VCC-HD2300/HD2300P
VCC-HD2100/HD2100P

Chapter 1

Introduction

Features of This Camera
Specifications
Name and Function of Each Component
Connections
Lens Installation
Lens Adjustment
Viewing Firmware Version

Features of This Camera

Support of Network Operation

The camera supports network operation. By simply connecting a LAN cable to it, you can construct the most advanced network monitoring system. From the Web browser (Internet Explorer) installed on your PC, you can operate the camera via the network in an easy-to-use manner.

In addition, it is a PoE product that can be powered through a LAN cable, so you can install it in locations where there is no power outlet nearby.

High-Resolution and High-Quality Images

The camera has 4-megapixel CMOS sensor that produces clear images at ultra-high resolution.

The camera can deliver full HD H.264 video throughout the network. Connecting a high-definition monitor to your PC enables full high-definition video monitoring.

The camera supports both H.264 video and JPEG image compression formats, which you can choose from depending on the network environment.

A Variety of Functions in One Compact Body

The camera offers the focus assist function that supports focus adjustment at megapixel image resolution, allowing you to fine-tune the focus in optimal conditions in an easy manner.

The camera's motion sensor function can work in conjunction with any external alarm device, facilitating the construction of a high-level security system.

Highly Scalable Design

Installing associated software applications on your PC further extends the capabilities of your surveillance system.

Specifications

Camera

Image pickup device	1/3" CMOS sensor
Effective pixels	16:9 1920 (H) × 1080 (V), 4:3 2288 (H) × 1712 (V)
Lowest image illumination	50IRE: 1.0 lx (at F1.2, color mode, high gain) 50IRE: 0.06 lx (at F1.2, black-and-white mode, high gain)
Video S/N ratio	50dB (when AGC is “OFF”)
Lens mount	CS mount
Flange back adjustment	12.5±0.5 mm, electrical flange back adjustment (Focus assist function)
Day/Night function	Auto, color, black-and-white, alarm input switching ((VCC-HD2300P/VCC-HD2300 only))
White balance	Auto (ATW), one push (AWC), manual (R/B gain adjustable), indoor, outdoor, fluorescent
Backlight compensation	Multi-spot evaluative metering, center-weighted average metering, masking
Electronic sensitivity boosting	Auto (32× max) or Off
Electronic shutter	VCC-HD2300P/VCC-HD2100P: 1/25, 1/50, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 VCC-HD2300/VCC-2100: 1/30, 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 Long exposure shutter (1×, 2×, 4×, 8×, 16×, 32×)
Electronic iris	ON/OFF (Set [SHUTTER] to “EI”.)
Iris control	DC iris lens supported
Camera settings	Selectable between 2 camera setting patterns
AGC gain	Normal/Middle/High (Manual gain setting possible at Off)
Gamma correction	0.45, 1, Mode 1, Mode 2
Aperture compensation	On/Off (Correction level adjustable)
VIVID COLOR EFFECT	ON/OFF
DNR	ON/OFF
Mirror	H/V/HV/OFF
Privacy mask	On/Off, max. 8 mask patterns
Motion sensor	On (masking/detection area setting)/Off
Language selection	English, French, German, Spanish, Japanese

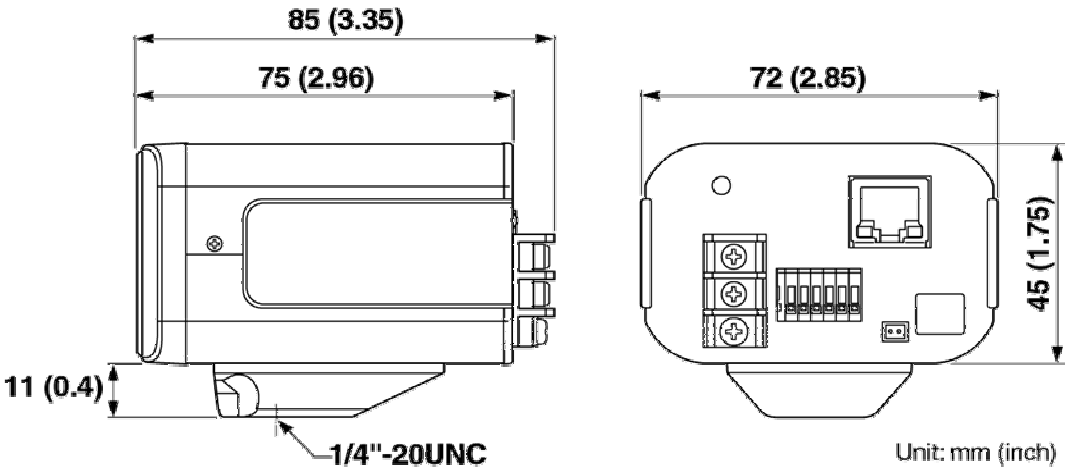
I/O

Video output	Composite output
LAN	10BASE-T/100BASE-TX (RJ-45 connector)
Alarm input	2 (NO/NC), also serve as Day/Night switching signal (VCC-HD2300P/VCC-HD2300 only)
Alarm output	2 (NO/NC, 16V, 150 mA, open collector)

Network

Image/video compression	H.264/JPEG
Video size (H.264)	(16:9) 1920×1080, 1280×720, 640×360, 320×180 (4:3) 1600×1200, 1280×960, 1024×768, 640×480, 320×240
Video size (JPEG)	(16:9)1920×1080, 1280×720, 1024×576, 640×360 (4:3) 2288×1712, 1600×1200, 1280×960, 1024×768, 800×600, 640×480, 320×240
Picture quality	QUALITY mode: BASIC, NORMAL, ENHANCED, FINE, SUPER FINE BITRATE mode: User-specified bit rate
Interface	10BASE-T/100BASE-TX
Protocol	TCP/IP, UDP, HTTP, HTTPS, SMTP, NTP, DHCP, FTP, DDNS, RTP, RTSP, RTCP
Simultaneous access	20
Security	BASIC authentication (ID/password), SSL, IP filtering

Others

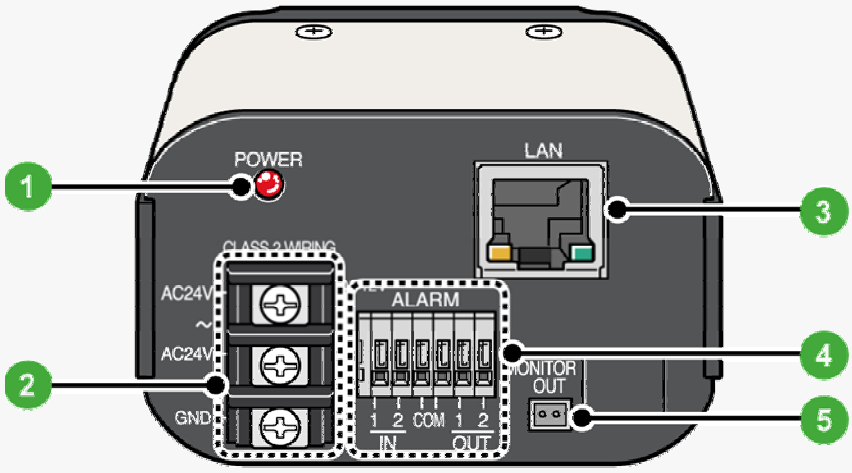
Operating ambient temperature/humidity	–10 to +50°C, 90% RH or less (no condensation)
Power source	12 to 15 VDC/24 VAC±10%, 50/60 Hz, PoE
Power consumption	4,6 W
Weight	220 g
Dimensions	

Accessories

1. Video cable
2. Cable holder for wiring
3. CD-ROM

Name and Function of Each Component

Rear Face



1 Power Indicator (POWER)

This indicator lights up when the camera is powered on.

The indicator blinks while the firmware is being updated.

2 24 VAC/12 VDC Power Terminals

Use these terminals to connect a 24 VAC or 12 VDC power supply. The power indicator lights up when the camera is powered on.
For details, refer to the “Basic Connections” section.

3 Network Socket (LAN, RJ-45)

Use this socket to connect the camera to your PC to enable network operation.
For details, refer to the “Basic Connections” section.

Right: Link access indicator (Green)
This indicator lights up approx. 3 seconds after power on, if a connection has been established between the camera and the network.
After that, it will blink when data are being transmitted via the network.

Left: Speed indicator (Orange)
The camera automatically detects the local network transmission speed (10BASE-T or 100BASE-TX).
This indicator lights up when 100BASE-TX data transmission is in progress; it goes out when 10BASE-T data transmission is in progress.

4 Control Terminals (6 push-lock pins)

For the detailed connection procedure, refer to the “Alarm Input/Output Terminal Connections” section.

1 Alarm input or Day/Night switching terminals (ALARM IN1/2)

These input terminals can be used for either of the following purposes:

Alarm input

Connecting an external switch, infrared sensor, or other device to these terminals enables the camera to detect alarm conditions such as the entry of an intruder.

Day/Night switching

Normally, switching the camera between the color and black-and-white video modes is automatically accomplished by the Day/Night function.

When used as Day/Night switching terminal, you can switch between color and black-and-white video modes using an external control signal.

(This function is supported only by VCC-HD2300P/VCC-HD2300)

Using network operation, under [DAY/NIGHT], set [DAY/NIGHT] to “COLOR” and select the terminal you want to use in [EXT ALARM].

Then, in [POLARITY] under [ALARM SETTINGS], select the signal polarity of the alarm input terminal.

2 Alarm output terminals (ALARM OUT1/2)

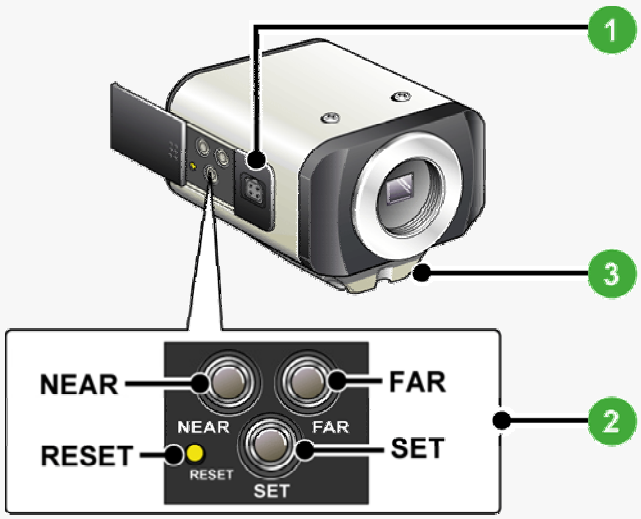
Connect a buzzer, lamp, or other alarm device to these terminals.

3 COM terminal (Earth grounding terminal)

5 Monitor Output Socket (MONITOR OUT)

Connect the camera to your monitor via the supplied video cable.
You can perform focus and iris adjustments while monitoring live video on the monitor.
For details, refer to the “Basic Connections” section.

Side Face



1 Auto Iris Lens Socket

Use this socket to connect an optional auto iris lens.
For details, refer to the “Lens Installation” section.

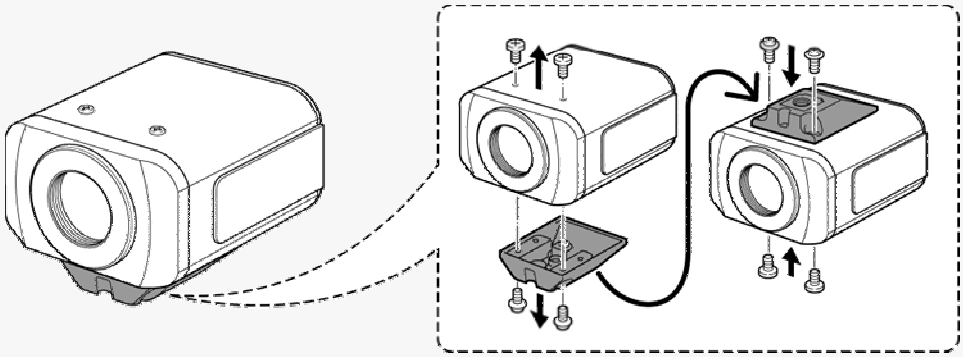
2 Operation Buttons

Use the buttons provided on the left-side face of the camera to perform the following operations.
These operations may be performed with the Web browser installed on your PC. For details, refer to the linked information.

Operation	Associated button and use	Equivalent network operation screen
Restarting camera	Press the RESET button.	OPTION SETTINGS (CAMERA REBOOT)
Restoring factory default settings	Press the NEAR and SET buttons simultaneously.	OPTION SETTINGS (FACTORY DEFAULT)
Restoring factory default back focus position	Press the NEAR and FAR buttons simultaneously.	CAMERA SETTINGS (FOCUS ASSIST)
Resetting login password	Press the FAR and SET buttons simultaneously.	USER SETTINGS
Adjusting focus	For details, refer to the “Lens Adjustment” section.	CAMERA SETTINGS (FOCUS ASSIST/IRIS SETTINGS)
Adjusting iris		
Viewing Firmware Version	For details, refer to the “Viewing Firmware Version” section.	OPTION SETTINGS (FIRMWARE UPDATE)

3 Bracket

This bracket may be attached to either the top or bottom face of the camera depending on the installation environment.
For bracket installation, be sure to use the longer screws supplied.



Install the camera securely to a durable location, taking into account the total weight of the camera mount (commercially available) and the camera.

Connections

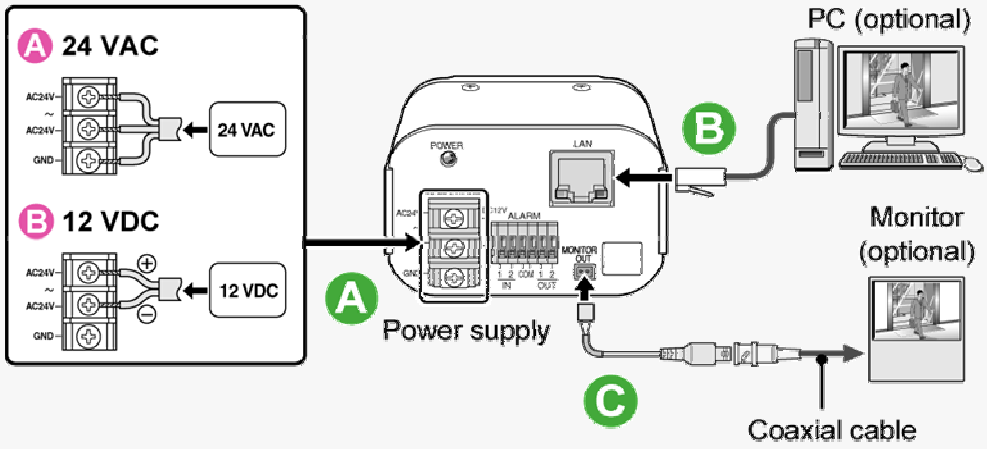
Perform the following connections according to the installation environment and application of your camera.

- **Basic Connections**
- **Alarm Input/Output Terminal Connections**

Before attempting the following connections, be sure to turn off all components of your system.

Improper connection may cause smoke or failures. Before attempting to connect each system component, carefully read the instruction manual that comes with it to familiarize yourself with the correct connection procedure.

Basic Connections



A Power Connection

Connect the power terminals (24 VAC/12 VDC) of the camera to a power supply.

A Connection to 24 VAC power supply

Although the power terminals have no polarity, the earth grounding wire must be connected to the GND (earth grounding) terminal.

B Connection to 12 VDC power supply

Note the polarity (+/–) of the power terminals when connecting the camera to a 12 VDC power supply.
Incorrect polarity may cause damage to the camera.

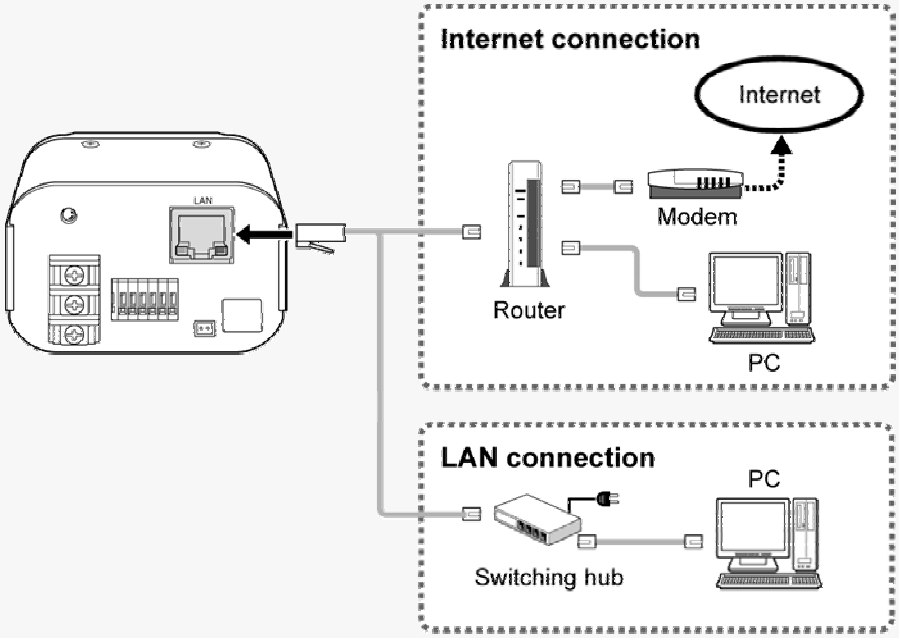
Be sure to use an 18AWG or thicker wire power cable.

A voltage drop may occur depending on the thickness of the power cable. If you must use a long power cable, determine the cable type by ensuring that the voltage at the 24-VAC/12-VDC terminals is within the operating range of the camera.

When using PoE to power the camera, do not use the camera's power terminals.

B Network Connection

This camera is designed so that you can use all of its functions via network operation.
By connecting the network (LAN) socket of the camera to your PC using a LAN cable, you can configure and operate it from the Web browser installed on your PC.

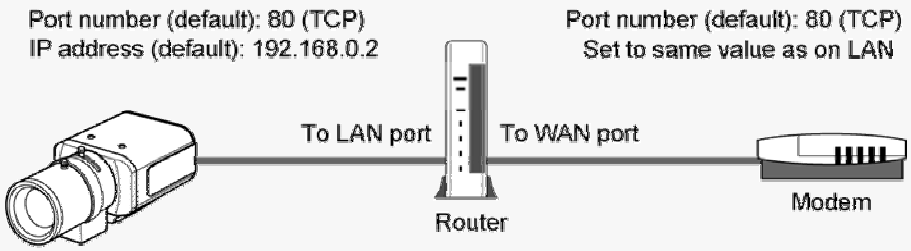


Use a LAN cable no longer than 100 m (109.4 yards) with the shield type CAT5 or higher.

The supported Web browser is Internet Explorer Ver.6.0 SP2 or higher, or Internet Explorer Ver.7.0.

About the internet connection

Port forwarding for the video port must be enabled on the broadband router.
For details on how to set port forwarding, please refer to your router's Instruction manual.



To connect two or more cameras, on the NETWORK SETTINGS screen, assign them with port numbers that are different from that of the first camera.

Using PoE

This camera supports PoE (Power over Ethernet). This means that you can install the camera in locations where there is no 24-VAC/12-VDC power outlet nearby.

When using PoE to power the camera, do not use the camera's power terminals.

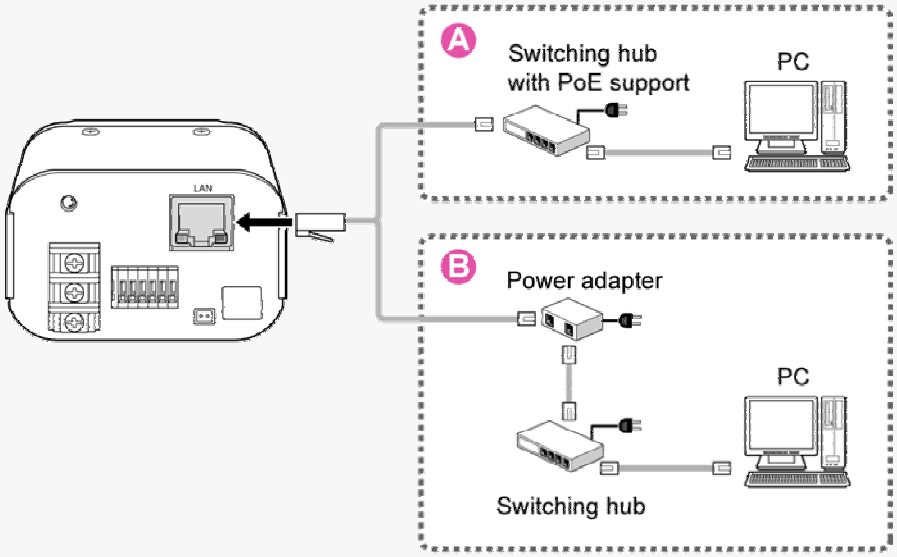
Do not power the PoE hub or PoE power adapter until you finish connecting the camera.

A Connecting the PC and camera through a switching hub

You can use a PoE-compatible switching hub to extend the transmission distance.

For details on the extendable distance, please refer to the hub performance in the specifications, etc.

B Connecting the PC and camera through a switching hub and a power adapter

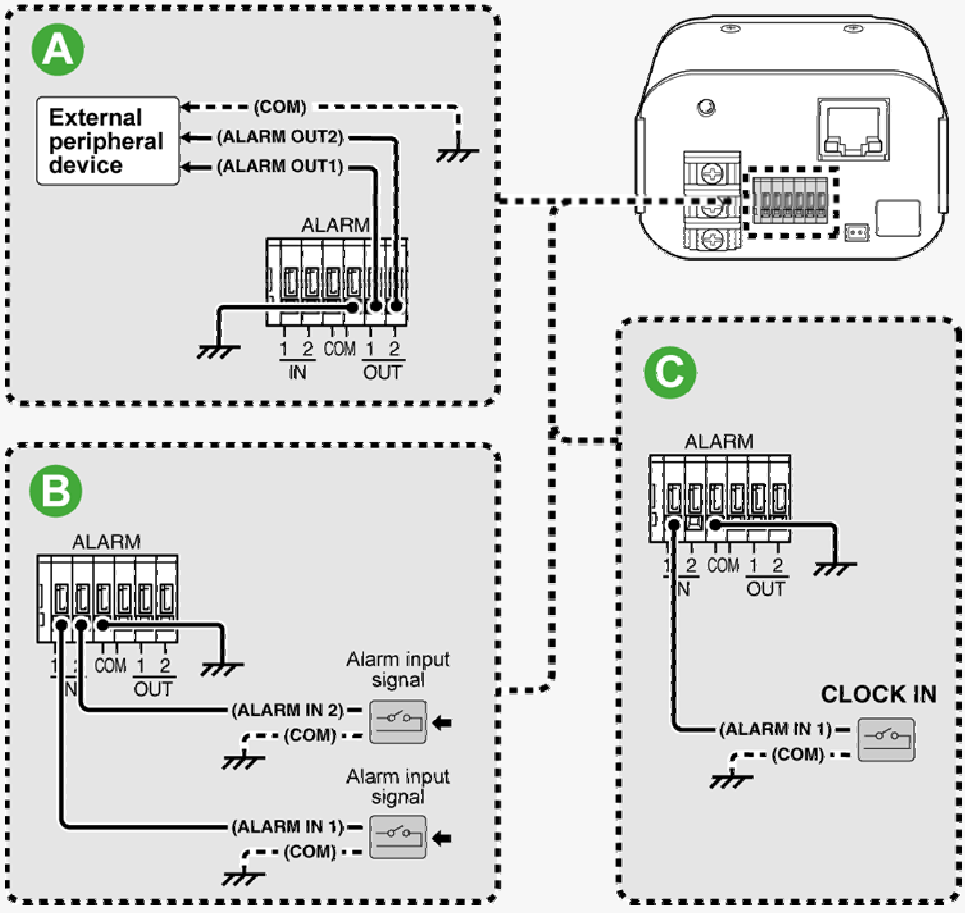


C Camera Monitor Connection

To perform focus adjustment with the camera, connect the supplied cable to the MONITOR OUT socket of the camera, and connect a monitor to the camera using a video cable.
After adjustment, be sure to remove the monitor cable.

Alarm Input/Output Terminal Connections

To connect a cable, while pushing the protrusion of the terminal, insert the cable into the opening and then release it.



A Alarm Output Terminal Connection

Connect a buzzer, lamp, or other alarm device to one of the alarm output terminals (ALARM OUT1 or 2).

After connecting an alarm device, configure the output conditions for the corresponding alarm output terminal (ALARM OUT1 or 2) via network operation on the ALARM SETTINGS screen.

Alarm output terminal configuration is also possible via remote operation.

B Alarm Input Terminal Connection

Connect an alarm switch, infrared sensor, or other external device to one of the alarm input terminals (ALARM IN1 or 2).

After connecting an alarm device, configure the input conditions for the corresponding alarm input terminal (ALARM IN1 or 2) via network operation on the ALARM SETTINGS screen.

To use the alarm input terminals as Day/Night switching terminals, follow the steps below.
(This function is supported only by VCC-HD2300P/VCC-HD2300)

Under [DAY/NIGHT], set [DAY/NIGHT] to “COLOR” and select the terminal you want to use in [EXT ALARM].

On the ALARM SETTINGS screen, in [POLARITY], select the signal polarity of the alarm input terminal.

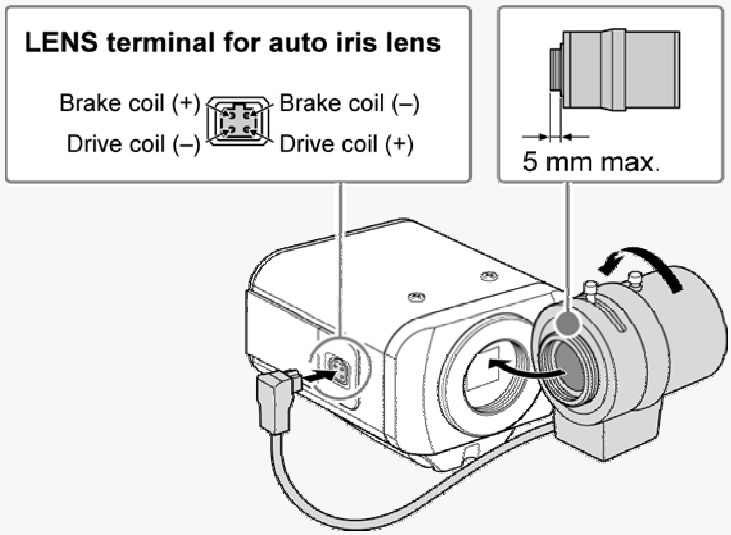
C Alarm Input Terminal Connection for Clock Adjustment (CLOCK IN)

You can connect an external switch to the ALARM IN1 terminal and use that switch to adjust the camera's internal clock.

To do so, via network operation, configure the [CLOCK IN] setting on the CLOCK SETTINGS screen.

Lens Installation

Connect the lens cable plug to the auto iris lens socket provided on the left-side face of the camera.
It is recommended that you use a CS-mount DC auto iris megapixel lens (optional).



- Keep the lens clean at all times.
- The conversion ring (optional) is required to use a C-mount lens.
- The lens cable plug must be changed if it does not fit into the auto iris lens socket. If so, contact the distributor from which you purchased the product (or the agent that provides the installation service).

Lens Adjustment

After installing the lens to the camera, you need to perform the following adjustments for the lens.

- A **Focus Adjustment (FOCUS ASSIST)**
- B **Flange Back Adjustment**
- C **Iris Adjustment (IRIS)**

Using network operation, you can use the focus assist function to adjust the focus.
You may also configure the back focus position switching mode to automatically adjust the back focus position when switching between the color and black-and-white video modes.
(This function is supported only by VCC-HD2300P/VCC-HD2300)

A Focus Adjustment (FOCUS ASSIST)

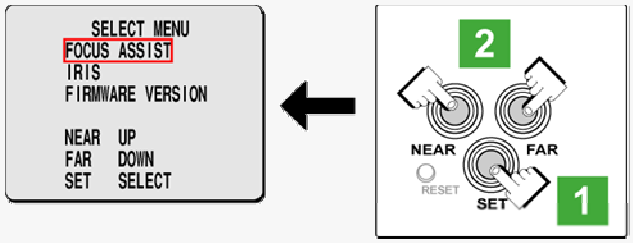
Use the focus assist function to accurately focus on subject in high-resolution megapixel image because otherwise doing so would be extremely difficult.
If you are using a varifocal lens, adjust the focus using the following procedure.

If the focus assist function does not work properly because the camera produces too dark or too bright video images, perform iris adjustment C in advance.

The focus must be readjusted if the camera has lost focus due to difference in the subject distance or ambient temperature, the deterioration of the lens and installation environment, and the like that have been caused over the years.

1 Press the SET button for 2 seconds or more.

The monitor now shows the SELECT MENU screen.



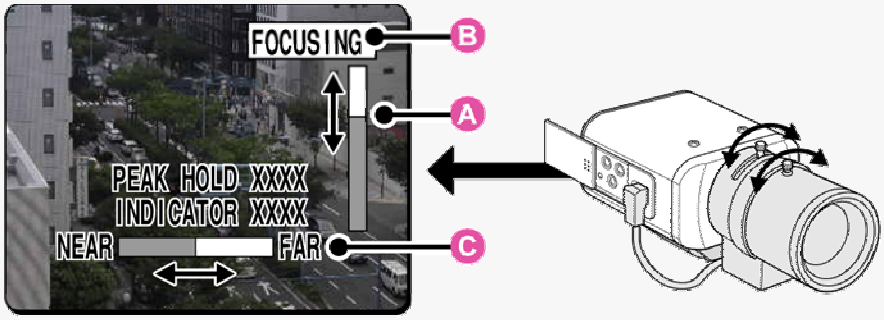
On the SELECT MENU screen, all information is displayed in English.

2 Select [FOCUS ASSIST] using the NEAR/FAR button and press the SET button.

The monitor now shows the focus adjustment screen.

3 Use the zoom lever of the lens to adjust the angle of view and the focus lever of the lens to set the FA bar (A) to the maximum level.

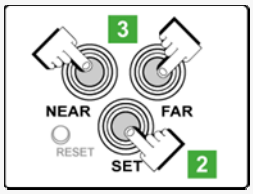
When the subject comes into focus, the color of the status indicator (B) “FOCUSING” turns from black to orange.
If the use of the focus lever does not provide precise focusing, follow the “Fine-adjusting focus” procedure described below.



PEAK HOLD: Shows the value of the maximum focus level.

INDICATOR: Shows the value of the current focus level.

Fine-adjusting focus (using buttons provided on side face)



1 Use the zoom lever of the lens to adjust the angle of view and the focus lever of the lens to roughly focus on the subject.

2 Press the SET button.

The camera automatically focuses on the subject. Note that the color of the status indicator (B) "FOCUSING" turns from black to orange.

If the camera failes to focus on the subject, the FA bar (A) will not operate normally with the status indicator (B) showing "ERROR". In this case, manually adjust the focus (in Step 3).

3 Press the NEAR/FAR button to adjust the focus.

Pressing the button causes the back focus position to change, which is indicated in the FB bar gauge (C).

The position changes step by step each time the button is pressed and continuously at a high speed when the button is held down.

If you want to restore the default back focus position in re-adjustment, etc., press the NEAR and FAR buttons simultaneously.
While the camera is initializing the back focus position, the status indicator (B) shows "INITIALIZING".

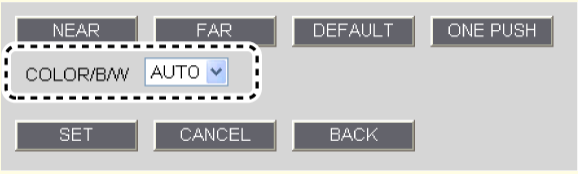
4 Press the SET button for 2 seconds or more.

The focus adjustment screen will close.
The focus adjustment screen will also close automatically if left idle for 5 minutes or more.

If video is out of focus in either color or black-and-white mode, perform the following steps to adjust the focus.

1 Confirm that [COLOR/B/W] is set to “AUTO” under [FOCUS ASSIST] on the CAMERA SETTINGS screen.

2 Adjust the focus in color and black-and-white mode, respectively.

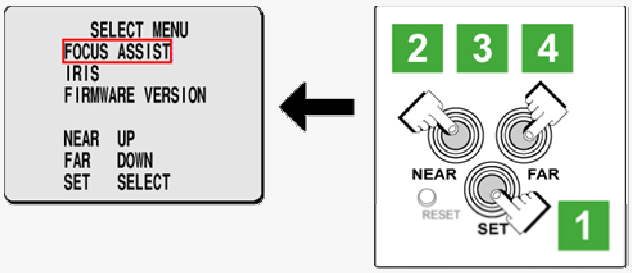


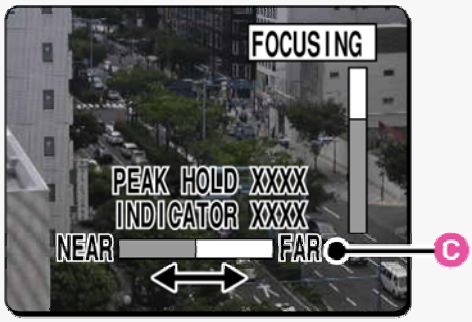
B Flange Back Adjustment

If you are using an optical zoom lens and zooming operation causes the camera to lose focus, adjust the flange back distance as follows.

1 Press the SET button for 2 seconds or more.

The monitor now shows the SELECT MENU screen.





On the SELECT MENU screen, all information is displayed in English.

2 Select [FOCUS ASSIST] using the NEAR/FAR button and press the SET button.

The monitor now shows the focus adjustment screen.

3 Use the zoom and focus levers of the lens to focus on the subject at the telephoto end and press the NEAR/FAR button to adjust the focus.

Pressing the button causes the back focus position to change, which is indicated in the FB bar gauge (C).
The position changes step by step each time the button is pressed and continuously at a high speed when the button is held down.

4 Use the zoom and focus levers of the lens to focus on the subject at the wide end and press the NEAR/FAR button to adjust the focus.

Repeat the above steps until switching between the telephoto and wide ends does not cause the camera to lose focus.

5 Press the SET button for 2 seconds or more.

The focus adjustment screen will close.

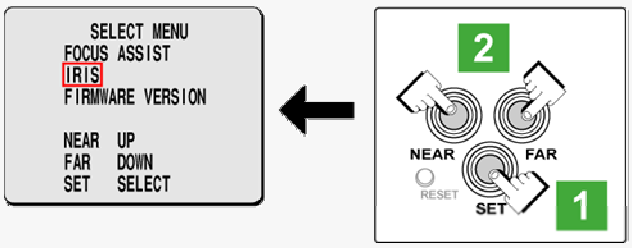
> The focus adjustment screen will also close automatically if left idle for 5 minutes or more.

C Iris Adjustment (IRIS)

If the camera produces too dark, too bright, or other incorrect video images, adjust the lens iris.

1 Press the SET button for 2 seconds or more.

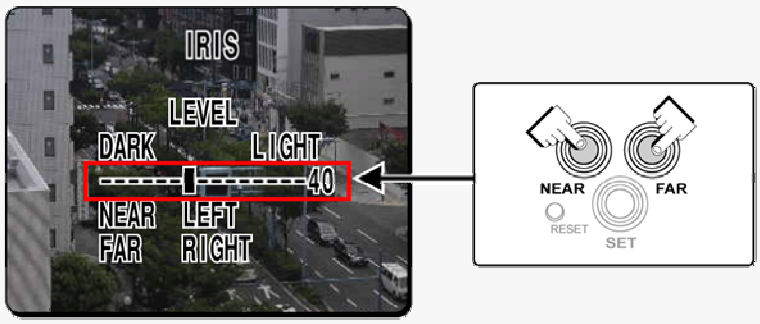
The monitor now shows the SELECT MENU screen.



> On the SELECT MENU screen, all information is displayed in English.

2 Select [IRIS] using the NEAR/FAR button and press the SET button.

The monitor now shows the iris adjustment screen.



3 Press the NEAR/FAR button to adjust the iris level.

The position changes step by step each time the button is pressed and continuously at a high speed when the button is held down.

- NEAR: Closes the iris to produce darker images.
- FAR: Opens the iris to produce brighter images.

4 Press the SET button for 2 seconds or more.

The iris adjustment screen will be closed.

> The iris adjustment screen will also close automatically if left idle for 5 minutes or more.

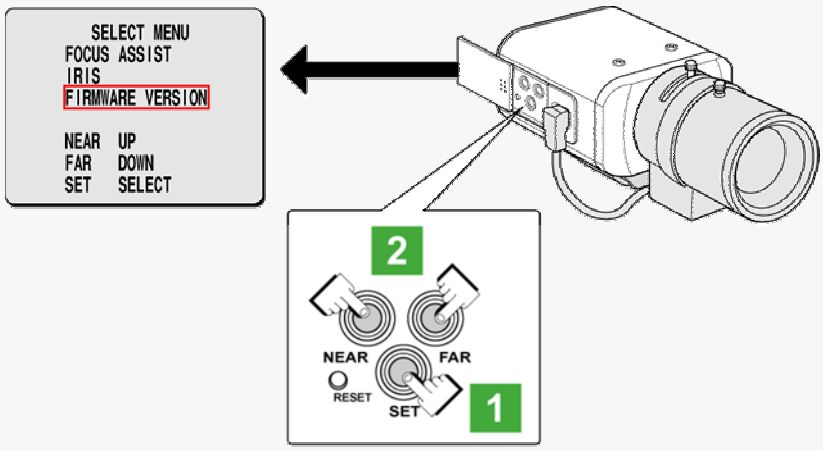
Viewing Firmware Version

On the FIRMWARE VERSION screen, you can check the firmware version, IP address, and other information on the camera.

The firmware version can also be checked via network operation on the OPTION SETTINGS screen.

1 Press the SET button for 2 seconds or more.

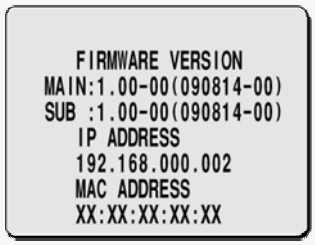
The monitor now shows the SELECT MENU screen.



On the SELECT MENU screen, all information is displayed in English.

2 Select [FIRMWARE VERSION] using the NEAR/FAR button and press the SET button.

The monitor now shows the FIRMWARE VERSION screen.



3 Press the SET button for 2 seconds or more.

The FIRMWARE VERSION screen closes.

The FIRMWARE VERSION screen will close automatically if left idle for 5 minutes or more.