {1/4 inches} T10)
Ⓓ Dome cover guard .... 1 pc.

Ⓐ
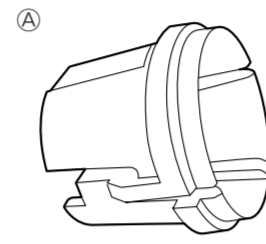
Ⓒ
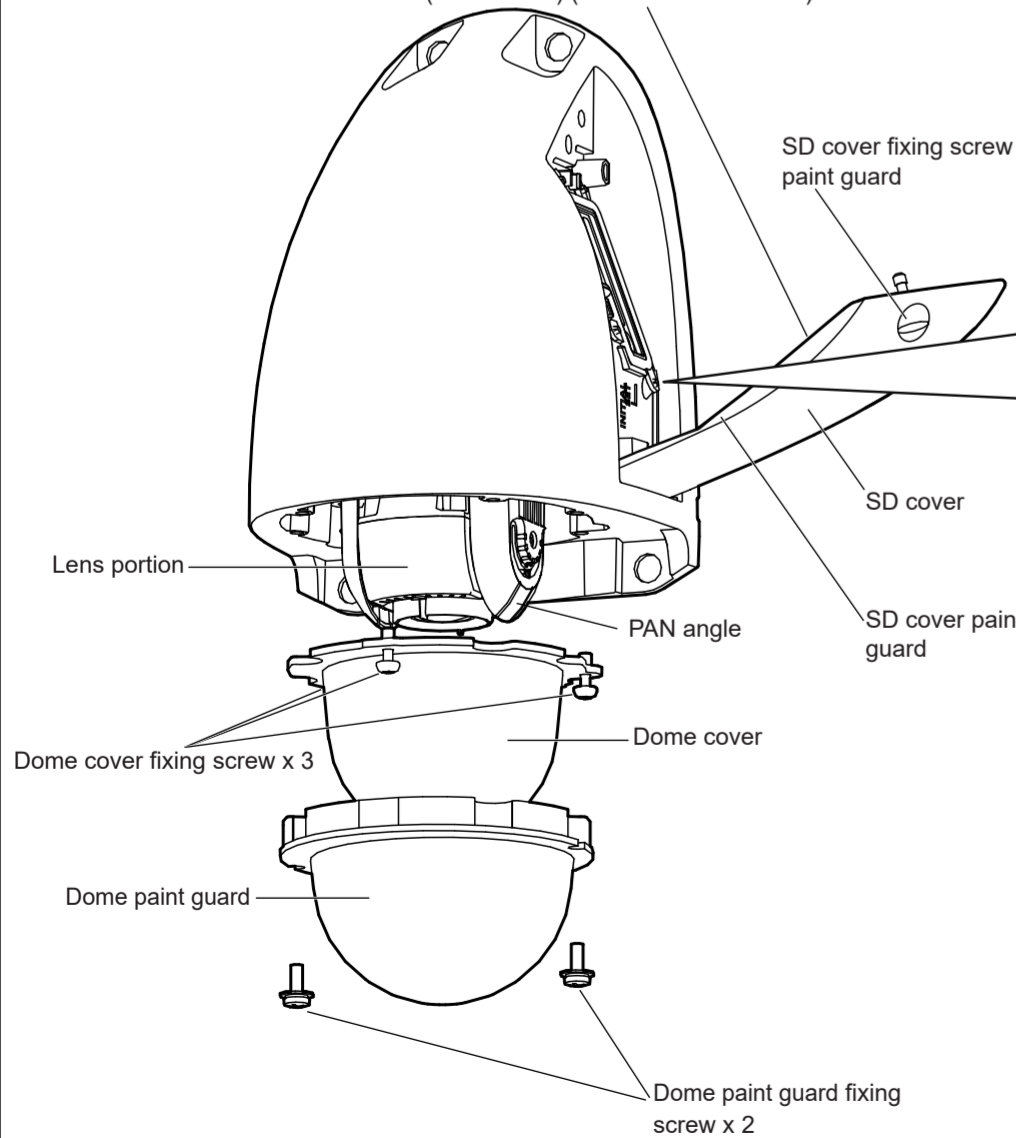Hex wrench,
screw size 6.35 mm
{1/4 inches} T10

Ⓓ
Dome cover guard
fixing screw x 2

Parts and functions

The component names of the camera are as follows. Refer to the illustration when installing or adjusting the camera.
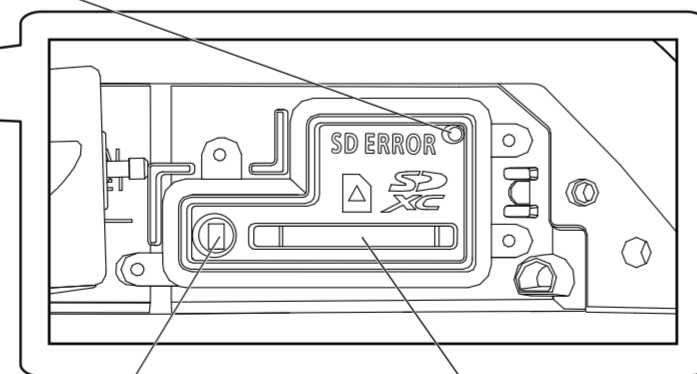
Two-dimensional barcode (Data Matrix) (backside of SD cover): To our website*1

SD cover fixing screw paint guard

SD cover

Lens portion

PAN angle

SD cover paint guard

Dome cover

Dome cover fixing screw x 3

Dome paint guard

Dome paint guard fixing screw x 2

SD memory*2 card slot

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

*1 Depending on the scanning application used, the Data Matrix may not be able to be read correctly. In this case, access the site by directly entering the following URL.
https://i-pro.com/global/en/surveillance/training_support/support/support_information/qr_sp_select

SD ERROR indicator
- The SD memory card setting is set to "Not use" — Lights off
- When the set is being started — Lights red
- When an SD memory card is recognized normally — Lights red → Lights off
- When the SD memory card slot is not used or an abnormality is detected in SD memory card after the camera has started — Lights red → Stays red

INITIAL SET button
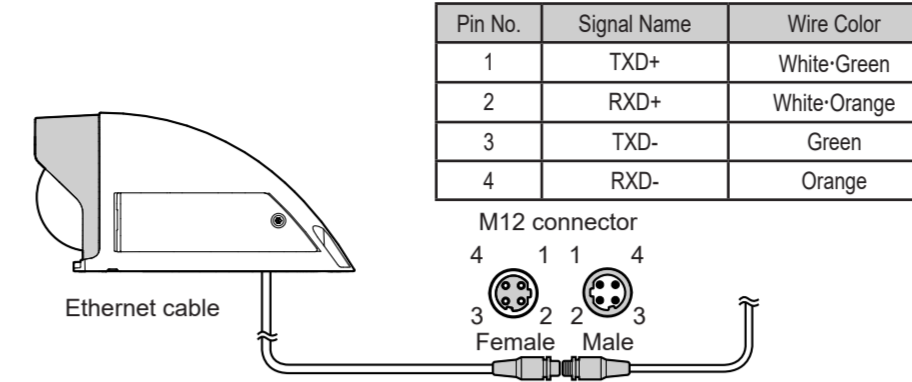- How to initialize the camera
Follow the steps below to initialize the network camera.
①Turn off the power of the camera.(Disconnect the Ethernet cable from the camera.)
②Turn on the power of the camera while holding down the INITIAL SET button, and then keep holding down the button for 10 seconds or more. In about 2 minutes later, 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.

Making connections

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

Pin No.	Signal Name	Wire Color
1	TXD+	White·Green
2	RXD+	White·Orange
3	TXD-	Green
4	RXD-	Orange

M12 connector

4 1 4
3 2 3
Female Male

Ethernet cable

<PoE device>
- Make sure that the PoE device in use is compliant with IEEE802.3af standard.
- Use a switching hub or a router which is compliant with 10BASE-T/100BASE-TX.
- Use a switching hub or router that supports on-vehicle use while the on-vehicle camera is in use.

<Ethernet cable>
- Use M12-RJ45 or M12-M12 Ethernet cable (category 5e or better, straight).
- The maximum cable length is 100 m {328 feet}.

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

PoE device (hub)

Ethernet cable (category 5e or better, straight)

Ethernet cable (category 5e or better, straight)

Ethernet cable (category 5e or better, straight)

PC
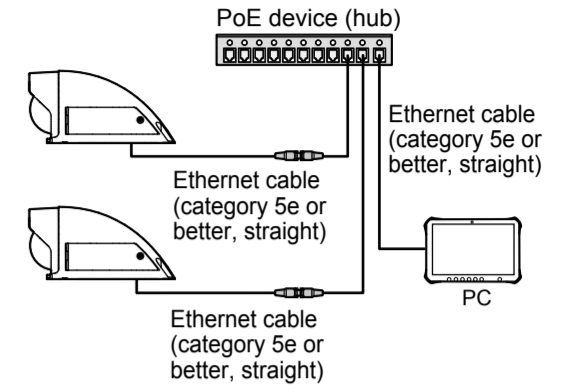
Installation

The installation tasks are explained using 4 steps.

| Step1 Preparations	Step2 Fixing the camera	Step3 Setting the camera	Step4 Adjusting the camera
Make sure all items are prepared before beginning installation.	Connect the cable to the camera and secure it onto the mounting surface.	Setting the camera so that it can be accessed from a PC.	Adjust the angle of view and focus, and then attach the dome cover and dome guard.

Step1 Preparations

[1] Obtain camera fixing screws or anchor bolts
Before installing the camera to the installation surface, prepare the screws, bolt-nuts, or anchor bolts listed below.
Recommended screw: M 5 × 4 screws
Minimum pull-out strength: 539 N (121 lbf)

[2] Check the installation surface and prepare in advance
Check if the installation surface is flat.
- Mount the camera to a flat installation surface.
- In order to assure that the camera is safely mounted, prepare a fixing bracket if the surface is curved. (Fixing bracket: locally procured metal parts can be mounted between the installation surface and the camera to keep the installation surface flat)

Camera body
Fixing bracket
Installation surface
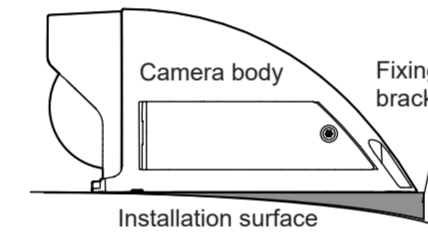
[3] Painting the camera
If you want to paint the camera, please paint it before mounting it onto the installation surface.

Note:
- Remove the dome paint guard, SD paint guard, and SD cover fixing screw paint guard if you want the use the camera in its original light gray factory color.
- The dome cover guard (Ⓓ:accessory) is provided in black in order to suppress the diffused reflection of light. Do not paint the dome cover guard.

IMPORTANT:
- Be sure to treat the camera with a primer before painting in order to improve the adhesion of the coating.
- Use spray paint when painting this camera. Because the camera contains precision parts, it cannot be painted with a baked enamel finish or dip coating.
- Do not remove the dome paint guard, SD cover paint guard, SD cover fixing screw paint guard and the plastic cover that protects the Ethernet cable until after the paint has finished drying.
- Do not paint the bottom of the camera (where the indication label and moisture protection sheet are located).
- Refer to the Important Information manual for more information about painting.

**[4] Remove the paint guard from the SD cover of the camera**
- Remove the SD cover fixing screw paint guard from the SD cover, then loosen the screws to open the SD cover by the bit (Ⓒ:accessory).
- Remove the SD cover paint guard attached to the inside of the SD cover.

SD·cover fixing screw
SD cover fixing screw paint guard
SD cover paint guard
SD cover
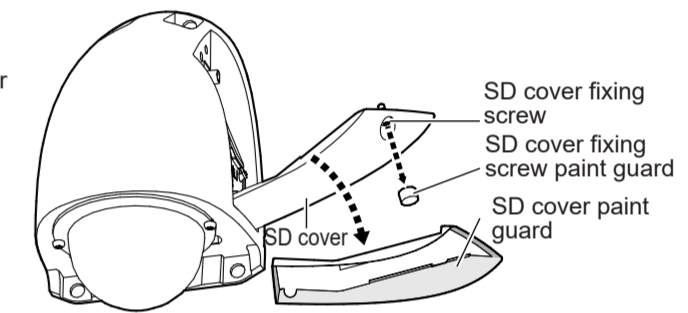
[5] Remove the plastic cover from the Ethernet cable

[6] Insert the SD memory card as shown in the illustration if necessary
- Insert the SD memory card into the memory card slot with the label side pointing in the opposite direction from the bottom of the camera.
- Close the SD cover by the bit. (Recommended tightening torque: 0.8 N·m {0.59 lbf·ft})

SD memory card slot
Label side
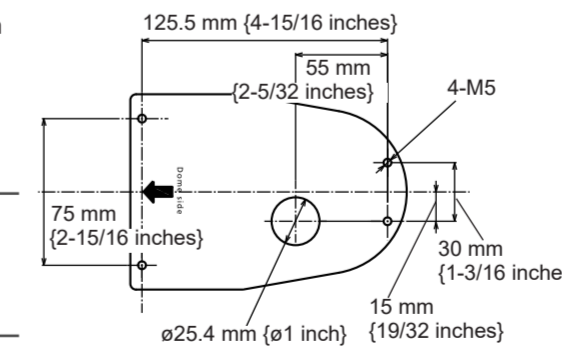SD memory card
SD cover SD cover fixing screw
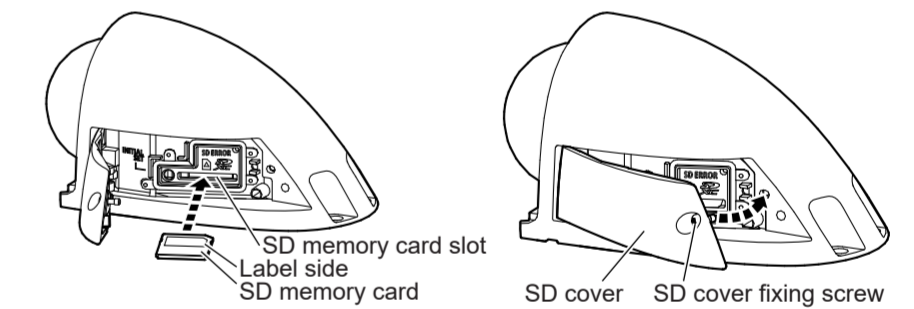
■ Dismount the SD memory card
- You can directly dismount the SD memory card if the camera is not turned on.
- If the camera is turned on, go to the "SD memory card" tab in the settings menu and set "SD memory card" to "Not use" before removing the SD memory card. For further information on the settings, refer to the Operating Instructions in the provided CD-ROM.

Step2 Fixing the camera <1>

[1] Opening holes for fixing and wiring on the installation surface
- Use the template (Ⓑ:accessory) to open the camera fixing holes (4 holes).
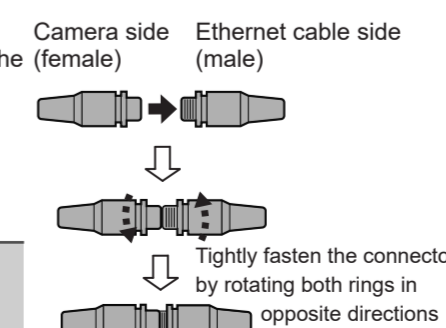- Also open the wiring holes to ø25.4 mm {ø1 inch}.

125.5 mm {4-15/16 inches}
55 mm {2-5/32 inches}
4-M5
75 mm {2-15/16 inches}
30 mm {1-3/16 inches}
15 mm {19/32 inches}
ø25.4 mm {ø1 inch}

Note:
- Select the diameter and depth of the hole based on the camera fixing screws (locally procured).

[2] Connect the M12 connector Ethernet cable
①Turn the system's (device) power off and prepare the peripheral equipment and necessary cables.
②Connect the M12 connector Ethernet cable to the camera by following the instructions in "Making connections". The connection order for the M12 connector is shown in the illustration on the right.
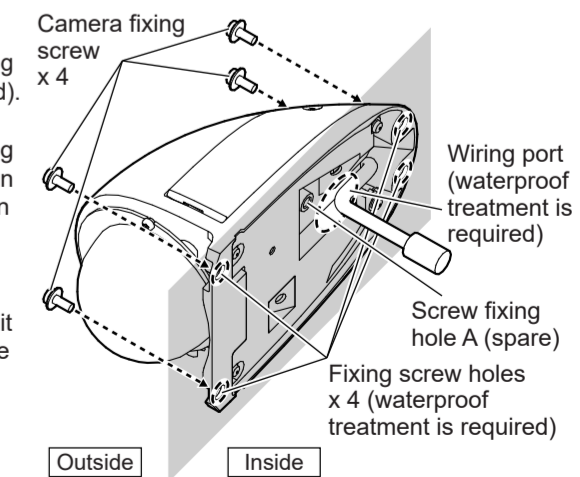
Camera side (female)
Ethernet cable side (male)

Tightly fasten the connector by rotating both rings in opposite directions

IMPORTANT:
- Firmly tighten the M12 connector screw.

[3] Attaching the camera to the installation surface
①Fix the wiring port through which the Ethernet cable passes and the camera fixing screw hole so that they become waterproof.
②Firmly attach the camera to the installation surface with the camera fixing screws (M 5 x 4 screws: locally procured).
- If the installation surface is curved, tighten the 4 fixing screws with the fixing bracket (locally procured) sandwiched in between the camera and the installation surface.
- If necessary, attach the camera by placing a safety wire (locally procured) through the wiring port and connecting it to the inside, using the screw fixing hole A (spare hole), located on the rear side of the camera.
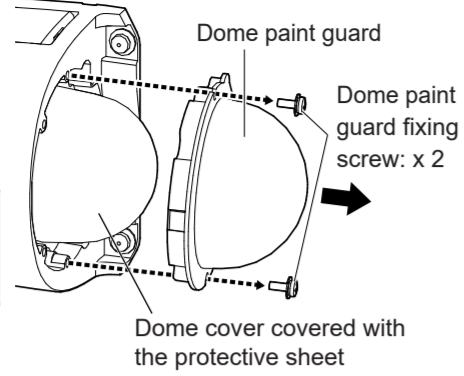
Camera fixing screw x 4
Wiring port (waterproof treatment is required)
Screw fixing hole A (spare)
Fixing screw holes x 4 (waterproof treatment is required)
Outside Inside

IMPORTANT:
- Recommended screws: M 5 x 4 screws
  Minimum pull-out strength: 539 N (121 lbf)
- Use M5 x 8 mm screws when attaching the safety wire (locally procured) using the screw fixing hole A (spare hole).
- Attach the camera so that the fixing screws don't become loose.

Step2 Fixing the camera <2>

[4] Removing the dome paint guard from the camera

Remove the 2 dome paint guard fixing screws that secure the dome paint guard to the camera, then remove the dome paint guard from the camera.
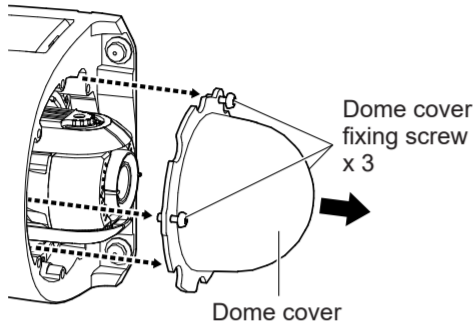
IMPORTANT:
- Do not remove the protective sheet from the dome cover.

Dome paint guard

Dome paint guard fixing screw: x 2

Dome cover covered with the protective sheet

[5] Removing the dome cover

Loosen the 3 dome cover fixing screws by bit (Ⓒ:accessory) and remove the dome cover from the camera.

IMPORTANT:
- When loosening the dome cover fixing screws, support the dome cover with your hand.
- Make sure to always support the dome cover from the top of the dome cover protection sheet.
  Directly touching the dome cover causes the surface to become dirty, which can lead to image quality degradation.

Dome cover fixing screw x 3

Dome cover

[6] Temporarily adjusting the view angle by adjusting the horizontal (PAN), vertical (TILT) and image rotation (YAW).

The recommended values for temporary adjustment are as follows.

SBV131M

Installation location	Installation direction	Aspect ratio	Recommended value
Side	Sideways (on the right of the traveling direction)	4:3	PAN 65 ° TILT 40 ° YAW -160 °
		16:9	PAN 75 ° TILT 40 ° YAW -170 °
	Sideways (on the left of the traveling direction)	4:3	PAN 65 ° TILT -40 ° YAW 20 °
		16:9	PAN 75 ° TILT -40 ° YAW 10 °
Rear	Portrait	4:3	PAN 0 ° TILT 40 ° YAW 0 °
		16:9	PAN 0 ° TILT 35 ° YAW 0 °

SBV111M

Installation location	Installation direction	Aspect ratio	Recommended value
Side	Sideways (on the right of the traveling direction)	4:3	PAN 75 ° TILT 40 ° YAW -160 °
	Sideways (on the left of the traveling direction)	4:3	PAN 75 ° TILT -40 ° YAW 20 °
Rear	Portrait	4:3	PAN 0 ° TILT 45 ° YAW 0 °

■ **An example showing the WV-SBV131M camera attached to the right of the traveling direction setting in sideways (aspect ratio 4: 3)**
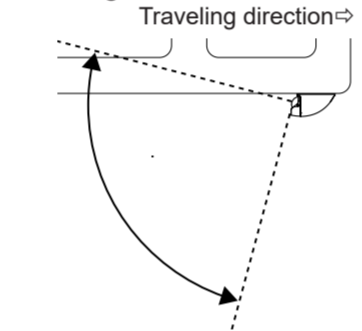
Recommended value: PAN 65 ° TILT 40 ° YAW -160 °
- An example showing the camera attached on the right side of a bus in traveling direction is shown below
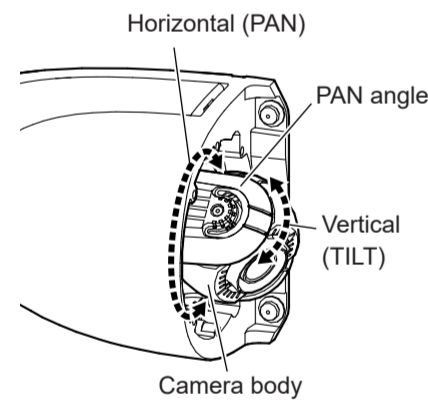
<Viewing angle of the camera from the side of the bus>
Traveling direction⇨

<Viewing angle of the camera looking down over the bus>
Traveling direction⇨

Step3 Setting the camera

Download and start [IP Setting Software] <Control No.: C0123> or [i-PRO Configuration Tool (iCT)] <Control No.: C0133> on our technical information support site (https://i-pro.com/global/en/surveillance/training_support/support/technical_information), and connect to the network.
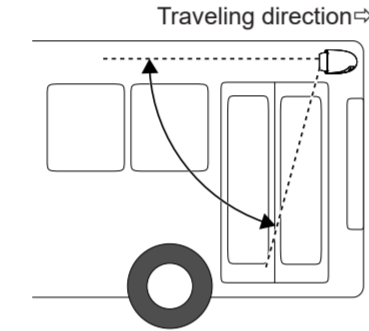
Step2 Fixing the camera <3>

① Adjusting the horizontal (PAN) and vertical (TILT).

Horizontal (PAN)

PAN angle

Vertical (TILT)

Camera body

Note:
- You can smoothly change the horizontal (PAN) by grasping the pan angle with your fingers and rotating it while applying some slight pressure.

IMPORTANT:
- Please do not touch the lens with your hand during installation.

■ **Adjusting the horizontal (PAN)**

You can adjust the rotation per 5 ° by grasping the left and right side of the lens part with your fingers and rotating it (scale by 30 °).
- Horizontal (PAN) angle: ±170 °

Note:
- The "Projection part of the lens" in the upper right illustration will be shown on the top side of the screen.

Scale

0 °

-170 ° +170 °

Projection part of the lens
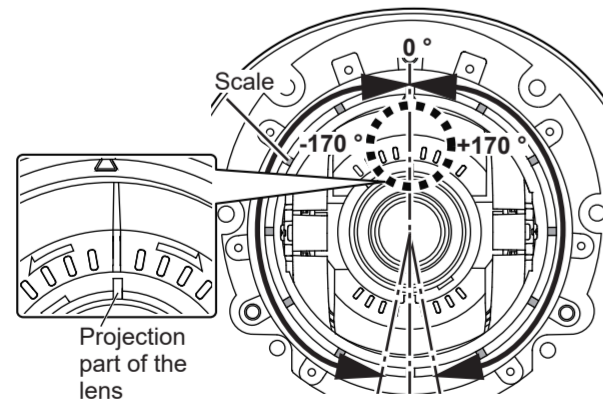
■ **Adjusting the vertical (TILT)**

You can adjust the rotation per 5 ° by grasping the left and right side of the camera part with your fingers and rotating it (scale by 30 °).
- Vertical (TILT) angle: ±90 °

Scale

+90 °

0 °

-90 °
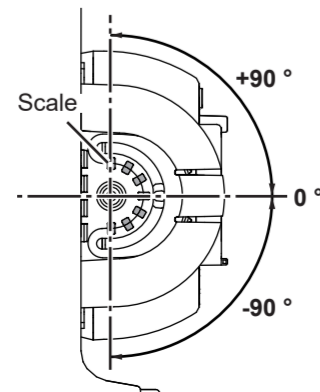
② Adjusting the image rotation (YAW).

When adjusting the image rotation (YAW), attach the thick part of the lens adjuster (Ⓐ:accessory) to the lens part, as shown in the illustration, and adjust the image rotation (YAW) while checking the computer screen.

Pan angle (Both side)

Projection part of the lens

Slit

Lens section

Thick part of the lens adjuster

Lens adjuster (Ⓐ:accessory)

Note:
- Attach the lens adjuster so that the slit of the adjuster aligns with the projection part of the lens.
- You can smoothly change the image rotation (YAW) by grasping the pan angle with your fingers and rotating it while applying some slight pressure.
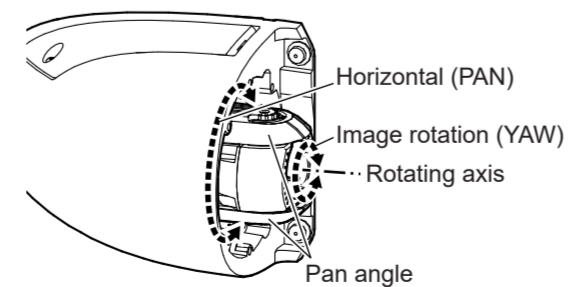
Adjust by rotating per 5 ° using the lens adjuster (Ⓐ:accessory) (scale by 10 °).
- image rotation (YAW) angle: ±170 °

Scale

0 °

-170 ° +170 °
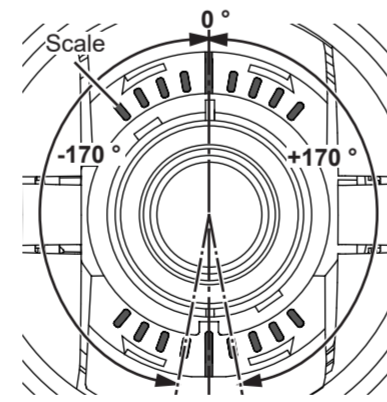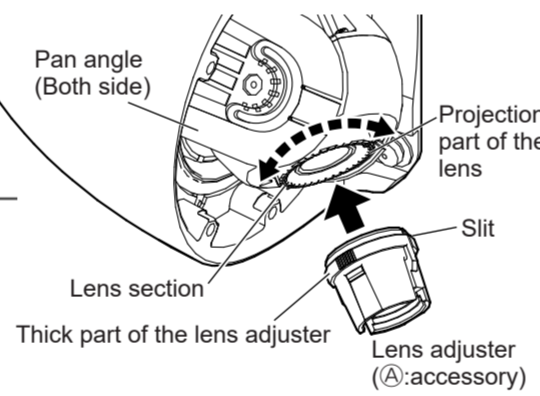
Note:
- If you line up the image rotation (YAW) on the same axis as the rotating axis of the horizontal (PAN), they will end up rotating together.
  Adjust it while holding the pan angle with your fingers to prevent it from rotating horizontally (PAN).

Horizontal (PAN)

Image rotation (YAW)

Rotating axis

Pan angle

③ Turn on the PoE power supply device to start the camera.

Step4 Adjusting the camera

[1] Check the screen, and if necessary, refer to Step2 Fixing the camera <3>, when adjusting the angle of the camera.
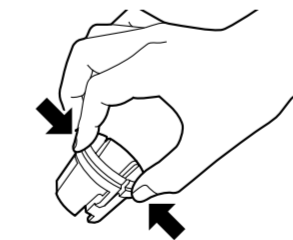
[2] Adjust the focus of the lens by rotating the lens adjuster (Ⓐ:accessory) which is attached to the focus ring of the lens.

Attach the thin part of the lens adjuster when adjusting the focus of the lens.

Focus ring

Lens adjuster (Ⓐ:accessory)

Thin part of the lens adjuster
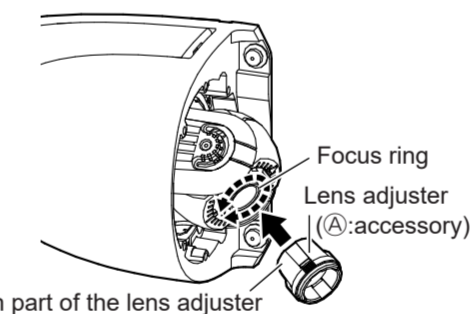
Note:
- Depending on the horizontal angle/vertical angle, there are times when the camera is shown in the top, bottom, left or right side of the screen.
- When attaching/detaching the Lens adjuster, hold the thick Lens adjuster as shown in the illustration to the right to open up the parts that are connected to the lens part.

- Because the Lens adjuster is used to adjust the focus, only the middle of the screen can be viewed.
  Enlarge the screen size if the image in the middle is too small to properly adjust.
- Use Extra Zoom when enlarging the screen and adjusting the angle. You can adjust the view angle without deteriorating the image quality. Refer to the Operating Instructions manual for more information about the Extra Zoom setup method.
- Keep the lens adjuster even after the installation is complete, it will be needed for adjustments.

[3]Reattach the previously removed dome cover to the camera with the 3 fixing screws. (Recommended tightening torque: 0.4 N·m {0.3 lbf·ft})

Dome cover fixing screw x 3

IMPORTANT:
- Make sure to always support the dome cover from the top of the dome cover protection sheet.
  Directly touching the dome cover can lead to image quality deterioration.
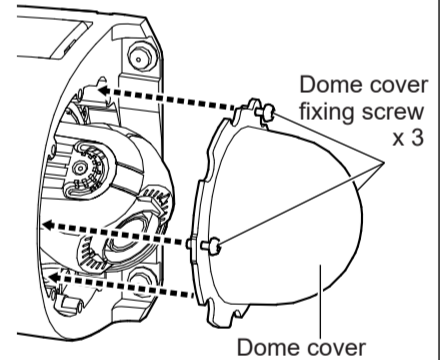
Dome cover

[4]Remove the dome cover protection sheet.

Note:
- After removing the protection sheet, avoid touching the surface of the dome cover.

[5]Attach the dome cover guard (Ⓓ:accessory) with 2 dome cover guard fixing screws. (Recommended tightening torque: 0.4 N·m {0.3 lbf·ft})

The attachment position of the dome guard cover can be adjusted.

Dome cover guard fixing screw x 2

Note:
- Choose an attachment position for the dome cover guard based on the camera's direction, so that the dome will not get damaged by car wash brushes or roadside trees. Rotate and attach the dome cover guard after you have decided on a position.
  There are 6 ways to attach the dome cover guard.

Dome cover guard (Ⓓ:accessory)

<Example of attaching the dome cover guard>

■ **When attaching the dome cover on the left and right side of the traveling direction**
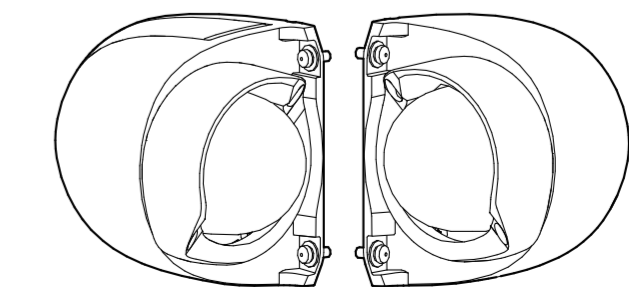
■ **When attaching the dome guard cover to the rear of the vehicle**
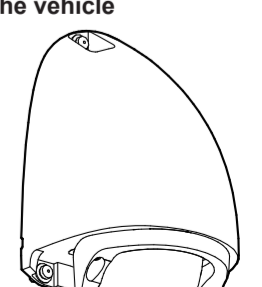
When removing the camera, follow the installation procedure in reverse order.