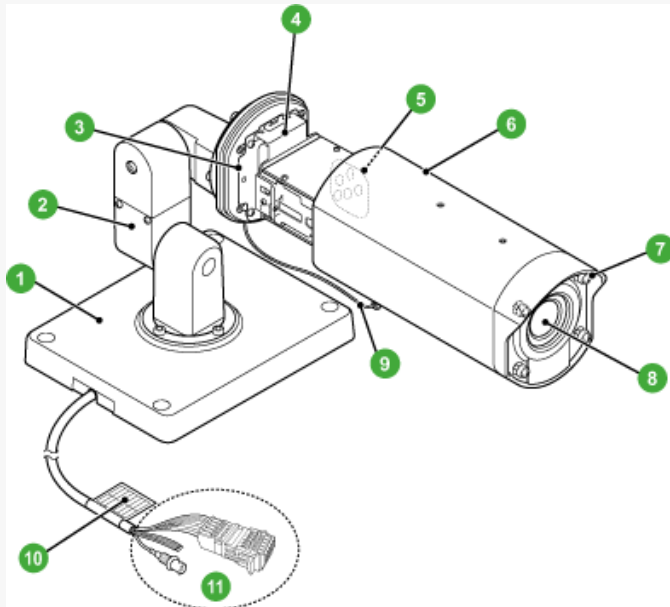


Before Using the Camera

Before Using the Camera

Name of Components

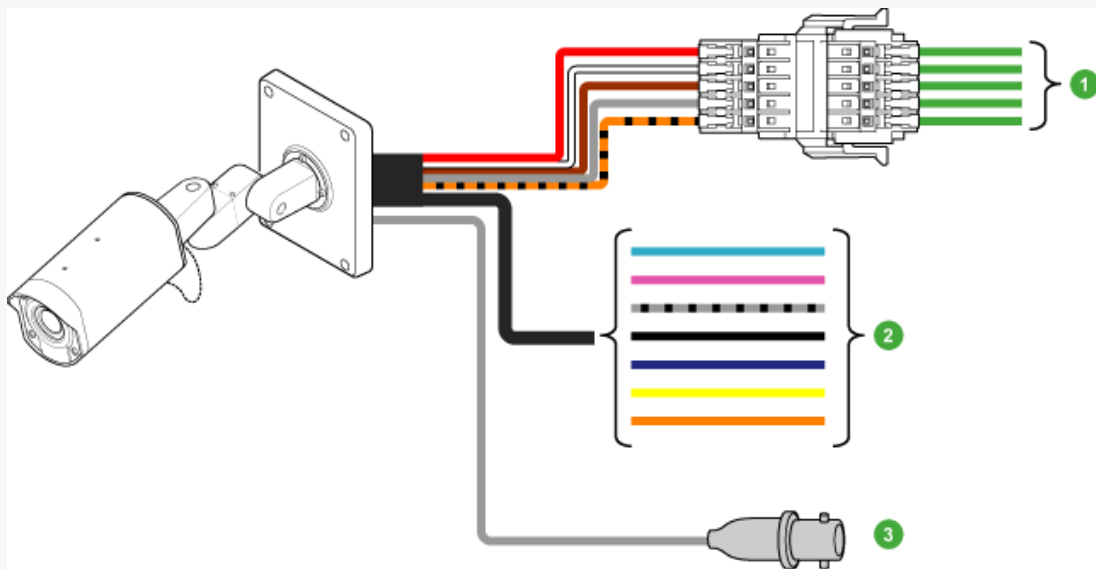
The figure below illustrates the system when the camera cover is pulled forward by loosening the camera cover fixing screws.



- 1 Camera stand
- 2 Arm
- 3 Camera mount
- 4 Camera mounting bracket
- 5 Operation buttons (on right side face)
- 6 Camera cover
- 7 Camera cover fixing screws (×4)
- 8 Lens
- 9 Safety chain
- 10 Cable label
- 11 Connection cables

Types of Connection Cables

You can identify each connection cable by its shape and color.



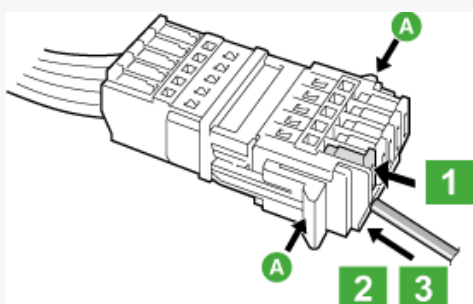
	Shape	Color	Signal Name	Use
1	One-touch connector	RED	24 VAC/12 VDC (+)	Used to connect the power supply.
		WHITE	24 VAC/12 VDC (-)	
		BROWN	COMMON	
2	Individual cables	GRAY	RS485 (A)	Used to connect the system controller or other external system component. For connection, use cables with 22AWG wire or thicker.
		ORANGE/BLACK	RS485 (B)	
		SKYBLUE	UTP (+)	Use these twisted pair cables to output the video signal to an external device.
		PINK	UTP (-)	
		GRAY/BLACK	ALARM IN 1	Used to connect alarm switch, infrared sensor, or other external devices. To automatically switch between the color and black/white modes, select [DAY/NIGHT], choose the "COLOR" mode, and then set the "EXT ALARM" to an appropriate input level.
		BLACK	ALARM IN 2	
		BLUE	ALARM OUT	Used to connect a buzzer, lamp, video recorder, or other peripheral device. To control the alarm output externally from a remote location, on the ALARM OUT screen, select [OUTPUT] and choose "REMOTE."
		YELLOW	FOCUS	Used to adjust the camera focus by external voltage control. DC ± (6 to 12 V), +: FAR/-: NEAR
		ORANGE	ZOOM	Used to adjust the camera zoom by external voltage control. DC ± (6 to 12 V), +: WIDE/-: TELE
		3	BNC connector	COAXIAL CABLE



For the cable type, see the "cable label" attached to the cable bundle.

Connecting cables to the one-touch connector

Follow the steps below to connect each cable firmly to the one-touch connector.



1 Push the lever.

The terminal hole opens.

2 Insert the cable into the terminal hole.

Be sure to insert the cable firmly all the way to the end.

3 Release the lever.

The cable is now locked.

Make sure that the cable is locked firmly in place.



To prevent short-circuiting, make sure that the stripped wire portion is not exposed out of the connector.



This connector is a separable type.

Separating the connector by pressing the connector lever **A** facilitates your work, especially when changing the connection with the power supply and system components.

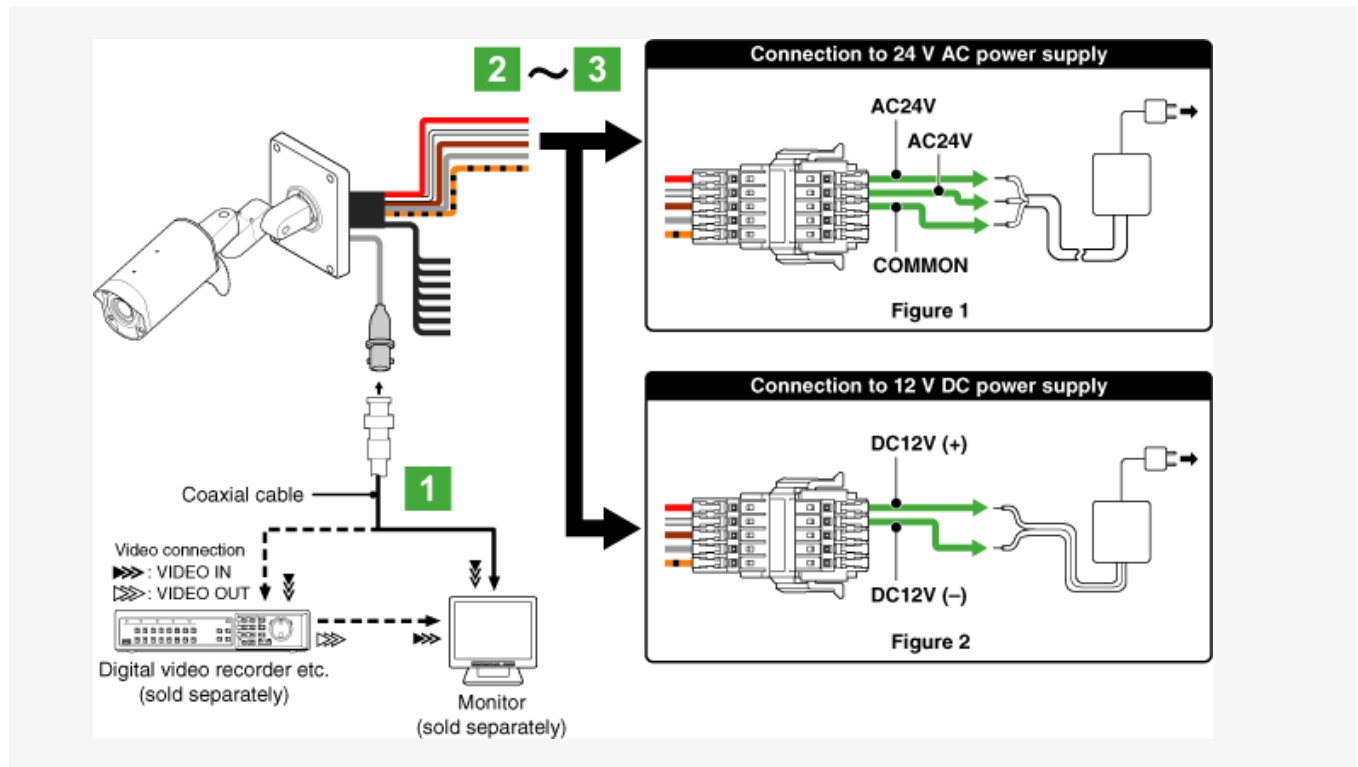


Connections

Basic connections

Be sure to turn OFF the power switch of all devices to be connected.

In addition, read the instruction manual for each device carefully so that you can connect devices correctly. Note that incorrect connection may cause smoke or malfunction.



1 Connect the video cable.

Use the coaxial cable to connect the camera's video output (VIDEO OUT) connector to the video input (VIDEO IN) connector of your monitor or other peripheral device.

Coaxial cable type and maximum length

- ▶ Cable type RG-59U (3C-2V), 250 m maximum
- ▶ Cable type RG-6U (5C-2V), 500 m maximum
- ▶ Cable type RG-11U (7C-2V), 600 m maximum



Using lower-grade cables will cause the attenuation of the video and synchronization signals, preventing correct transmission.

An RG-59U coaxial cable may be used if the distance between devices you want to connect is short. However, avoid using it for piping or air wiring.

Use CCTV/Video-compatible coaxial cables.

2 Connect the power cables to the power terminals of the one-touch connector.

Use a power cable with an AWG wire (20, 21 or 22).

Connecting 24 VAC power (See Figure 1.)

Although power wires have no polarity in this case, the earth wire must be connected to the earth (COMMON) terminal.

Connecting 12 VDC power (See Figure 2.)

Note the polarity (+/-) when you connect 12-VDC power cables. Incorrect polarity may cause damage to your camera.

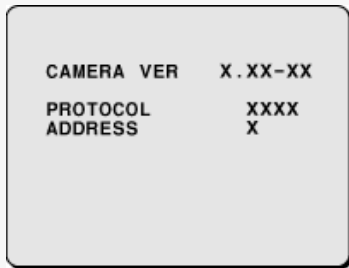


A voltage drop occurs depending on the thickness of the power wires. If you must use a long power cable, determine the cable type by ensuring that the voltage at the power input terminal falls in the operating range of this unit.

3 Plug in the power cable to the wall outlet.

When the camera is turned ON, the monitor shows the startup screen with system information on your camera for approximately 10 seconds and displays live video images.

While monitoring the video images displayed on the monitor, set the operating conditions and required functions of the camera using the menu screen.



Optional connections

Connect the following cables as required.

For detailed information on these connections, refer to the separate installation manual.

ALARM IN cables: GRAY/BLACK, BLACK

Used to connect alarm switch, infrared sensor, or other external devices.

ALARM OUT cable: BLUE

Used to connect a buzzer, lamp, digital video recorder, or other peripheral device.

FOCUS/ZOOM cable: YELLOW, ORANGE

Used to remote control the camera.

UTP cables: SKYBLUE, PINK

Use these twisted pair cables to output the video signal to an external device.



Peripheral Devices

A surveillance system consists of mainly the following peripheral devices. Please use SANYO products for connection with this camera.

Monitor

Displays surveillance video for monitoring. The monitor also displays the menu screen.



Digital video recorder (DVR)

Records surveillance video. For surveillance systems, the use of a DVR is recommended. DVRs ensure a long-hour recording without video degradation.



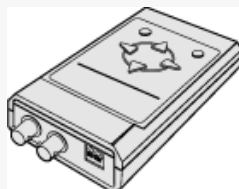
System controller

Provides not only the remote control of the camera and connected devices, but also the centralized control of a surveillance system consisting of multiple components.



Camera control unit (VAC-70)

This is a simplified camera controller. It enables you to set the camera's menu options from a remote location. Be sure to disconnect the camera control unit when setting is completed.



Settings with the Menu Screen

Settings with the Menu Screen

The menu screen allows you to set the operating conditions and required functions of the camera according to your installation environment or other needs.

To set the camera conditions on the menu screen, use the operation buttons on the camera or the optional camera control unit (VAC-70).



When the password lock is enabled, the user will be prompted for the entry of the password if he/she attempts to access the setting on the menu screen.

Using this function, you can prevent users other than the password administrator from changing the menu settings.

If you forget your password, contact the distributor from which you purchased the camera.

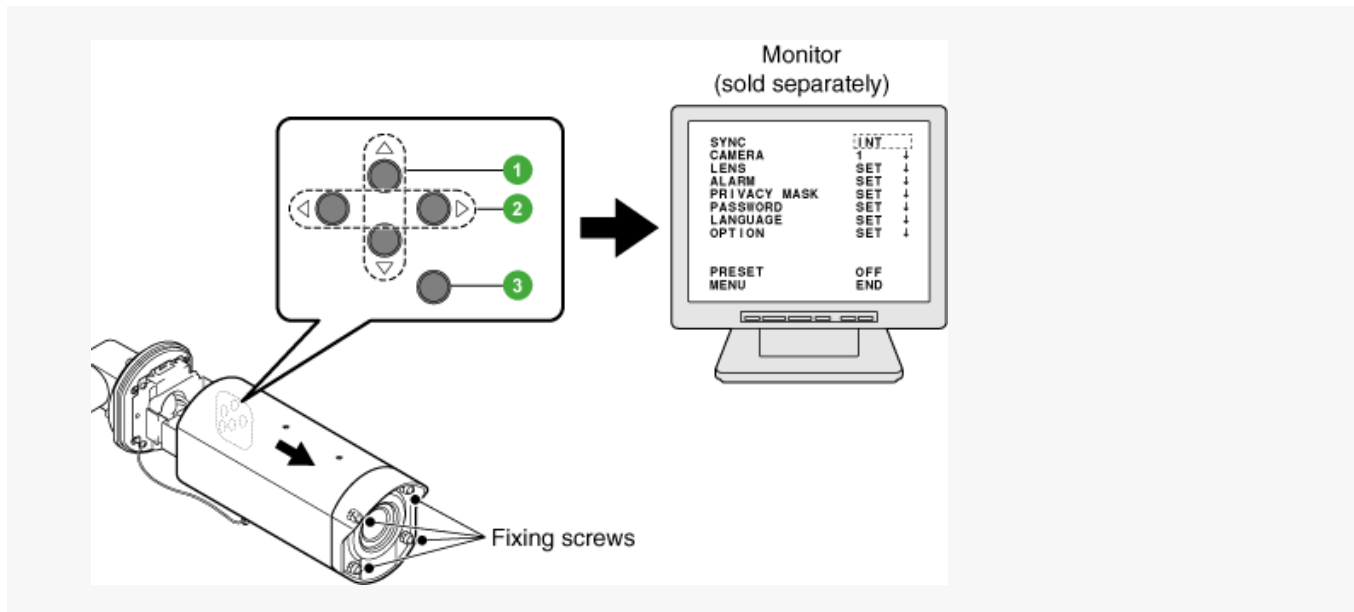
The menu screen will close automatically if no operation is performed for approximately 3 minutes.

Setting the operating conditions using the operation buttons on the camera

Completely loosen the four fixing screws located on the front face of the camera and pull the camera cover forward.

Now, you can use the operation buttons on the right side face of the camera to set the operating conditions of the camera.

(For details, refer to the separate installation manual.)



After you complete setting up the camera, reinstall the camera cover in position and tighten the fixing screws with a torque of 0.5 to 1 N·m (5 to 10 kgf·cm) to maintain the waterproof performance.

Using the operation buttons

Pressing the SET button for approximately three seconds causes the main menu to appear on the monitor.

1 ▲▼ buttons

Used to vertically move the cursor to select a menu item.

2 ◀▶ buttons

Used to make adjustments in horizontal direction or choose a setting value.

3 SET button

Use the SET button to set the value you adjusted or chose for the selected item, or switch to the sub-menu.

Manually adjusting the camera focus/zoom

When the menu screen is not displayed, the operation buttons can be used to perform the following operations:

1 Focus adjustment

Use the \triangle button to set the focus to a near target.

Use the ∇ button to set the focus to a far target.

2 Zoom adjustment (Magnification: $\times 1$ to $\times 30$)

Use the \triangleleft button to zoom out of the target.

Use the \triangleright button to zoom into the target.

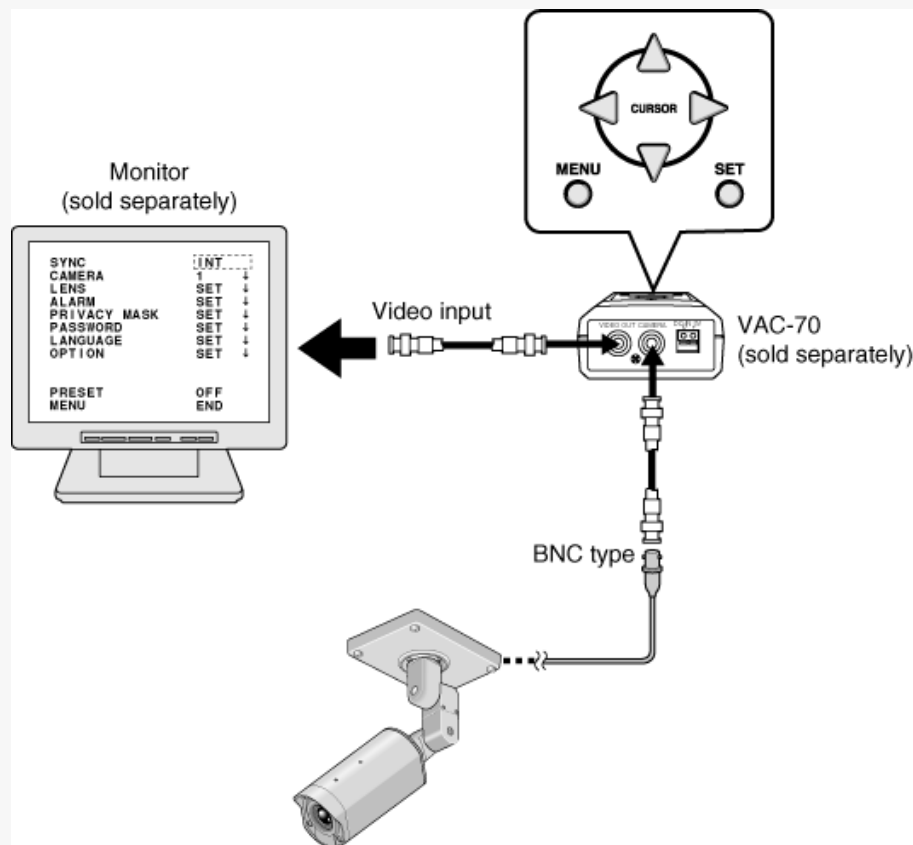
3 One-push auto focus adjustment

Use the SET button to focus the camera automatically by one-push operation.

Setting the operating conditions using the camera control unit

Connecting the optional camera control unit enables you to remotely set the camera's operating conditions on the menu screen.

For details, refer to the instruction manual supplied with the camera control unit.



Be sure to disconnect the camera control unit after you complete setting up the camera.

Avoid connecting the camera control unit via a cable compensator or video distribution amplifier.

Doing so may prevent remote control of your camera.

Menu Screen Composition

	Main Menu	Sub Menu	Description of Setting
1	SYNC	-	Sets the signal synchronization method.
2	CAMERA	IRIS	Sets the lens iris.
		WHITE BALANCE	Adjusts the white balance of the video signal.
		BLC	Sets the backlight compensation function.
		SHUTTER	Sets the electronic shutter.
		APERTURE	Corrects the profile of the target object.
		AGC	Sets the gain of the video signal.
		GAMMA	Adjusts the contrast and brightness of the video signal.
		MOTION	Sets the motion sensor function that automatically detects moving targets.
		POSITION	Stores the zoom/focus settings of the current position by camera setting number (1 or 2).
		DAY/NIGHT	Sets the Day/Night function that automatically switches between color and black/white video modes depending on the luminance of the target.
3	LENS	FOCUS	Sets the focusing mode.
		ZOOM	Sets the optical zooming speed and electronic zooming option.
4	ALARM	ALARM IN	Provides alarm input settings.
		ALARM OUT	Provides alarm output settings.
		ALARM DISPLAY	Sets the alarm display function.
5	PRIVACY MASK	MASK 1 to 4	Masks anywhere you want to hide on the screen for the purpose of privacy protection.
6	PASSWORD	PASSWORD LOCK	Sets the password lock function that prevents access to the menu screen.
		PASSWORD CHANGE	Changes the password.
7	LANGUAGE	-	Sets the language in which menu items are displayed on the menu screen.
8	OPTION	DISPLAY	Sets the information to be displayed on the monitor.
		MIRROR	Sets the mirroring function that electronically reverses the displayed image.
		STABILIZER	Corrects the image from the camera when it sways.
		SYSTEM	Sets the conditions for the connection of external devices to the camera.



Basic Flow of Setting on the Menu Screen

While viewing the menu screen on the monitor, set the operating conditions using the operation buttons on the camera.

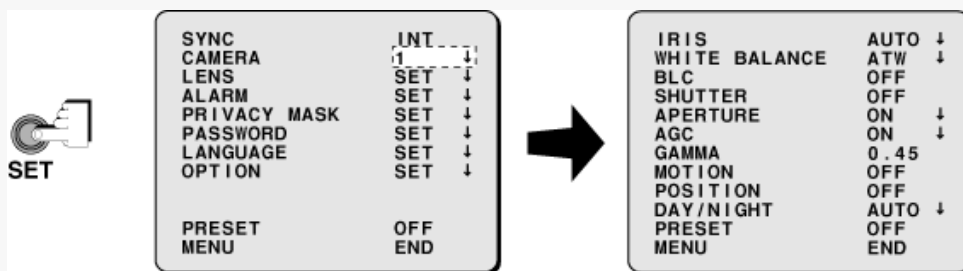
You may use the optional camera control unit to do so.

- 1 Use the Δ/∇ button to select the menu item.

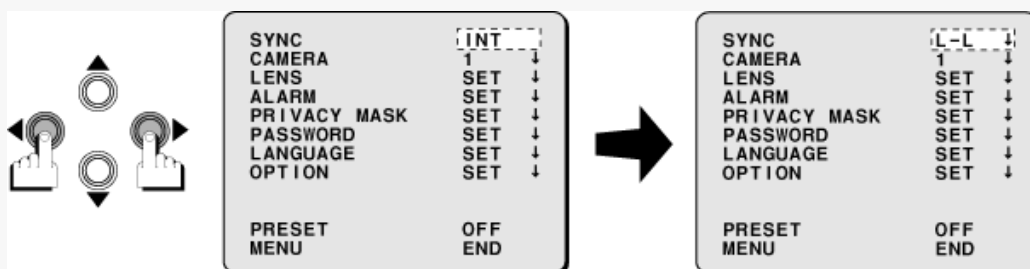


- 2 If the “↓” (down arrow) symbol is shown to the right of the selected menu item, press the SET button.

The next-level sub menu or the details setting screen appears.



- 3 To choose a setting, show the desired value or option using the $\triangleleft/\triangleright$ button.



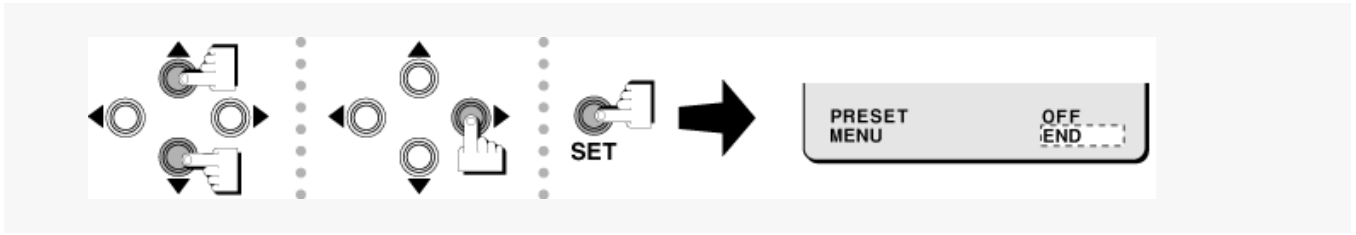
- 4 To return to the previous screen, use the Δ/∇ button to select [MENU] and, with the setting of “BACK” shown, press the SET button.



5 To close the menu screen, use the Δ/∇ button to select [MENU], use the $\triangleleft/\triangleright$ button to change the setting from “BACK” to “END”, and press the SET button.

The main menu disappears and live video images appear on the screen.

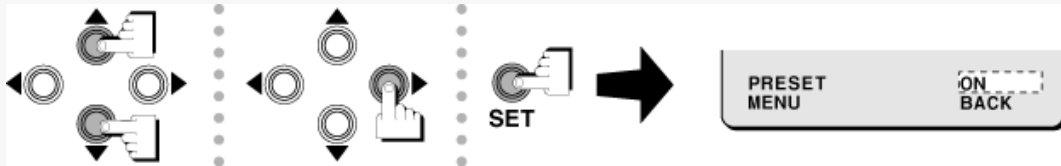
To display the main menu again, press the SET button located on the side face of the camera for approximately three seconds.



Resetting All the Menu Settings to the Defaults

Use the Δ/∇ button to select [PRESET] on the main menu, use the $\triangleleft/\triangleright$ button to choose "ON", and press the SET button.

This initializes all the menu settings, with the value for [PRESET] returned to "OFF".



Performing the above resetting operation on a sub menu resets the settings on lower-level screens to the defaults.

Note that the resetting operation does not reset the settings for the following items:

- [PRIVACY MASK] on main menu
- [PASSWORD] on the main menu
- [DISPLAY (TITLE)] and [SYSTEM] on the OPTION menu

Zoom or focus setting in [POSITION] on the CAMERA menu

Note that the value of the item [POSITION] is reset from "ON" to the default "OFF".

When the [POSITION] setting is switched to "OFF", the zoom and focus settings stored in the camera will be overwritten by those settings of the current position.

In the same way, performing zoom or focus operation with [POSITION] set to "OFF" also overwrites the stored zoom and focus settings.

Setting the Synchronization Method (SYNC)

This camera supports the following synchronization methods:

- INT: Internal synchronization**

Performs synchronization according to the camera's internal signal.

- L-L (Line Lock): Power source synchronization**

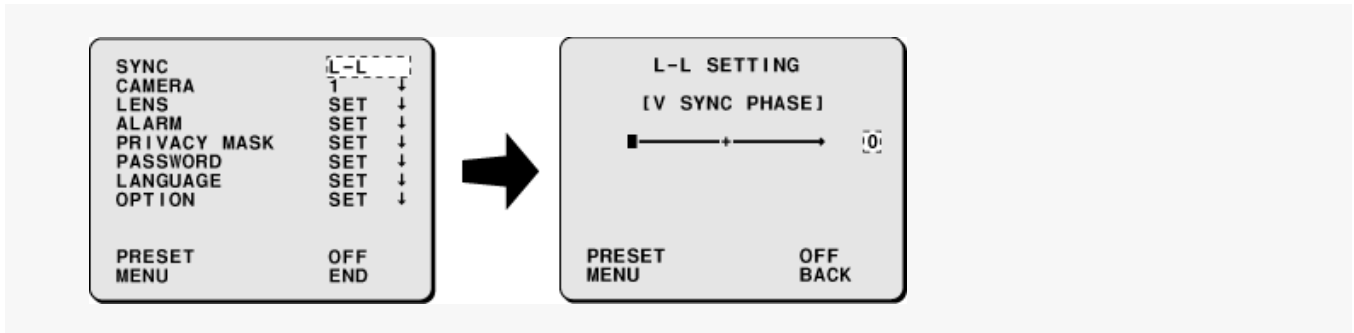
Performs synchronization according to the frequency of the commercial power source. With this method, you can manually adjust the vertical synchronization phase.



Power Source Synchronization (L-L)

- 1 Use the \triangle/∇ button to select [SYNC], use the \triangle/∇ button to choose “L-L”, and press the SET button.

The L-L SETTING screen appears.



- 2 Use the \triangle/∇ button to adjust the vertical synchronization phase.

- 3 Select [MENU] and choose “BACK” or “END” to complete adjustment.



Camera Settings (CAMERA)

On this screen, set the operating conditions of the camera.

You can have two patterns of operating conditions and use the preferable condition pattern for your environment by choosing the camera setting number (1 or 2).



Setting example for using the operating conditions for the daytime use and nighttime use:

- 1 Select [CAMERA], choose the setting number "1", and set the operating conditions for daytime use.
- 2 Return to the main menu, select [CAMERA], choose the setting number "2", and set the operating conditions for nighttime use.
- 3 To switch between these operating conditions, select [CAMERA] in the main menu and choose "1" (for daytime use) or "2" (for nighttime use) as the camera number.
(You may use alarm input to switch the operating conditions.)

IRIS setting

Sets the lens iris.

WHITE BALANCE setting

Sets the white balance.

BLC setting

Sets the backlight compensation function.

SHUTTER setting

Sets the electronic shutter.

APERTURE setting

Corrects the profile of the target object.

AGC setting

Sets the gain of the video signal.

GAMMA setting

Adjusts the contrast and brightness of the video signal.

MOTION setting

Sets the motion sensor function that automatically detects moving targets.

POSITION setting

Stores the zoom/focus settings of the current position by camera setting number (1 or 2).

DAY/NIGHT setting

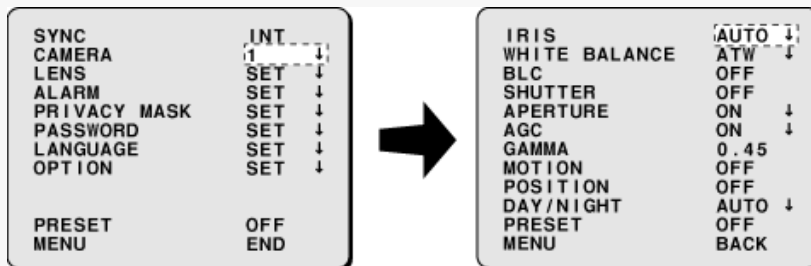
Sets the Day/Night function that automatically switches between color and black/white video modes depending on the luminance of the target.



Choosing the Camera Setting Number (CAMERA)

- 1 Use the \triangle/∇ button to select [CAMERA] on the main menu, use the \triangle/\triangleright button to choose the camera setting number ("1" or "2") with which you want to set operating conditions, and press the SET button.

The CAMERA setting screen for the chosen camera setting number appears.



You can use the system controller to change the camera setting number in [CAMERA]. To do so, select [AUX ON] (for CAMERA 1) or [AUX OFF] (for CAMERA 2) and select "7" on the number entry screen.

IRIS setting

Use this setting to set the lens iris (auto or manual) according to the luminance level of the target objects.

AUTO: Auto iris

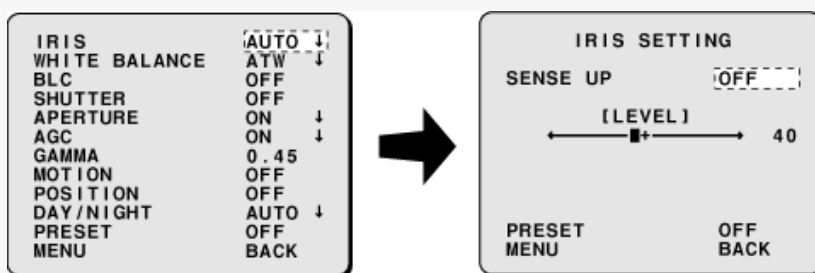
MANU: Manual iris

Setting the auto iris (AUTO)

Automatically adjusting the lens iris enables the reproduction of natural images even in outdoors where the luminance difference is large, or under backlight conditions.

- 1 Use the \triangle/∇ button to select [IRIS], use the $\triangleleft/\triangleright$ button to choose "AUTO", and press the SET button.

The IRIS SETTING screen appears.



- 2 Use the \triangle/∇ button to select [SENSE UP] and use the $\triangleleft/\triangleright$ button to choose the electronic sensitivity boosting power.

Available settings: OFF, x2, x4, x8, x16, x32



If the electronic sensitivity boosting power cannot be set:

[MOTION] is set to "ON", or [AGC] is set to "OFF".

Setting the electronic sensitivity boosting power causes the following:

The CCD exposure time will be increased automatically in dark situations. This may result in conspicuous afterimages, blurs, and white spots in moving target objects.

The [SHUTTER] (electronic shutter) setting ("SHORT" or "LONG") and the [V-RESO UP] (vertical resolution increase) setting will be cancelled.

The [EI] (electronic iris) setting will be cancelled.

When [DAY/NIGHT] is set to "AUTO", [SENSE UP] works only for black/white video images.

- 3 Use the \triangle/∇ button to select [LEVEL] and use the $\triangleleft/\triangleright$ button to adjust the level of the video signal level.

Available settings: 0 (dark) to 100 (bright)

- 4 Select [MENU] and choose "BACK" or "END" to complete adjustment.

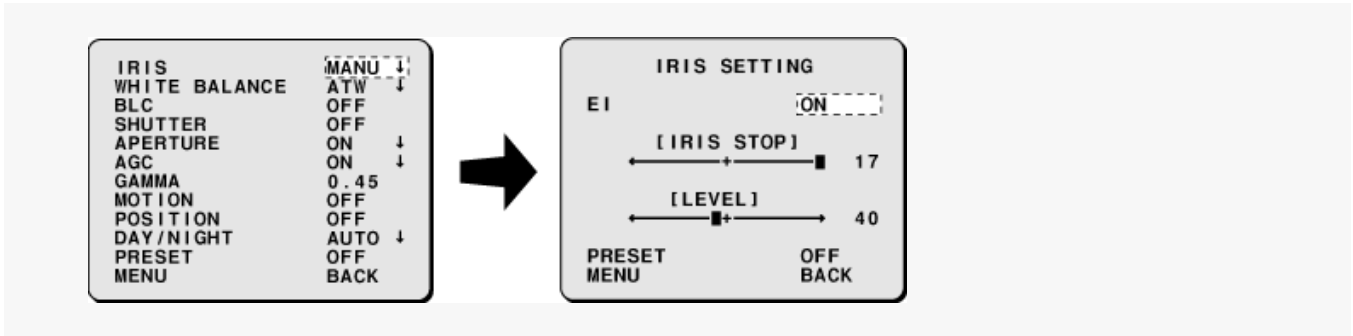
Setting the manual iris (MANU)

The auto iris function is not available when the electronic iris (EI) is set. Set the lens iris manually using the following procedure.

- 1 Use the \triangle/∇ button to select [IRIS], use the $\triangleleft/\triangleright$ button to choose "MANU", and press the SET

button.

The IRIS SETTING screen appears.



2 Use the Δ/∇ button to select [EI] and use the \langle/\rangle button to choose “ON”.

The electronic iris is now enabled, controlling both the AGC circuit and the shutter speed to adjust the exposure.



Setting the electronic iris (EI) causes the following:

- The [SHUTTER] (electronic shutter) setting (“SHORT” or “LONG”) will be cancelled and the [SENSE UP] (electronic sensitivity boosting) will not work.
- Under extremely bright lighting, the electronic iris cannot adjust the light entering through the lens, resulting in a phenomenon such as a smear. This may be prevented by changing the lighting angle or other measures.
- Under fluorescent lighting, the camera may cause the target images to flicker. To prevent this, replace the fluorescent lamps with incandescent lamps.

3 Use the Δ/∇ button to select [IRIS STOP] and use the \langle/\rangle button to adjust the iris stop.

The lens iris changes based on the iris stop setting.

Available settings: 1 (closes the iris = dark) to 17 (opens the iris = bright)

4 Use the Δ/∇ button to select [LEVEL] and use the \langle/\rangle button to adjust the level of the video signal level.

Available settings: 0 (dark) to 100 (bright)

5 Select [MENU] and choose “BACK” or “END” to complete adjustment.



WHITE BALANCE setting

Use this setting to set the white balance according to the installation conditions of the camera.

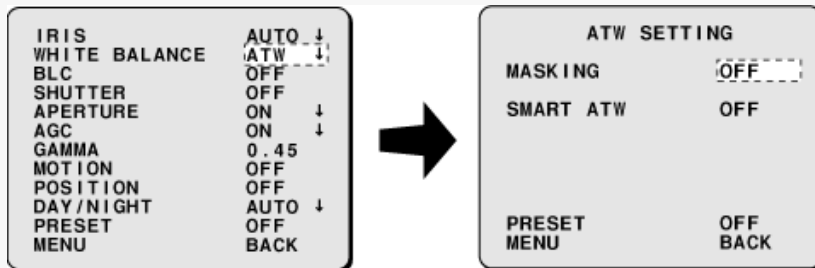
- ATW: Auto trace white balance
- AWC: Push-lock auto white balance
- 3200: Fixed white balance (for indoors)
- 5600: Fixed white balance (for outdoors)
- FLUO: Fixed white balance (for fluorescent lighting)
- MWB: Manual white balance

Auto trace white balance (ATW)

Auto trace white balance (ATW) automatically adjusts the white balance to provide optimal colors, even if the light source for the target objects is changed.

- 1 Use the \triangle/∇ button to select [WHITE BALANCE], use the $\triangleleft/\triangleright$ button to choose "ATW", and press the SET button.

The ATW SETTING screen appears.



- 2 Select [MENU] and choose "BACK" or "END" to complete the setting.

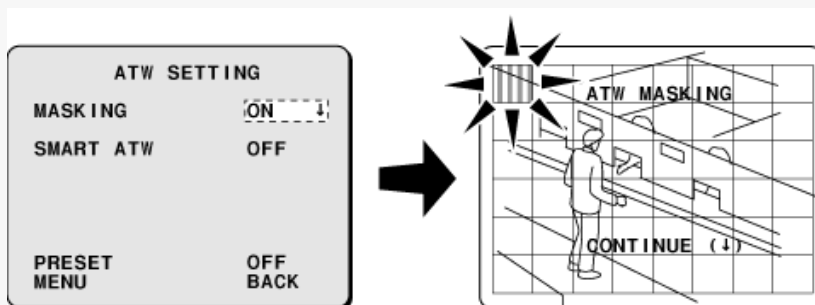
To mask a specific light source, or to set the SMART ATW function, do the following.

Setting masks (MASKING)

If the target objects include an extremely bright light source, set a mask as follows to correct the white balance.

- 1 Use the \triangle/∇ button to select [MASKING], use the $\triangleleft/\triangleright$ button to choose "ON", and press the SET button.

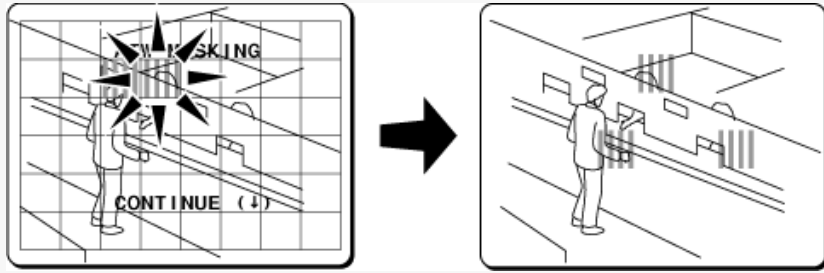
The ATW MASKING screen appears, with a blinking mask pattern shown at the top left.



- 2 Use the $\triangle/\nabla/\triangleleft/\triangleright$ buttons to move the mask pattern over the light source you want to mask and press the SET button.

This sets a mask at the position where you moved the mask pattern. A new mask pattern starts blinking.

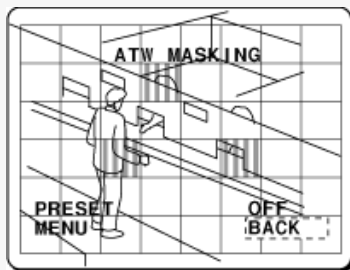
Repeat this step to set masks as many as you want.



To delete a mask, move the mask pattern over it and press the SET button.

- 3** When finished setting masks, use the ∇ button to move the mask pattern to the bottom area of the screen and press and hold the ∇ button for approximately three seconds.

The [PRESET] and [MENU] items appear on the screen.



- 4** Select [MENU] and choose “BACK” or “END” to complete the setting.

Setting the smart function (SMART ATW)

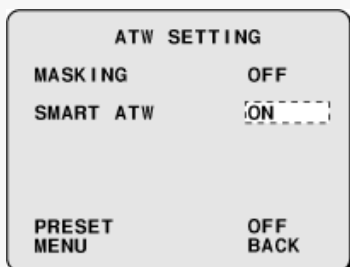
The smart function automatically calculates the information on colors contained in the target images. Adjusting the white balance may not produce desirable results if a single color occupies the majority of the images. In such a case, use the smart function.



Do not use the smart function in environments where the color temperature varies. In an outdoor environment for example, adjusting the white balance may not produce desirable results because the color temperature varies depending on the time of the day (at sunrise, daytime, and sunset), weather (sunny or cloudy), and other conditions.

- 1** Use the \triangle/∇ button to select [SMART ATW] and use the $\triangle/$ button to choose “ON”.

This sets the smart function.



- 2 Select [MENU] and choose “BACK” or “END” to complete the setting.

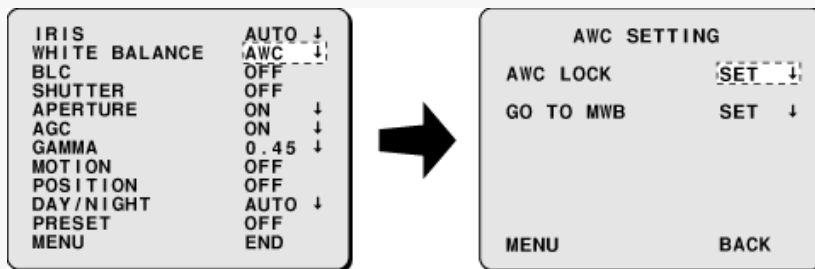
Push-lock auto white balance (AWC)

Use push-lock auto white balance (AWC) if auto trace white balance (ATW) does not reproduce a natural white balance.

Direct the camera lens toward a white wall or anything that is white and adjust the white balance by one-push operation.

- 1 Use the Δ/∇ button to select [WHITE BALANCE], use the $\triangleleft/\triangleright$ button to choose “AWC”, and press the SET button.

The AWC SETTING screen appears.



- 2 Use the Δ/∇ button to select [AWC LOCK] and, with “SET ↓” displayed, press the SET button.

The setting changes from “SET ↓” to “SET ↓” (highlighted) in two seconds, which indicates that the white balance adjustment has been completed.



If the white balance adjustment does not reproduce the desired result, press the SET button again with “SET ↓” displayed.

To fine-tune the white balance after the adjustment, select [GO TO MWB] using the Δ/∇ button and press the SET button.

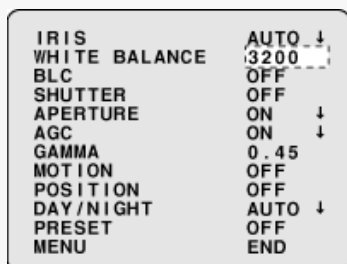
Then, when the MWB SETTING screen appears, manually adjust the gain values of the red (R) and blue (B) signals.

- 3 Select [MENU] and choose “BACK” or “END” to complete adjustment.

Fixed white balance (3200/5600/FLUO)

You can set the color temperature to a fixed value.

- 1 Use the Δ/∇ button to select [WHITE BALANCE] and use the $\triangleleft/\triangleright$ button to choose the desired fixed white balance option.



Available settings:

- ▶ 3200: For indoors (Fixes the color temperature to 3200 K.)
- ▶ 5600: For outdoors (Fixes the color temperature to 5600 K.)
- ▶ FLUO: For fluorescent lighting (Fixes the color temperature to 4200 K.)

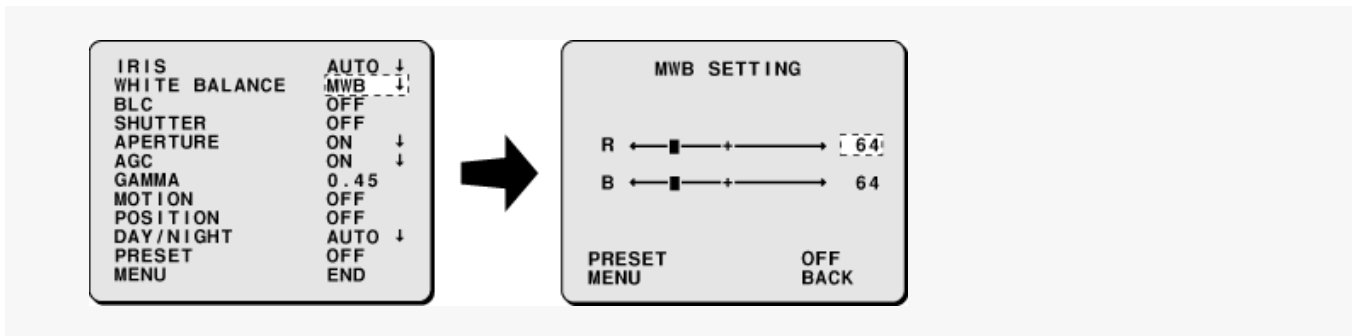
2 Select [MENU] and choose “BACK” or “END” to complete the setting.

Manual white balance (MWB)

Use the following procedure to manually adjust the gain values of the red and blue signals.

1 Use the \triangle/∇ button to select [WHITE BALANCE], use the $\triangleleft/\triangleright$ button to choose “MWB”, and press the SET button.

The MWB SETTING screen appears.



2 Use the \triangle/∇ button to select [R] or [B] and use the $\triangleleft/\triangleright$ button to choose the gain value of the red or blue signal.

Available settings:

- ▶ R (red): 0 (light) to 255 (dark)
- ▶ B (blue): 0 (light) to 255 (dark)

3 Select [MENU] and choose “BACK” or “END” to complete adjustment.



BLC setting

Sets the backlight compensation function.

If you do not use the backlight compensation function, set [BLC] to “OFF”.

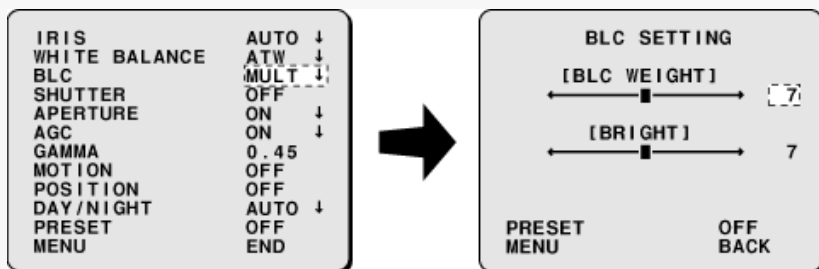
- **MULT: Multi-spot evaluative metering**
- **CENT: Center-weighted average metering**
- **MASK: Masking for backlight compensation**

Multi-spot evaluative metering (MULT)

Multi-spot evaluative metering compensates for the backlighting problem by evaluating the photometry of the entire screen.

- 1 Use the \triangle/∇ button to select [BLC], use the $\triangleleft/\triangleright$ button to choose “MULT”, and press the SET button.

The BLC SETTING screen for multi-spot evaluative metering appears.



- 2 Use the \triangle/∇ button to select [BLC WEIGHT] and use the $\triangleleft/\triangleright$ button to adjust the backlight compensation weight (sensitivity).

Available settings: 0 (low sensitivity) to 15 (high sensitivity)

- 3 Use the \triangle/∇ button to select [BRIGHT] and use the $\triangleleft/\triangleright$ button to adjust the compensation level for the brightness of the backlighting.

Available settings: 0 (minimum brightness compensation) to 15 (maximum brightness compensation)

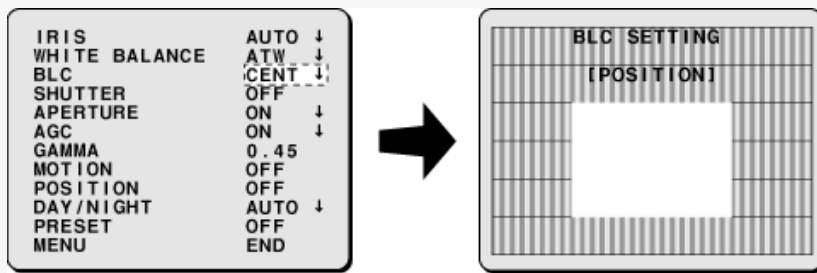
- 4 Select [MENU] and choose “BACK” or “END” to complete adjustment.

Center-weighted average metering (CENT)

Center-weighted average metering compensates for the backlighting problem by measuring the specified compensation zone intensively.

- 1 Use the \triangle/∇ button to select [BLC], use the $\triangleleft/\triangleright$ button to choose “CENT”, and press the SET button.

The BLC SETTING [POSITION] screen appears, showing the backlight compensation zone in the center area.

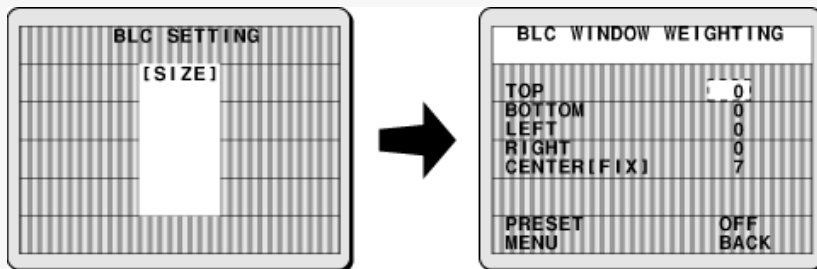


- 2** Use the \triangle/∇ buttons to determine the position of the backlight compensation zone and press the SET button.

The BLC SETTING [SIZE] screen appears.

- 3** Use the \triangle/∇ buttons to determine the size of the backlight compensation zone and press the SET button.

The BLC WINDOW WEIGHTING screen appears.



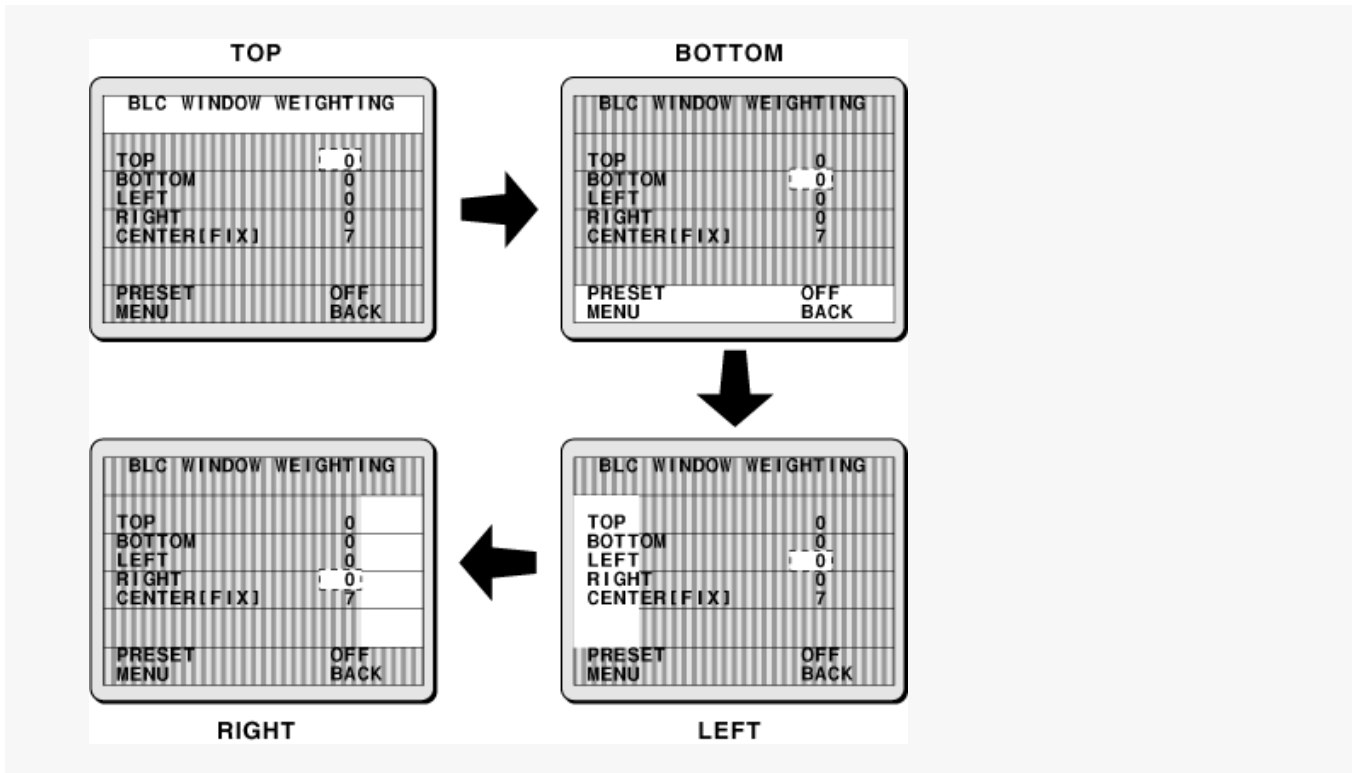
Use the \triangle/∇ button to change the vertical size. Use the $\triangleleft/\triangleright$ button to change the horizontal size.

- 4** Use the \triangle/∇ button to select each spot to be weighted and use the $\triangleleft/\triangleright$ button to set the weighting value.

Spot evaluative metering will occur in five spots: TOP, BOTTOM, LEFT, RIGHT, and CENTER.

The weighting value of [CENTER (FIX)] is fixed to "7".

Available settings: 0 (minimum) to 7 (maximum)



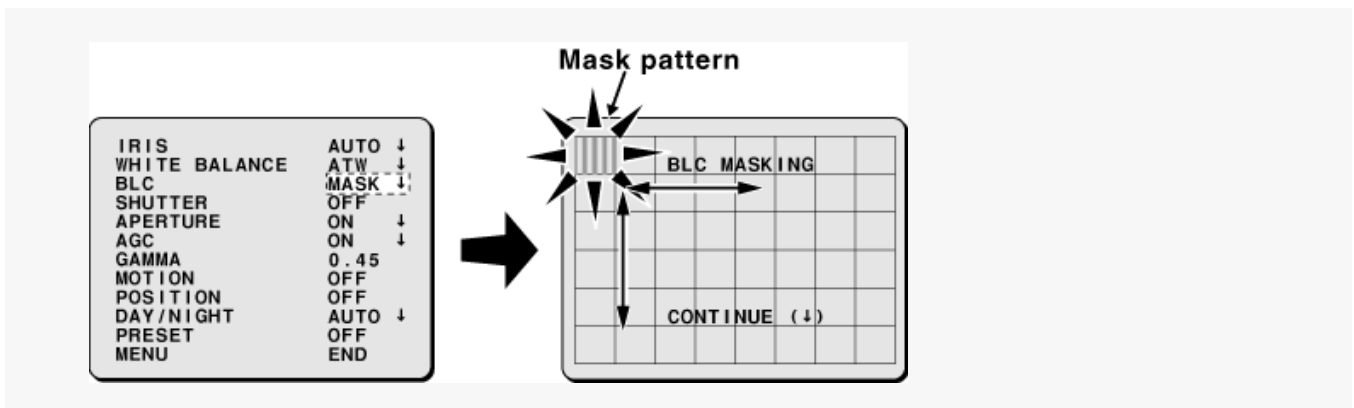
5 Select [MENU] and choose “BACK” or “END” to complete the setting.

Masking for backlight compensation (MASK)

You can use BLC masking to compensate for the backlighting problem when the target is human, by masking bright background areas.

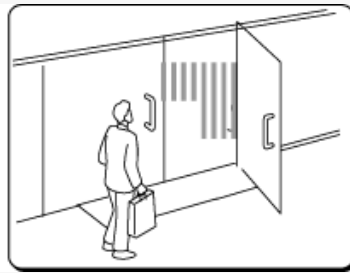
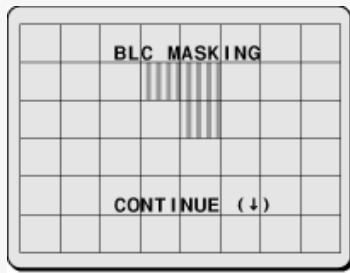
1 Use the \triangle/∇ button to select [BLC], use the $\triangleleft/\triangleright$ button to choose “MASK”, and press the SET button.

The BLC MASKING screen appears, with a blinking mask pattern shown at the top left.



2 Use the $\triangle/\nabla/\triangleleft/\triangleright$ buttons to move the mask pattern over the light source you want to mask and press the SET button.

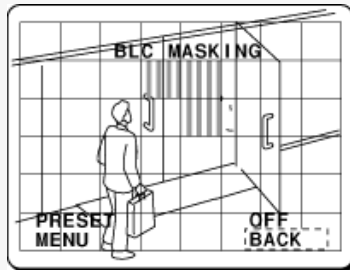
This sets a mask at the position where you moved the mask pattern. A new mask pattern starts blinking. Repeat this step to set masks as many as you want.



To delete a mask, move the mask pattern over it and press the SET button.

- 3** When finished setting masks, use the  button to move the mask pattern to the bottom area of the screen and press and hold the  button for approximately three seconds.

The [PRESET] and [MENU] items appear on the screen.



- 4** Select [MENU] and choose "BACK" or "END" to complete the setting.



SHUTTER setting

Sets the electronic shutter.

If you do not use the electronic shutter, set [SHUTTER] to "OFF".

SHORT: Fast shutter speeds

LONG: Slow shutter speeds

Fast shutter speeds (SHORT)

For fast-moving objects, setting a faster shutter speed will reproduce clearer images with less blurs.

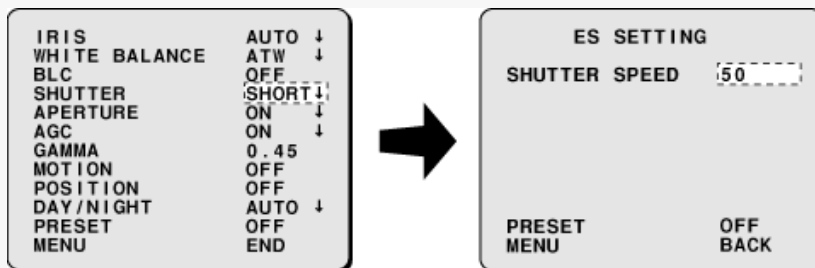


If fast shutter speeds (SHORT) cannot be set:

[SENSE UP] (electronic sensitivity boosting) or [EI] (electronic iris) is set.

- 1 Use the \triangle/∇ button to select [SHUTTER], use the $\triangleleft/\triangleright$ button to choose "SHORT", and press the SET button.

The ES SETTING screen appears.



- 2 Use the $\triangleleft/\triangleright$ button to select the desired shutter speed.

Available settings:

- ▶ PAL: 50, 120, 250, 500, 1000, 2000, 4000, 10000
- ▶ NTSC: 60, 100, 250, 500, 1000, 2000, 4000, 10000

- 3 Select [MENU] and choose "BACK" or "END" to complete the setting.

Slow shutter speeds (LONG)

Increasing the exposure time will improve the sensitivity, ensuring clear images even if the target objects are dark.



If slow shutter speeds (LONG) cannot be set:

[SENSE UP] (electronic sensitivity boosting) or [EI] (electronic iris) is set.

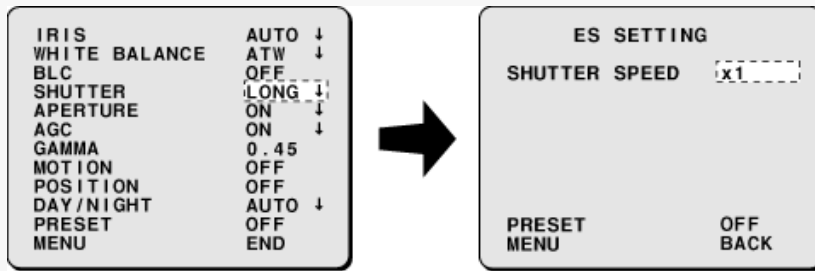
[MOTION] is set to "ON".

Setting a slow shutter speed causes the following:

The [V-RESO.UP] (vertical resolution increase) settings will be cancelled.

- 1 Use the \triangle/∇ button to select [SHUTTER], use the $\triangleleft/\triangleright$ button to choose "LONG", and press the SET button.

The ES SETTING screen appears.



2 Use the  button to select the desired shutter speed.

Available settings:

▶ x1, x2, x4, x8, x16, x32



The faster shutter speeds, the longer the resulting exposure time.

Setting an excessively long exposure time may result in ghosts, blurs and white spots in moving target objects.

3 Select [MENU] and choose “BACK” or “END” to complete the setting.



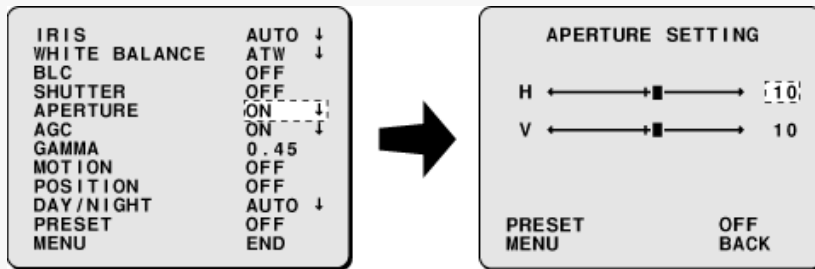
APERTURE setting

Use this setting to emphasize the profile of the target objects. The aperture adjustment can be done in the horizontal and vertical directions.

If you do not use the aperture compensation function, set [APERTURE] to "OFF".

- 1 Use the \triangle/∇ button to select [APERTURE], use the $\triangleleft/\triangleright$ button to choose "ON", and press the SET button.

The APERTURE SETTING screen appears.



- 2 Use the \triangle/∇ button to select the direction of aperture compensation (H or V) and use the $\triangleleft/\triangleright$ button to set the compensation value.

Available settings:

- ▶ H: Horizontal aperture compensation (1 to 15)
- ▶ V: Vertical aperture compensation (1 to 15)

- 3 Select [MENU] and choose "BACK" or "END" to complete the setting.



AGC setting

Sets the gain of the video signal.

Auto Gain Control (AGC) is a function that automatically adjusts the gain of the video signal in the camera's amplifier according to the brightness of the target objects to maintain a constant signal output.

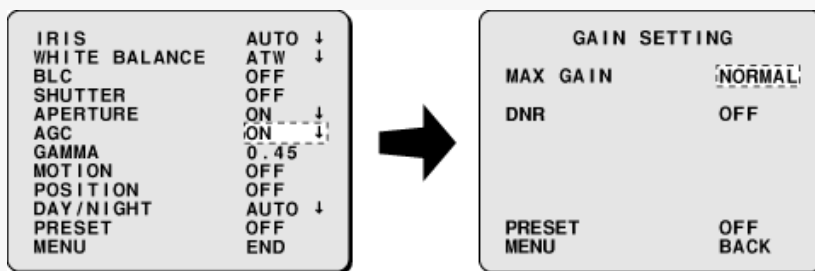
Automatic gain setting using AGC

Manual gain setting

Automatic gain setting using AGC

- 1 Use the \triangle/∇ button to select [AGC], use the $\triangleleft/\triangleright$ button to choose "ON", and press the SET button.

The GAIN SETTING screen appears.



- 2 Use the \triangle/∇ button to select [MAX GAIN] and use the $\triangleleft/\triangleright$ button to choose the desired gain option.

Available settings:

- ▶ LOW: For bright target object
(The "LOW" option is not available when [DAY/NIGHT] is set to "AUTO".)
- ▶ NORMAL: Normal setting
- ▶ MIDDLE: For slightly dark target objects
- ▶ HIGH: For dark target objects



The maximum gain value varies depending on the Day/Night function mode.

Setting a higher gain level will improve the camera sensitivity in a dark condition, but increase the noise as well.

- 3 Use the \triangle/∇ button to select [DNR] and use the $\triangleleft/\triangleright$ button to choose "ON".

Setting the DNR (Digital Noise Reduction) will reduce the noise at low luminance levels.



Setting [DNR] to "ON" cancels the [V-RESO.UP] (vertical resolution increase) settings.

The DNR function does not work in electronically zoomed areas in the color mode.

The DNR function works when the AGC's gain level is high. However, using the DNR function may cause blurs and ghosts in moving target objects. In this case, the resolution will also be reduced.

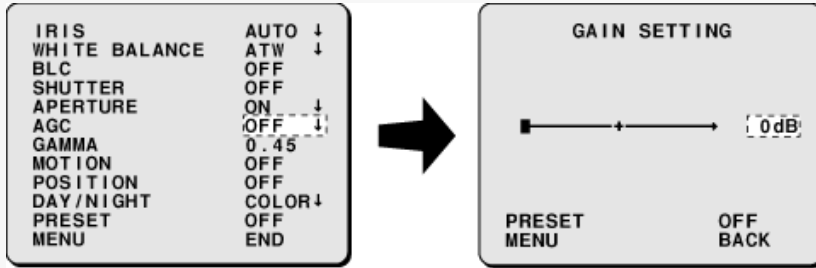
- 4 Select [MENU] and choose "BACK" or "END" to complete the setting.

Manual gain setting

- 1 Use the \triangle/∇ button to select [AGC], use the $\triangleleft/\triangleright$ button to choose "OFF", and press the SET

button.

The GAIN SETTING screen appears.



If [AGC] cannot be set to “OFF”:

■ [DAY/NIGHT] is set to “AUTO”, or [SENSE UP] (electronic sensitivity boosting) is set to “ON”.

2 Use the ◀▶ button to set the AGC’s gain value.

Available settings: 0 to 30 dB

3 Select [MENU] and choose “BACK” or “END” to complete the setting.



GAMMA setting

Use this setting to set the gamma correction level to adjust the contrast or brightness level.

IRIS	AUTO ↓
WHITE BALANCE	ATW ↓
BLC	OFF
SHUTTER	OFF
APERTURE	ON ↓
AGC	ON ↓
GAMMA	0.45 ↓
MOTION	OFF
POSITION	OFF
DAY/NIGHT	AUTO ↓
PRESET	OFF
MENU	END

- 1 Use the  button to select [GAMMA] and use the  button to choose the desired gamma correction level.

Available settings:

- ▶ 0.45: Sets the gamma correction level to 0.45.
- ▶ 1: Sets the gamma correction level to 1.
- ▶ MODE1: Increases the contrast in dark areas.
- ▶ MODE2: Increases the contrast in dark areas further.



Choosing "MODE1" or "MODE2" may result in excessively bright images depending on the target objects.

- 2 Select [MENU] and choose "BACK" or "END" to complete the setting.



MOTION setting

This camera offers a built-in motion sensor function that detects movements by intruders and so on and outputs an alarm signal.

SIZE: Sets the detection area size.

MASKING: Sets masks.

SENSITIVITY: Sets the detection sensitivity.

DURATION: Sets the alarm disable duration.



If [MOTION] cannot be set:

[SENSE UP] (electronic sensitivity boosting) is set, or [SHUTTER] is set to "LONG" (a slow shutter speed).

Setting [MOTION] causes the following:

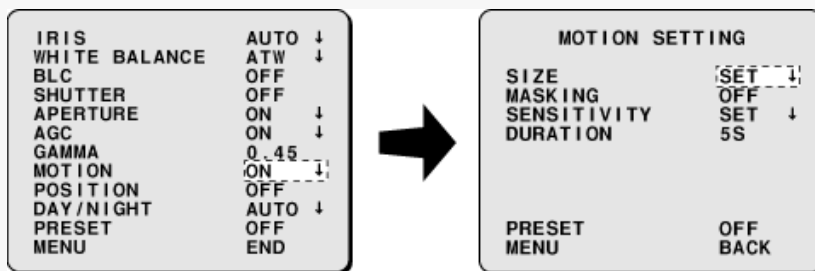
[SENSE UP] (electronic sensitivity boosting) cannot be set, and [SHUTTER] cannot be set to "LONG" (a slow shutter speed).

Setting the detection area size (SIZE)

Set the size of the detection area on the screen, where movements will be detected.

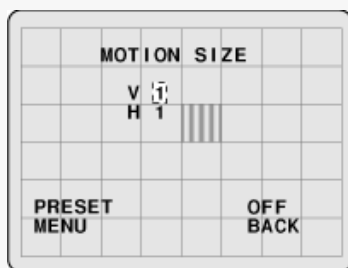
- 1 Use the \triangle/∇ button to select [MOTION], use the $\triangleleft/\triangleright$ button to choose "ON", and press the SET button.

The MOTION SETTING screen appears.



- 2 Use the \triangle/∇ button to select [SIZE] and press the SET button.

The MOTION SIZE screen appears, showing the detection pattern in the center area.



- 3 Use the \triangle/∇ button to select [V] (for vertical sizing) or [H] (for horizontal sizing) and use the $\triangleleft/\triangleright$ button to set the size value.

The size of the detection pattern shown on the screen changes based on the [V] and [H] settings. An alarm signal will be output if motion is detected in all areas of the set detection pattern.

Available settings:

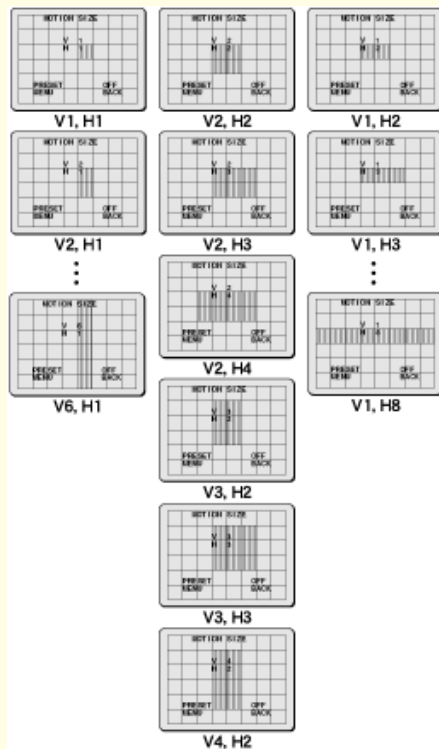
- ▶ V: Vertical sizing (1 to 6)

► H: Horizontal sizing (1 to 8)



The maximum size of the detection pattern ([V] x [H]) is 9. If setting a vertical or horizontal size causes this maximum size to be exceeded, the other size will be automatically adjusted.

The detection pattern can be set in 19 sizes, as shown below.



Any motion in the target that is larger than the area of the set detection pattern causes the motion sensor to respond and output an alarm signal.

The motion sensor does not respond to motions smaller than the detection pattern.

The displayed detection pattern does not indicate the sensing position.

4 Select [MENU] and choose “BACK” or “END” to complete the setting.

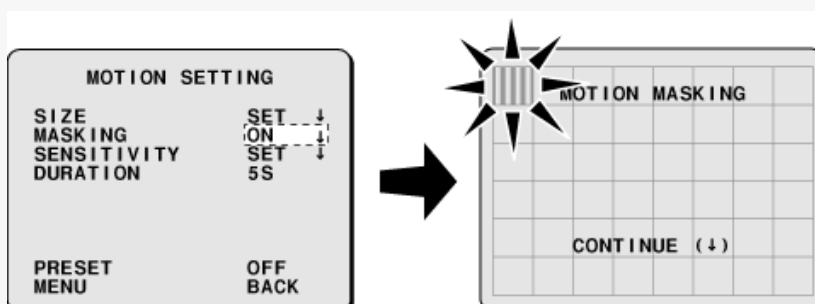
Setting masks (MASKING)

You can set masks over objects such as swaying trees and flickering of light, which may cause the motion sensor to respond incorrectly.

If you do not use masks, set [MASKING] to “OFF”.

1 Use the \triangle/∇ button to select [MASKING], use the \triangle/\triangleright button to choose “ON”, and press the SET button.

The MOTION MASKING screen appears, with a blinking mask pattern shown at the top left.



- 2** Use the $\triangle/\nabla/\triangleleft/\triangleright$ buttons to move the mask pattern over the light source you want to mask and press the SET button.

This sets a mask at the position where you moved the mask pattern. A new mask pattern starts blinking. Repeat this step to set masks as many as you want.



To delete a mask, move the mask pattern over it and press the SET button.

- 3** When finished setting masks, use the ∇ button to move the mask pattern to the bottom area of the screen and press and hold the ∇ button for approximately three seconds.

The [PRESET] and [MENU] items appear on the screen.

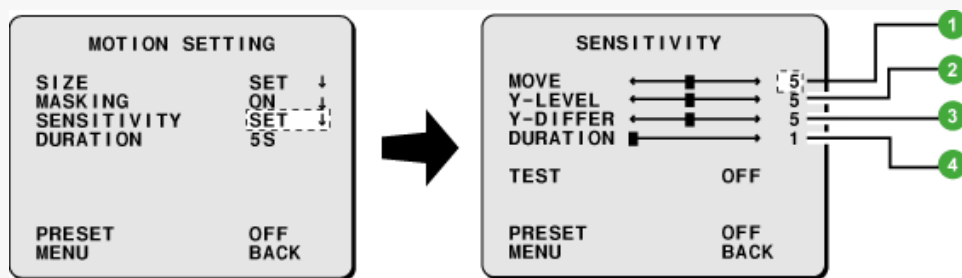
- 4** Select [MENU] and choose “BACK” or “END” to complete the setting.

Setting the detection sensitivity (SENSITIVITY)

You can adjust the sensitivity of motion sensor to prevent unwanted detection.

- 1** Use the \triangle/∇ button to select [SENSITIVITY] and press the SET button.

The SENSITIVITY screen appears.



- 2** Use the \triangle/∇ button to select one of the following sensitivity items and use the $\triangleleft/\triangleright$ button to adjust the detection level.

For all items, the sensitivity decreases as you increase the value.

1 MOVE (Motion sensitivity): 1 to 10

Set a larger value to prevent the detection of subtle movements, such as those caused by a breeze.

2 Y-LEVEL (Brightness level): 1 to 10

Set a larger value to prevent unwanted detection due to noise in a dark image.

3 Y-DIFFER (Brightness difference): 1 to 10

Set a larger value to prevent the motion sensor from responding to the switching ON/OFF of lighting.

4 DURATION (Detection interval): 1 to 60

Set a larger value to prevent the detection of fast-moving objects.





To test the sensitivity settings, select [TEST] using the \triangle/∇ button and choose “ON” using the $\triangleleft/\triangleright$ button.

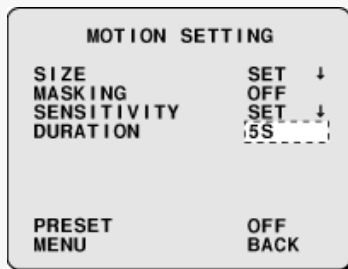
A detection pattern will appear in any area where a motion is detected. Adjust the settings as necessary.

- 3** Select [MENU] and choose “BACK” or “END” to complete the setting.

Setting the alarm disable duration (DURATION)

Set the alarm disable duration to prevent the motion sensor, after detecting a motion and outputting an alarm signal, from detecting subsequent alarm motions for that period.

- 1 Use the  button to select [DURATION] and use the  button to choose the alarm disable duration.



Available settings: 5S, 10S, 15S, 20S, 30S, 45S, 1M, 2M, 3M, 4M, 5M (S = seconds, M = minutes)

- 2 Select [MENU] and choose “BACK” or “END” to complete the setting.



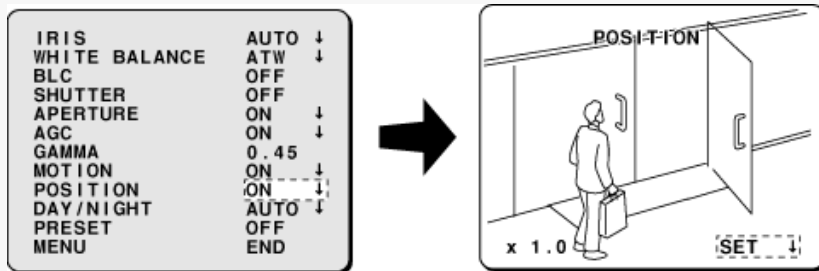
POSITION setting

You can store the zoom and focus settings of surveillance locations by camera setting number (either 1 or 2). These stored zoom and focus settings can be retrieved by selecting [CAMERA] and choosing the camera setting number.

- 1 Use the Δ/∇ button to select [POSITION] and use the $\triangleleft/\triangleright$ button to choose "ON", and press the SET button.

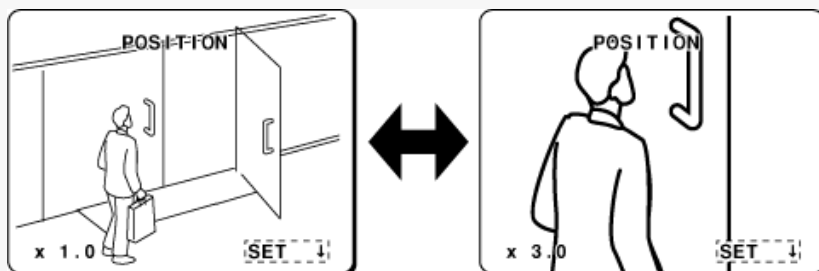
The [POSITION] screen appears, where the $\triangleleft/\triangleright$ buttons function as the zoom buttons and the Δ/∇ buttons serve as focus buttons.

If you do not store zoom and focus settings, set [POSITION] to "OFF".



- 2 Use the $\triangleleft/\triangleright$ button to adjust the zoom and use the Δ/∇ button to adjust the focus and press the SET button.

This stores the zoom and focus settings and brings you back to the CAMERA setting screen.



The Δ/∇ button can be used to adjust the focus even when the auto focus is set ([FOCUS] is set to "AUTO").

When [POSITION] is set to "OFF", the zoom and focus settings stored in the camera will be overwritten by those settings of the current position.

In the same way, performing zoom or focus operation with [POSITION] set to "OFF" also overwrites the zoom and focus settings stored following this procedure.



DAY/NIGHT setting

The Day/Night function improves the camera's sensitivity by automatically switching the video to the normal color mode in bright conditions and to the black/white mode in dark situations.

You can fix the camera to the color or black/white video mode without using the Day/Night function.

AUTO: Automatically switches to color or black/white mode.

COLOR:

- ▶ Fixes the video mode to color mode.
- ▶ Automatically switches between color and black/white modes when an external alarm is input.

B/W: Fixes the video mode to black/white mode.



You can use the system controller to change the Day/Night function mode. To do so, select [AUX ON] and select one of the mode numbers on the number entry screen:

3 = AUTO mode, 2 = B/W mode, 1 = COLOR mode

You may hear switching noise or see distorted images when the camera mode is switched. This is not a malfunction, however.

In AUTO mode, turning OFF the camera with black/white image displayed and then turning it back on again switches to color image. The retrieved focused position may differ between the color and black/white images.

When using infrared lighting in the black/white mode, the camera may switch to the color mode due to strong reflection from the target objects.

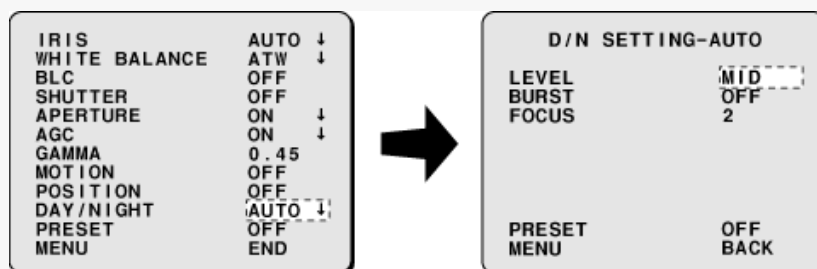
If this occurs, take the following measures:

- ▶ Set the focus compensation mode to adjust the focus more accurately.
- ▶ Adjust the infrared lighting so as not to cause switching to the color mode.

Switching to color or black/white mode automatically (AUTO)

- 1 Use the \triangle/∇ button to select [DAY/NIGHT], use the $\triangleleft/\triangleright$ button to choose "AUTO", and press the SET button.

The D/N SETTING-AUTO screen appears.



Setting [DAY/NIGHT] to "AUTO" causes the following:

- ▶ [AGC] cannot be set to "OFF".

- 2 Use the \triangle/∇ button to select [LEVEL] and use the $\triangleleft/\triangleright$ button to choose the luminance level at which the camera is switched between the color and black/white mode.

Available settings:

- ▶ LOW: Sets a low luminance level (to increase the time during which the camera operates in the color mode).
- ▶ MID: Sets the luminance level to halfway between "LOW" and "HIGH".
- ▶ HIGH: Sets a high luminance level (to increase the time during which the camera operates in the

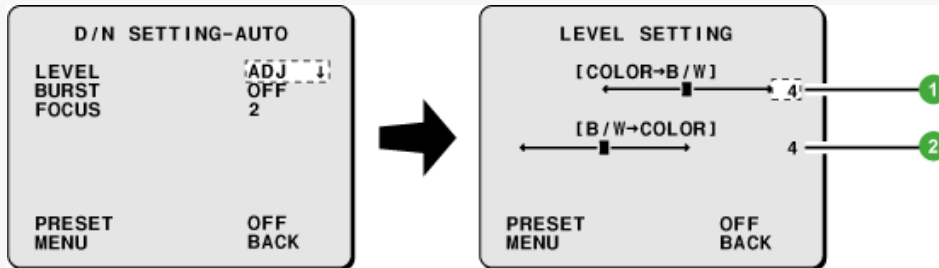
- ▶ black/white mode).
- ▶ ADJ: Enables the manual adjustment of the luminance level.

To set the mode-switching luminance level manually (ADJ)

- 1** Use the ◀/▶ button to Choose “ADJ” and press the SET button.

The LEVEL SETTING screen appears.

- 2** Use the △/▽ button to select the level setting item (1 or 2) and use the ◀/▶ button to adjust the luminance level at which switching occurs.



1 [COLOR→B/W]

Sets the luminance level at which switching occurs from the color mode to the black/white mode.
Available settings: 1 to 7 (Switching occurs in darker conditions as the luminance value increases.)

2 [B/W→COLOR]

Sets the luminance level at which switching occurs from the black/white mode to the color mode.
To prevent hunting in infrared (IR) lighting, set the two luminance settings to widely different values.
Available settings: 1 to 7
(Switching occurs in darker conditions as the luminance value increases. Changing this setting also changes the other setting to retain the difference.)

- 3** Use the △/▽ button to select [BURST] and use the ◀/▶ button to turn ON/OFF the burst signal.

If connected to a peripheral device like a frame switcher, the camera may produce distorted images (or “burst”) when switching between the color and black/white video modes.

This phenomenon can be corrected by inserting a color burst signal.

Normally, set [BURST] to “OFF”.

Available settings:

- ▶ ON: Inserts a burst signal.
- ▶ OFF: Does not insert a burst signal.

- 4** Use the △/▽ button to select [FOCUS] and use the ◀/▶ button to choose the focus compensation mode.

Normally, set the focus compensation mode to “2”. However, if the target gets out of focus, set this to “1”.

Available settings:

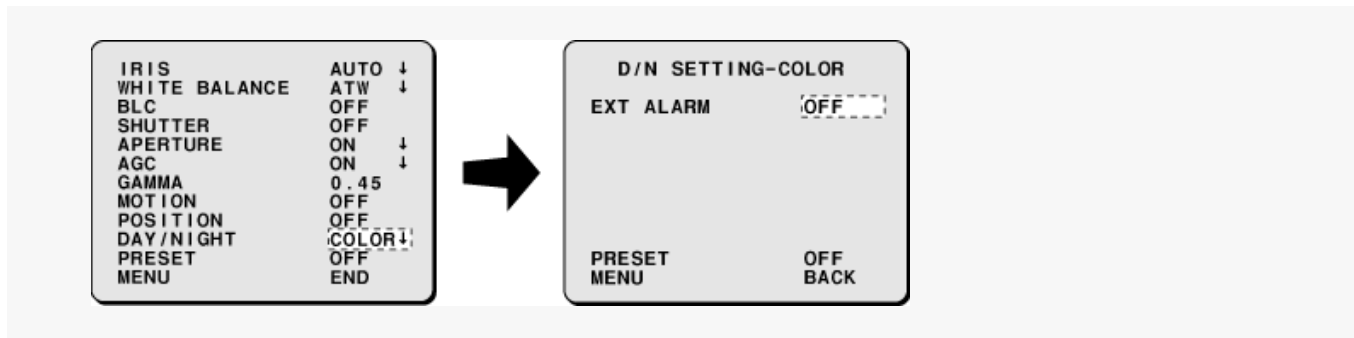
- ▶ 1: Use this mode if the camera is used under near-infrared lighting.
- ▶ 2: Use this mode if the camera is used under natural sunlight or normal lighting.

- 5** Select [MENU] and choose “BACK” or “END” to complete the setting.

Fixing the video mode to color mode (COLOR)

- 1 Use the \triangle/∇ button to select [DAY/NIGHT], use the $\triangleleft/\triangleright$ button to choose “COLOR”, and press the SET button.

The D/N SETTING-COLOR screen appears.



- 2 Use the $\triangleleft/\triangleright$ button to set [EXT ALARM] to “OFF”.

Switching between color and black/white modes automatically when an external alarm is input (COLOR)

- 1 Use the \triangle/∇ button to select [DAY/NIGHT], use the $\triangleleft/\triangleright$ button to choose “COLOR”, and press the SET button.

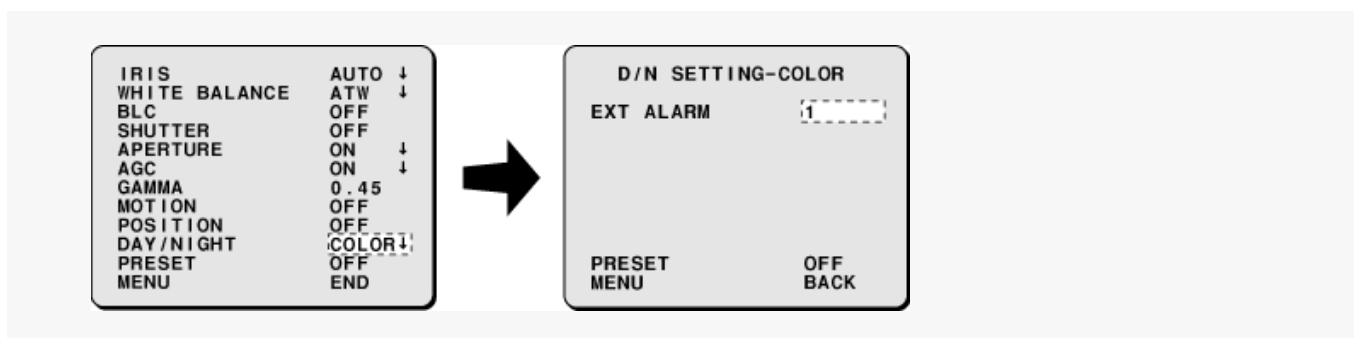
The D/N SETTING-COLOR screen appears.

- 2 Use the $\triangleleft/\triangleright$ button to choose the external alarm input channel setting for [EXT ALARM].

You can use external alarm input to switch the video mode of the camera.

Available settings:

- ▶ OFF: Disables detection of external alarm input.
- ▶ 1: Switches to color or black/white mode when an external alarm input through the ALARM IN 1 terminal is detected.
- ▶ 2: Switches to color or black/white mode when an external alarm input through the ALARM IN 2 terminal is detected.



- 3 On the ALARM screen, use the $\triangleleft/\triangleright$ button to set [ALARM IN] to “1” or “2” (alarm input channel set on the D/N SETTING-COLOR screen), and use the $\triangleleft/\triangleright$ button to select [POLARITY].

For details, see “Setting the Alarm Input (ALARM IN)”.

[POLARITY] = “NO”

Open: color mode, Closed: black/white mode

[POLARITY] = “NC”

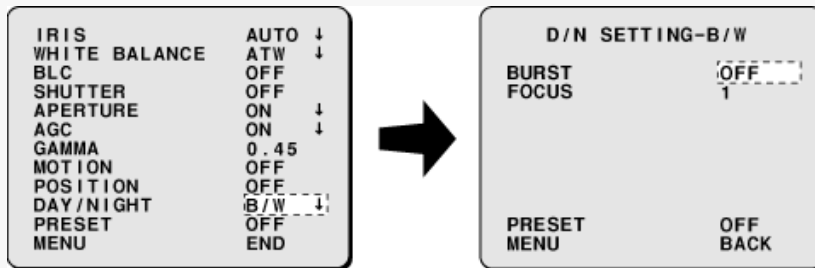
Open: black/white mode, Closed: color mode

- 4 Select [MENU] and choose “BACK” or “END” to complete the setting.

Fixing the video mode to black/white mode (B/W)

- 1 Use the \triangle/∇ button to select [DAY/NIGHT], use the $\triangleleft/\triangleright$ button to choose “B/W”, and press the SET button.

The D/N SETTING-B/W screen appears.



- 2 Use the \triangle/∇ button to select [BURST] and use the $\triangleleft/\triangleright$ button to turn ON/OFF the burst signal.

Set whether or not to insert a color burst signal into the black/white signal. Normally, set [BURST] to “OFF”.

Available settings:

- ▶ ON: Inserts a burst signal.
- ▶ OFF: Does not insert a burst signal.

- 3 Use the \triangle/∇ button to select [FOCUS] and use the $\triangleleft/\triangleright$ button to choose the focus compensation mode.

Normally, set the focus compensation mode to “1”. However, if the target gets out of focus, set this to “2”.

Available settings:

- ▶ 1: Use this mode if the camera is used under near-infrared lighting.
- ▶ 2: Use this mode if the camera is used under natural sunlight or normal lighting.

- 4 Select [MENU] and choose “BACK” or “END” to complete the setting.



Lens Settings (LENS)

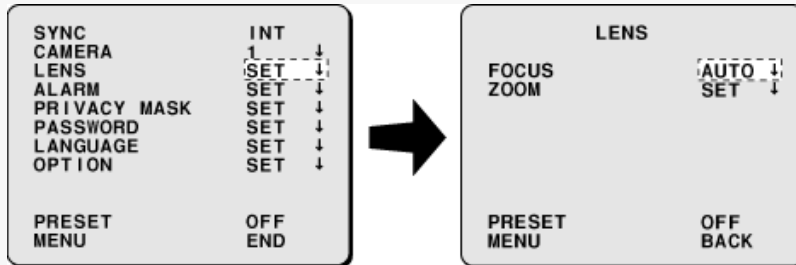
For the lens settings, you can specify the options for focusing and zooming operations.

Focusing operation settings (FOCUS)

Sets the focusing mode to either auto or manual.

Zooming operation settings (ZOOM)

Sets the optical zooming speed and electronic zooming option.



Setting the Focusing Mode (FOCUS)

AUTO: Auto focus

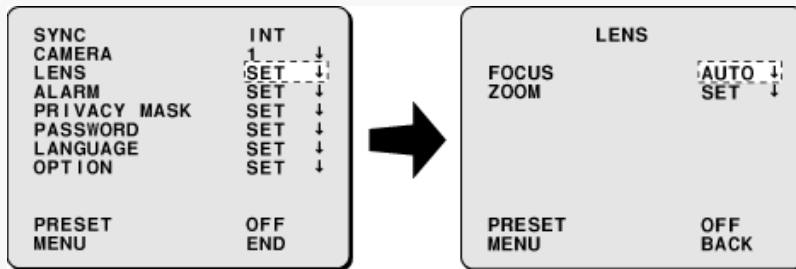
MANU: Manual focus

Set the focusing distance and speed appropriate for the target object.

Setting the auto focus function (AUTO)

- 1 Use the \triangle/∇ button to select [LENS] in the main menu, and press the SET button.

The LENS screen appears.



- 2 Use the \triangle/∇ button to select [FOCUS], use the \triangle/∇ button to select "AUTO", and press the SET button.

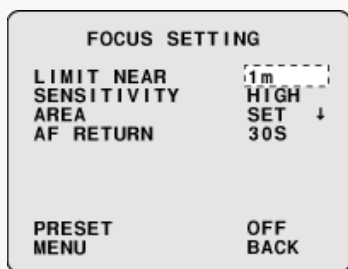
The FOCUS SETTING screen appears.

- 3 Use the \triangle/∇ button to select [LIMIT NEAR], and use the \triangle/∇ button to choose the nearest focusing distance to the object.

Available settings: 10cm, 30cm, 50cm, 1m, 3m, 5m



When the distance to the object is less than or equal to 1m, focusing may become difficult.



- 4 Use the \triangle/∇ button to select [SENSITIVITY], and use the \triangle/∇ button to select sensitivity in focusing.

Available settings:

- ▶ HIGH: High sensitivity focusing
- ▶ LOW: Low sensitivity focusing



When focusing sensitivity is set to "HIGH", the camera may react to even slight movements of the object. In this case, change the setting to "LOW".

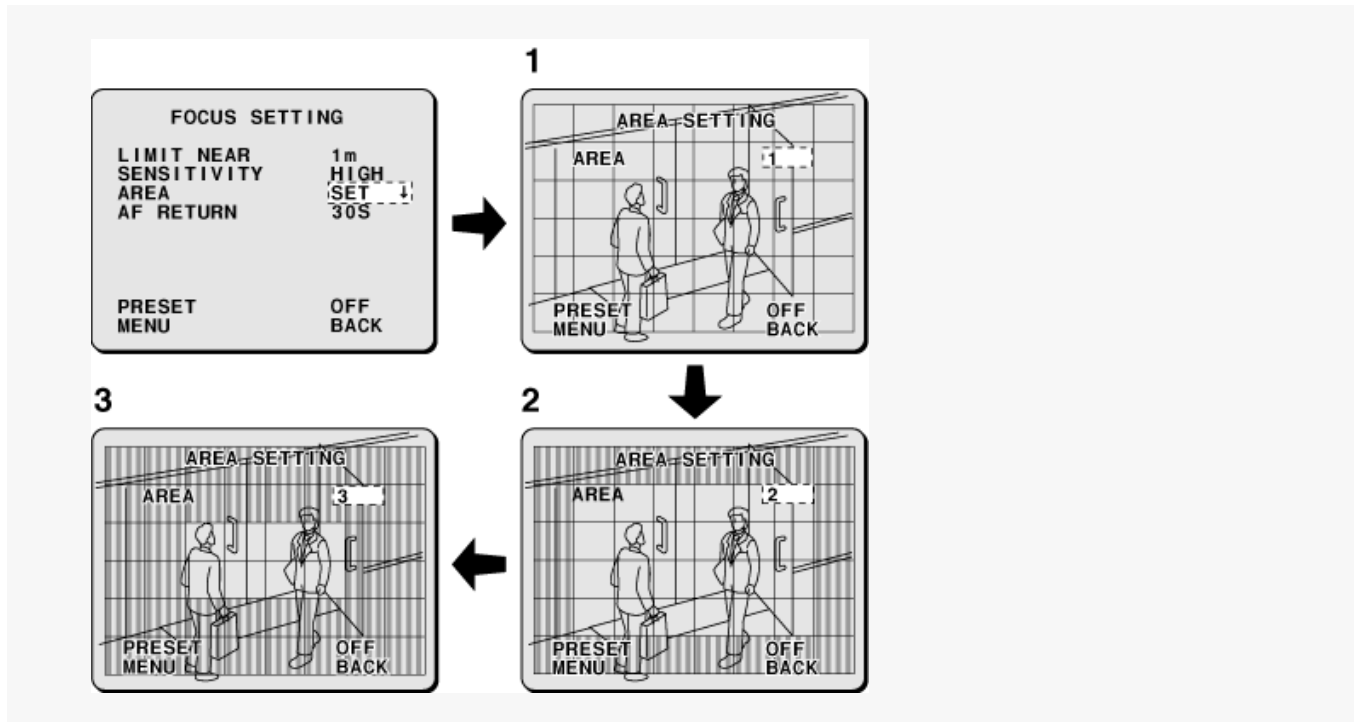
5 Use the \triangle/∇ button to select [AREA], and press the SET button.

The AREA SETTING screen appears.

6 Use the $\triangleleft/\triangleright$ button to select the option for the auto-focusing target area.

Available settings:

- ▶ 1 (entire screen)
- ▶ 2 (center of screen: larger area)
- ▶ 3 (center of screen: smaller area)



7 Select [MENU], choose “BACK”, and press the SET button.

The FOCUS SETTING screen appears again.

8 Use the \triangle/∇ button to select [AF RETURN], and use the $\triangleleft/\triangleright$ button to select the auto focus auto return option.

Available settings:

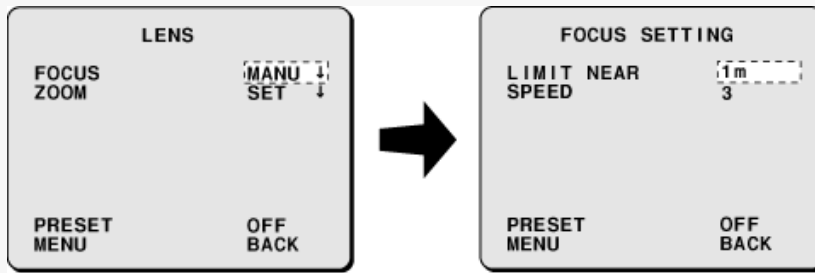
- ▶ AUTO: Returns the focusing mode automatically to the auto focus mode when a zooming operation is performed after the camera is focused manually.
- ▶ 20S - 5M: Returns the focusing mode automatically to the auto focus mode after the duration selected in this option has passed.

9 Select [MENU] and choose “BACK” or “END” to complete the setting.

Setting the manual focus function (MANU)

1 Use the \triangle/∇ button to select [FOCUS], use the $\triangleleft/\triangleright$ button to choose “MANU”, and press the SET button.

The FOCUS SETTING screen appears.



2 Use the \triangle/∇ button to select [LIMIT NEAR], and use the $\triangleleft/\triangleright$ button to choose the nearest focusing distance to the object.

Available settings: 10cm, 30cm, 50cm, 1m, 3m, 5m



When the distance to the object is less than or equal to 1m, focusing may become difficult.

3 Use the \triangle/∇ button to select [SPEED], and use the $\triangleleft/\triangleright$ button to select the focusing speed.

Available settings: 1, 2, 3, and 4 (maximum)

4 Select [MENU] and choose “BACK” or “END” to complete the setting.

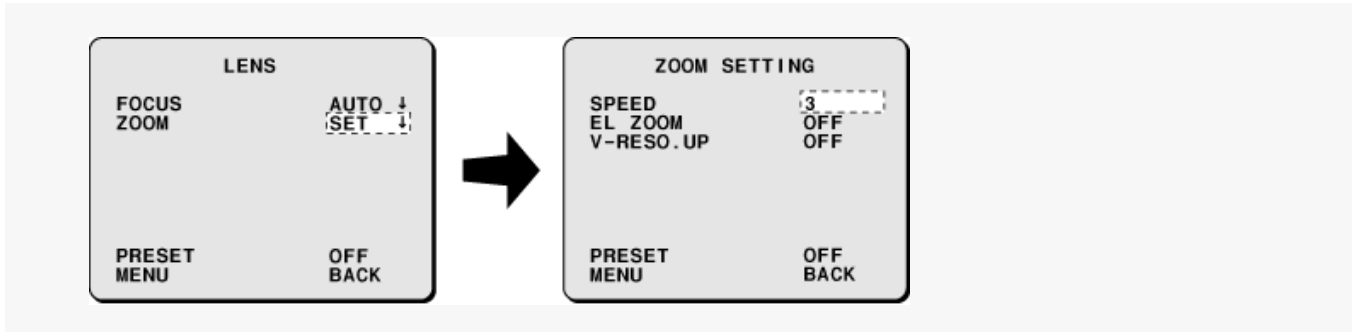


Setting the Zooming Operations (ZOOM)

You can select zooming speed to the object and magnification power of electronic zoom.

- 1 Use the Δ/∇ button to select [ZOOM], and press the SET button.

The ZOOM SETTING screen appears.



- 2 Use the Δ/∇ button to select [SPEED], and use the $\triangleleft/\triangleright$ button to choose the desired optical zoom speed.

Available settings: 1, 2, 3, and 4 (maximum)

- 3 Use the Δ/∇ button to select [EL ZOOM], and use the $\triangleleft/\triangleright$ button to choose the desired magnification power of electronic zoom.

The optical zoom factor can be selected from the range of 1 to 30. If you want to zoom in beyond this range, use the electronic zoom function by selecting from the following electronic zoom factors:

Available settings:

- ▶ OFF: Optical zoom only
- ▶ x 2: Approx. 60x magnification
- ▶ x 4: Approx. 120x magnification
- ▶ x 8: Approx. 240x magnification
- ▶ x 16: Approx. 480x magnification



When the electronic zoom is applied, the quality of image slightly degrades.

- 4 Use the Δ/∇ button to select [V-RESO.UP], and use the $\triangleleft/\triangleright$ button to enable/disable the vertical resolution increase.

Available settings:

- ▶ ON: Increases vertical resolution while using the electronic zoom.
- ▶ OFF: Does not increase vertical resolution while using the electronic zoom.



The vertical resolution increase (V-RESO.UP) cannot be set to "OFF" in the following conditions:

- ▶ When the electronic sensitivity setting (SENSE UP) is set to "ON".
- ▶ When the [SHUTTER] setting is set to "LONG" (Slow shutter speed).
- ▶ When [DNR] is set to "ON".

- 5 Select [MENU] and choose "BACK" or "END" to complete the setting.



Alarm Settings (ALARM)

You can specify the alarm input/output settings for the camera.

ALARM IN:

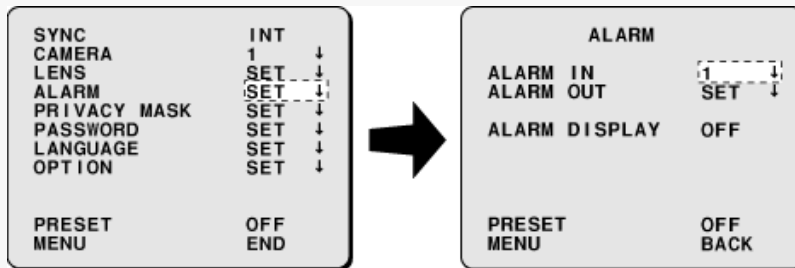
Allows you to perform the alarm input settings (input conditions, alarm action, etc) for each alarm input number.

ALARM OUT:

Allows you to perform the alarm output settings.

ALARM DISPLAY:

When an alarm is detected, the camera title displayed in the screen blinks indicating that an alarm is detected.



Setting the Alarm Input (ALARM IN)

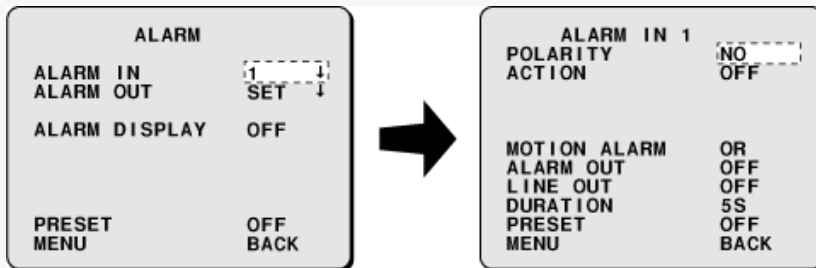
- 1 Use the \triangle/∇ button to select [ALARM] in the main menu, and press the SET button.

The ALARM screen appears.

- 2 Use the \triangle/∇ button to select [ALARM IN], use the \triangle/∇ button to choose an alarm input number, and press the SET button.

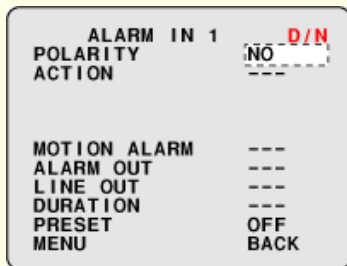
The ALARM IN screen corresponding to the selected alarm input number (1 or 2) appears.

Available options: 1, 2



When the alarm input is used as the external control input of the DAY/NIGHT function, “D/N” appears in the top right of the screen.

In this case, settings other than [POLARITY] cannot be made.



When [EXT ALARM] for [DAY/NIGHT (COLOR)] is set to “OFF”, “D/N” disappears.

- 3 Use the \triangle/∇ button to select [POLARITY], and use the \triangle/∇ button to choose the polarity for the alarm input signal.

Available settings:

- ▶ NO (Normal Open): Normally open so closed condition is detected as input.
- ▶ NC (Normal Close): Normally closed so open condition is detected as input.

- 4 Use the \triangle/∇ button to select [ACTION], and use the \triangle/∇ button to select the action after the alarm is detected.

Available settings:

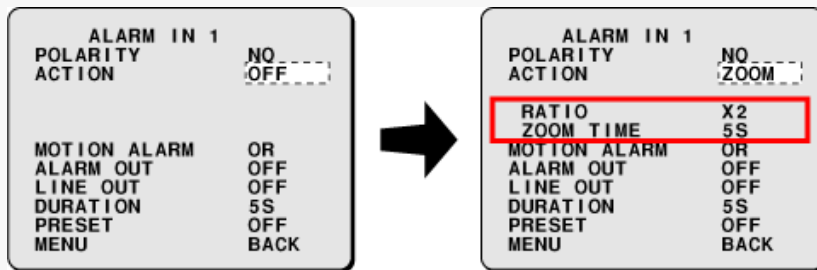
- ▶ OFF: Does not perform any actions.
- ▶ ZOOM: Zooms into the video at the specified magnification power.
To use this setting, set the zoom magnification power ([RATIO]) and the display duration ([ZOOM TIME]).
- ▶ CAM1/CAM2: Uses the operating conditions you configured for Camera 1 or Camera 2 in [CAMERA] on the main menu to monitor surveillance points.
To use this setting, select whether or not to return to the previous operating conditions upon completion of an alarm action (in [RETURN] under the item [ACTION]).

Performing zooming operation at the specified magnification power when an alarm

Performing zooming operation at the specified magnification power when an alarm

- 1 Use the \triangle/∇ button to select [ACTION], and use the $\triangleleft/\triangleright$ button to choose "ZOOM".

Under the item [ACTION], [RATIO] and [ZOOM TIME] appear.



- 2 Use the \triangle/∇ button to select [RATIO], and use the $\triangleleft/\triangleright$ button to choose the desired magnification power used when the alarm is detected.

Available settings: WIDE (widest angle), 1/8, 1/5.6, 1/4, 1/2.8, 1/2, 1/1.4, x1.4, x2, x2.8, x4, x5.6, x8, TELE (maximum telephoto), and MANU

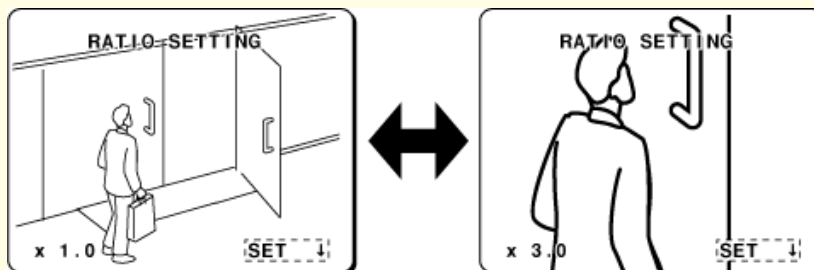


Setting the zooming magnification power manually

- 1 Use the $\triangleleft/\triangleright$ button to choose "MANU" and press the SET button.

The RATIO SETTING screen appears. On this screen, the \triangleleft and \triangleright buttons are used for zooming operation and the \triangle and ∇ buttons for focusing operation.

- 2 Use the $\triangleleft/\triangleright$ button to adjust the zoom and use the \triangle/∇ button to adjust the focus and press the SET button.



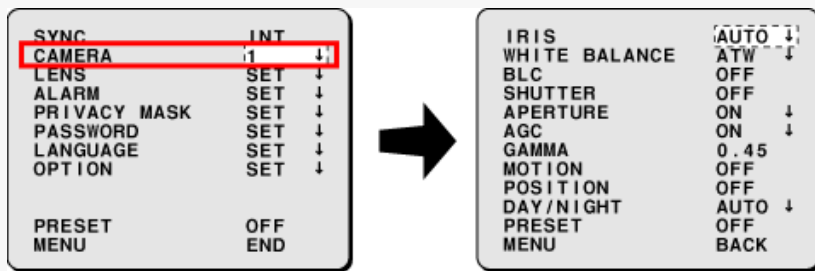
The settings made in step 2 are saved and the ALARM IN screen appears again.

The \triangle/∇ button can be used to adjust the focus even when the auto focus is set ([FOCUS] is set to "AUTO").

- 3 Use the \triangle/∇ button to select [ZOOM TIME], and use the $\triangleleft/\triangleright$ button to set the duration for which the zoomed image is displayed.

Available settings: 5S, 10S, 15S, 20S, 30S, 45S, 1M, 2M, 3M, 4M, 5M (S: seconds, M: minutes)

Using the operating conditions you configured for Camera 1 or Camera 2 in [CAMERA] on the main menu to monitor surveillance points when an alarm input is received

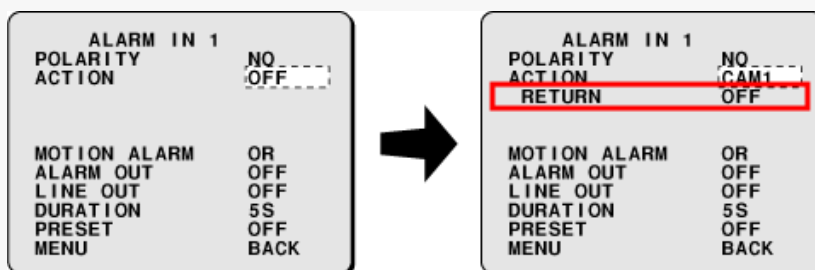


1 Use the \triangle/∇ button to select [ACTION] and use the $\triangleleft/\triangleright$ button to choose “CAM1” or “CAM2”.

Under the item [ACTION], [RETURN] appears.

Available settings:

- ▶ CAM1: Uses the operating conditions you configured for Camera 1 in [CAMERA] to monitor surveillance points.
- ▶ CAM2: Uses the operating conditions you configured for Camera 2 in [CAMERA] to monitor surveillance points.



2 Use the \triangle/∇ button to select [RETURN] and use the $\triangleleft/\triangleright$ button to choose “ON” or “OFF”.

Specify whether or not to return to the previous operating conditions upon completion of an alarm action.

Available settings:

- ▶ OFF: Retains the operating conditions used after the receipt of the alarm input.
- ▶ ON: Returns to the operating conditions before the receipt of the alarm input.



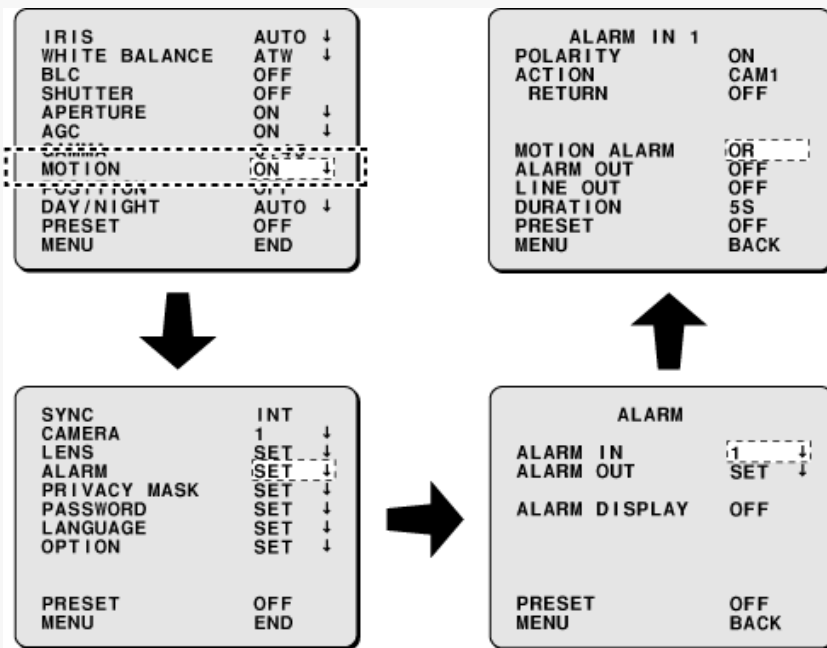
Setting [RETURN] to “ON” causes the camera to return to the previous operating conditions when the return duration you set in [DURATION] (in Step **7**) expires.

If another alarm input is received during the time specified in the [DURATION] setting, the operation will be performed according to the last alarm.

Setting the motion sensor

1 Use the \triangle/∇ buttons to set [MOTION] in the camera setting screen to “ON”.

2 Use the \triangle/∇ button to select [MOTION ALARM], and use the $\triangleleft/\triangleright$ button to set how the motion sensor will be used as an alarm input source.



Available settings:

- ▶ AND: Outputs an alarm signal if an external alarm input is received when the motion sensor has detected an alarm condition.
- ▶ OR: Outputs an alarm signal if the motion sensor detects an alarm condition or an external alarm input is received.

5 Use the \triangle/∇ button to select [ALARM OUT], and use the $\triangleleft/\triangleright$ button to enable/disable the alarm output.

Available settings:

- ▶ OFF: Does not output the alarm signal.
- ▶ ON: Outputs the alarm signal.

6 Use the \triangle/∇ button to select [LINE OUT], and use the $\triangleleft/\triangleright$ button to enable/disable the alarm output to the communication line.

Available settings:

- ▶ OFF: Does not output the alarm signal.
- ▶ ON: Outputs the alarm signal.

7 Use the \triangle/∇ button to select [DURATION], and use the $\triangleleft/\triangleright$ button to choose the alarm disable duration.

When an alarm is detected, another alarm signal will not be input until the duration specified in this setting has passed.

Available settings: 5S, 10S, 15S, 20S, 30S, 45S, 1M, 2M, 3M, 4M, 5M (S = seconds, M = minutes)



The alarm disable duration is applied to the external device which has the same alarm input number. When an input from another alarm input number is detected, the alarm will be received even in the alarm disable duration.

When multiple alarm inputs are received simultaneously, the input whose alarm number is smaller precedes the others.

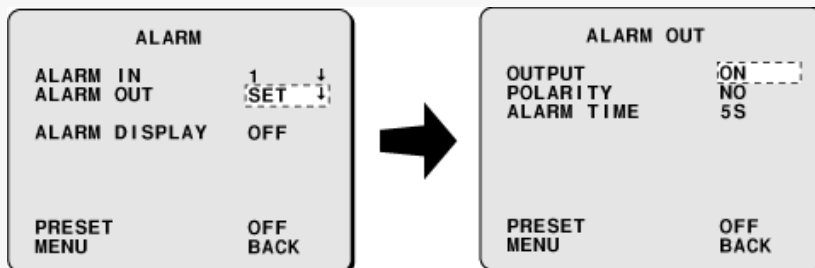
8 Select [MENU] and choose “BACK” or “END” to complete the setting.



Alarm Output Settings (ALARM OUT)

- 1 Use the Δ/∇ button to select [ALARM OUT], and press the SET button.

The ALARM OUT screen appears.



- 2 Use the Δ/∇ button to select [OUTPUT], and use the $\triangleleft/\triangleright$ button to enable/disable the alarm output.

Available settings:

- ▶ ON: Outputs the alarm signal.
- ▶ OFF: Does not output the alarm signal.
- ▶ REMOTE: Outputs the alarm signal by remote operation.



When selecting “REMOTE”, “MANU” is available for [ALARM TIME] enabling remote operation of the alarm output using an external device.

Selecting [AUX6-ON] enables remote operation, and selecting [AUX6-OFF] disables remote operation.

You can also turn on or off the alarm output using the system controller.

Press the [AUX ON] button to turn on the alarm output or the [AUX OFF] button to turn off the output, and select “6” in the number entry screen.

While the alarm is output using remote operation, the alarm signal will not be output automatically even when the alarm condition is detected.

- 3 Use the Δ/∇ button to select [POLARITY], and use the $\triangleleft/\triangleright$ button to select the polarity for the alarm output signal.

Available settings:

- ▶ NO (Normal Open): Normally open so closed condition is detected as output.
- ▶ NC (Normal Close): Normally closed so open condition is detected as output.

- 4 Use the Δ/∇ button to select [ALARM TIME], and use the $\triangleleft/\triangleright$ button to set the duration for which the alarm signal is output.

Available settings: 2S, 5S, 10S, 15S, 20S, 30S, 45S, 1M, 2M, 3M, 4M, 5M, MANU (S: seconds, M: minutes)

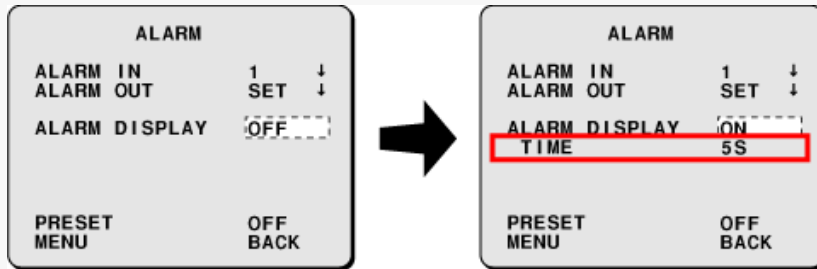
- 5 Select [MENU] and choose “BACK” or “END” to complete the setting.



Notifying Alarm Detection (ALARM DISPLAY)

- 1 Use the \triangle/∇ button to select [ALARM DISPLAY], and use the $\triangleleft/\triangleright$ button to choose "ON".

The [TIME] menu item appears.



Available settings:

- ▶ OFF: The alarm information does not blink.
- ▶ ON: When an alarm is detected, the camera title displayed in the screen blinks indicating that the alarm is detected.



While [ALARM DISPLAY] is set to "ON", the camera title will flash even when [TITLE] in [DISPLAY] is set to "OFF".

If the camera title is not set, "?????????" blinks.

- 2 Use the \triangle/∇ button to select [TIME], and use the $\triangleleft/\triangleright$ button to choose the duration for which the camera title blinks.

Available settings: 5S, 10S, 15S, 20S, 30S, 45S, 1M, 2M, 3M, 4M, 5M (S: seconds, M: minutes)

- 3 Select [MENU] and choose "BACK" or "END" to complete the setting.



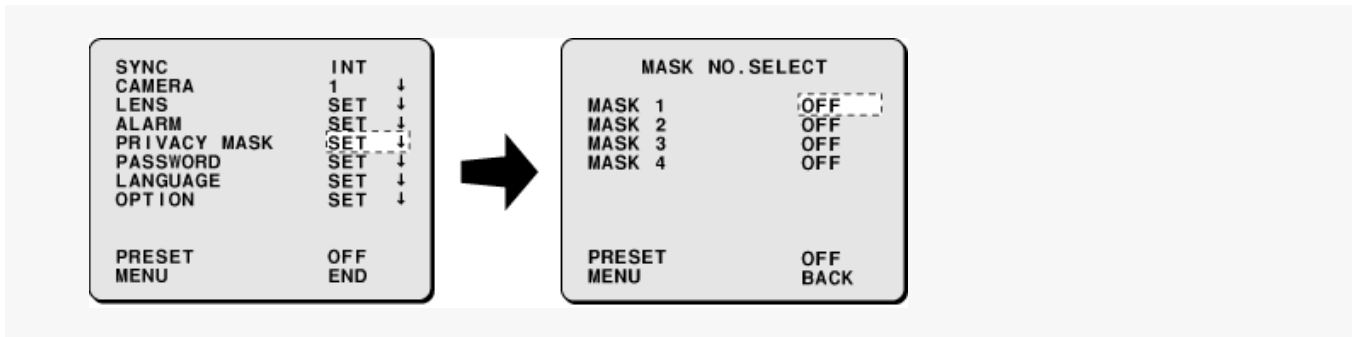
Privacy Mask Settings (PRIVACY MASK)

You can use the privacy mask to cover a certain part of the surveillance image. The privacy mask may be used to protect privacy.

Up to 4 privacy masks can be set.

Setting the Privacy Mask over Areas You Want to Hide

Turning Configured Privacy Masks On/Off and Reconfiguration Masks.

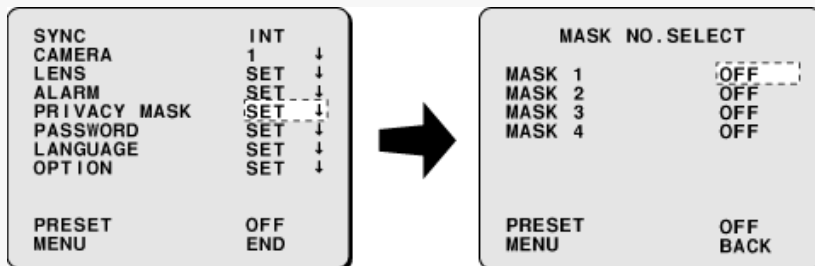


Setting the Privacy Mask over Areas You Want to Hide

- 1 Use the \triangle/∇ button to select [PRIVACY MASK] in the main menu, and press the SET button.

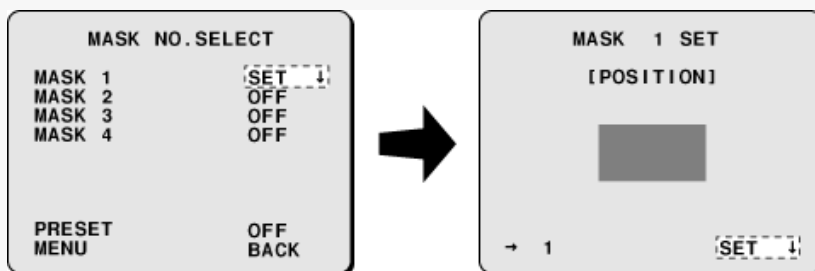
The MASK NO. SELECT screen appears.

- 2 Use the \triangle/∇ button to select [MASK 1].



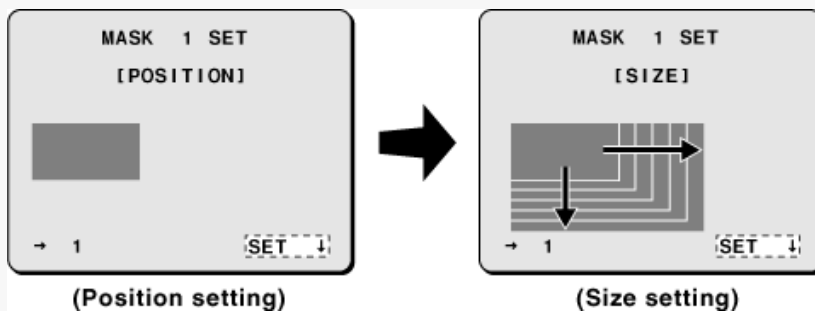
- 3 Use the $\triangleleft/\triangleright$ button to choose "SET" in [MASK 1], and press the SET button.

The MASK 1 SET [POSITION] screen appears and the mask pattern is displayed in the center of the screen.



- 4 Use the $\triangle/\nabla/\triangleleft/\triangleright$ buttons to move the mask pattern to determine the position to be covered, and press the SET button.

The MASK 1 SET [SIZE] screen appears.



- 5 Use the $\triangle/\nabla/\triangleleft/\triangleright$ buttons to adjust the vertical and horizontal sizes of the mask pattern, and press the SET button.

This completes the privacy mask settings. The MASK NO. SELECT screen appears again, and the setting for [MASK 1] has been changed to "ON".

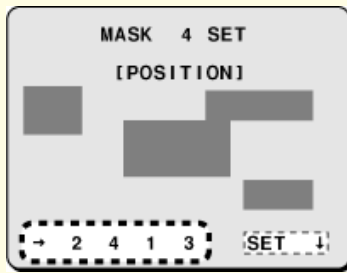
Repeat the same procedures above to set MASK 2 to MASK 4, as necessary.



If any other privacy masks have already been set, they are displayed together in the setting screens. The numbers following the right arrow (\rightarrow) at the bottom of the screen indicate the set mask



numbers, which appear in masking order from left to right.

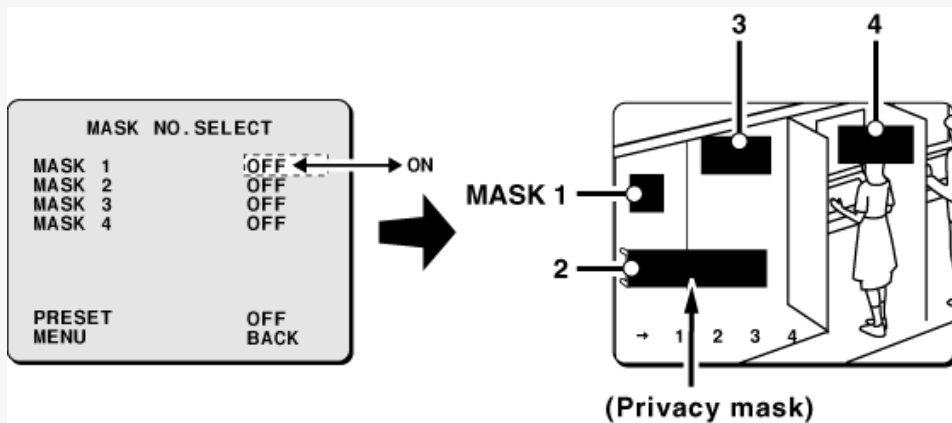


6 Select [MENU] and choose “BACK” or “END” to complete the setting.



Turning Configured Privacy Masks On/Off and Reconfiguration Masks.

On the MASK NO. SELECT screen, select a configured privacy mask number, and then choose to turn on (ON), turn off (OFF) or reconfigure (SET) the mask.



Available settings:

- ▶ ON: Displays the privacy mask for the mask number you selected.
- ▶ OFF: Does not display the privacy mask for the mask number you selected.
- ▶ SET: Resets the privacy mask setting.

You can display up to 4 privacy masks simultaneously on the screen if you turn on all the privacy masks (MASK 1 to 4).

Password Settings (PASSWORD)

Password can be used to restrict the menu setting operations to specific users.

PASSWORD LOCK:

Setting this option to "ON" authorizes operations in the menu screen by password entry.



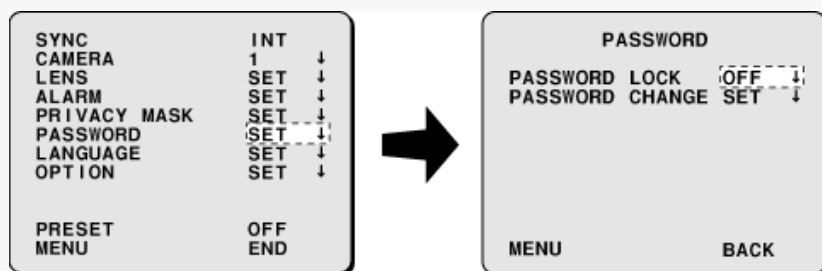
When the password lock is set, entering the password is prompted before performing any menu operation.

While this option is set to "ON", only the password administrator can change the menu settings.

PASSWORD CHANGE:

Changes the password.

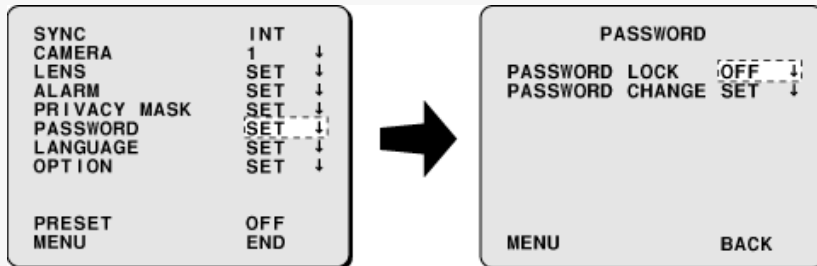
The factory setting value of the password is "1234". For security reasons, change your password periodically.



Enabling Password Lock (PASSWORD LOCK)

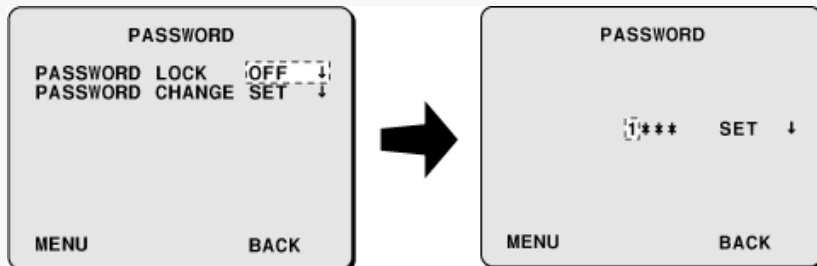
- 1 Use the \triangle/∇ button to select [PASSWORD] in the main menu, and press the SET button.

The PASSWORD screen appears.



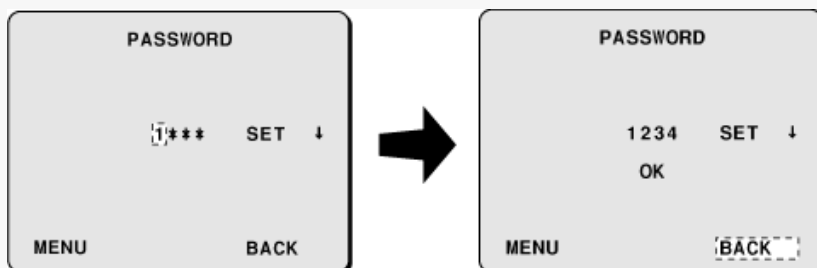
- 2 Use the \triangle/∇ button to select [PASSWORD LOCK], and press the SET button with “OFF ↓” displayed.

The password entry screen appears.



- 3 Use the \triangle/∇ button to select the digit and use the \triangle/∇ button to select a number for the digit. Repeat this procedure until the whole password value (ex. 1234) is entered, and press the SET button.

When a valid password is entered, “OK” appears.



When a wrong password is entered, “NG” appears.

If you enter wrong passwords three consecutive times, the password entry field disappears.

- 4 Press the SET button again.

This completes the password lock setting, and the PASSWORD screen appears again.

While the password lock is enabled, “ON” is displayed for [PASSWORD LOCK].



- 5 Select [MENU] and choose “BACK” or “END” to complete the setting.



Disabling Password Lock (PASSWORD LOCK)

- 1** Use the  button to select [PASSWORD LOCK], and press the SET button with “ON ↓” displayed.

The password entry screen appears.

- 2** Use the  button to select the digit and use the  button to select a number for the digit. Repeat this procedure until the whole password value is entered, and press the SET button.

When the valid password is entered, “OK” appears. When a wrong password is entered, “NG” appears.

- 3** Press the SET button again.

This disables the password lock function, and the PASSWORD screen appears again.

When the password lock is disabled, “OFF” is displayed for [PASSWORD LOCK].

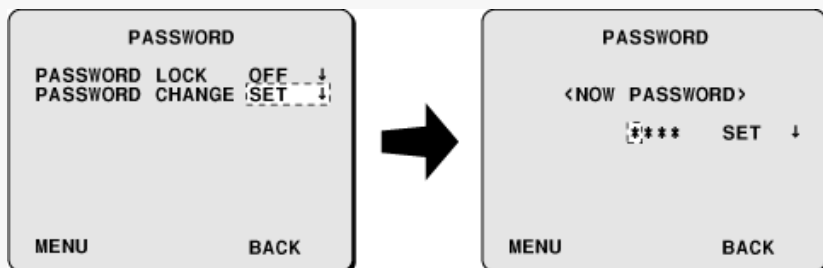
- 4** Select [MENU] and choose “BACK” or “END” to complete the setting.



Changing the Password (PASSWORD CHANGE)

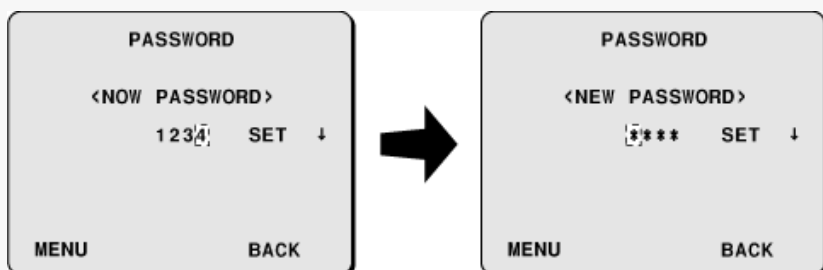
- 1 Use the \triangle/∇ button to select [PASSWORD CHANGE], and press the SET button.

The PASSWORD <NOW PASSWORD> screen appears.



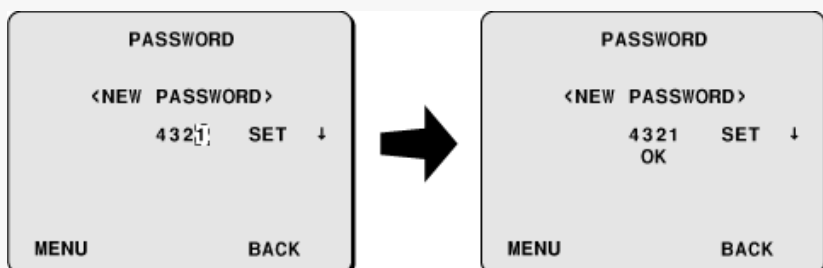
- 2 Use the \triangle/∇ button to select the digit and use the \triangle/∇ button to select a number for the digit. Repeat this procedure until the current password value (ex. 1234) is entered, and press the SET button.

When the valid password is entered, the PASSWORD <NEW PASSWORD> screen appears.



- 3 Use the \triangle/∇ button to select the digit and use the \triangle/∇ button to select a number for the digit. Repeat this procedure until the new password value (ex. 4321) is entered, and press the SET button.

"OK" appears under the <NEW PASSWORD> field, and the new password is set.

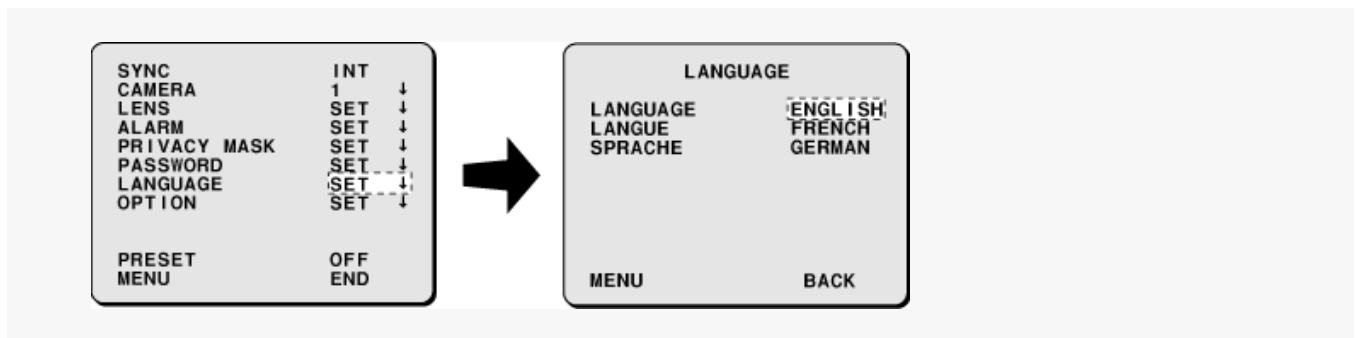


- 4 Select [MENU] and choose "BACK" or "END" to complete the setting.



Language Settings (LANGUAGE)

You can select the language used for menu display. The initial setting is English.



- 1 Use the \triangle/∇ button to select [LANGUAGE] in the main menu, and press the SET button.

The LANGUAGE screen appears.

- 2 Use the \triangle/∇ button to select the language used for menu display, and press the SET button.

All the menu displays are changed to the selected language.

Available settings:

- ▶ PAL system region: English, French, German
- ▶ NTSC system region: English, French, Spanish

- 3 Select [MENU] and choose “BACK” or “END” to complete the setting.



Miscellaneous Settings (OPTION)

According to your installation environment or connecting condition, the OPTION menu can be used to perform the following settings.

DISPLAY:

Sets the information to be displayed (camera title, magnification power in zooming, etc.) and their position in the monitor.

MIRROR:

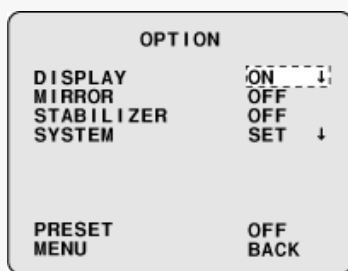
Sets a mirroring mode according to your installation condition of the camera. This setting is useful, for example, when the camera is installed upside down or when performing surveillance through a mirror.

STABILIZER:

Corrects images from a shaking camera installed on the roadside or a similar place.

SYSTEM:

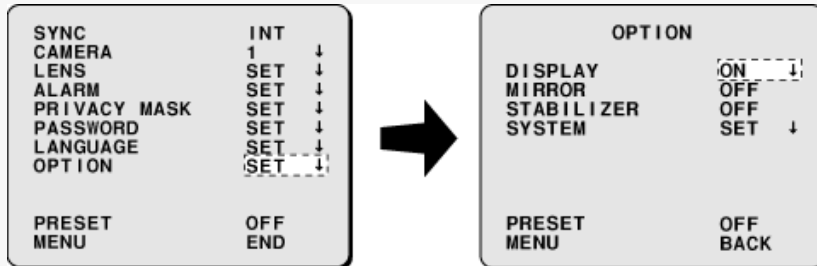
Sets the preferences when the external system device is connected to control the camera remotely.



Performing the Display Setting for the Camera Title and Magnification Power in Zooming (DISPLAY)

- 1 Use the \triangle/∇ button to select [OPTION] in the main menu, and press the SET button.

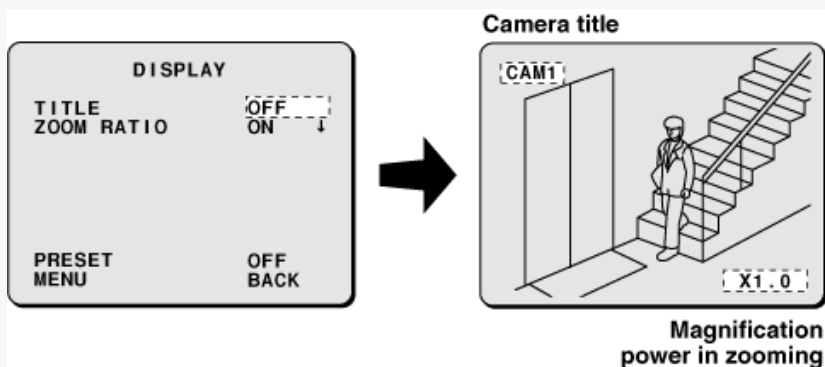
The OPTION screen appears.



- 2 Use the \triangle/∇ button to select [DISPLAY], use the \triangle/∇ button to choose "ON", and press the SET button.

The DISPLAY screen appears.

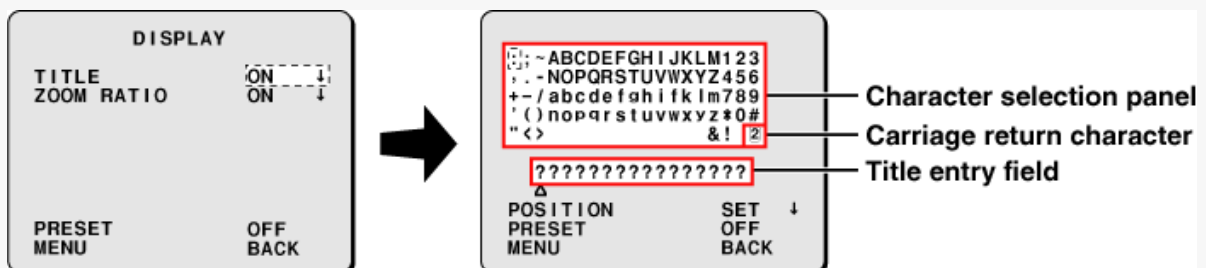
Set this option to "OFF" if you do not want the camera title and the zoom magnification power to be displayed on the monitor.



Setting the camera title and its display position (TITLE)

- 1 Use the \triangle/∇ button to select [TITLE], use the \triangle/∇ button to choose "ON", and press the SET button.

The camera title setting screen appears.

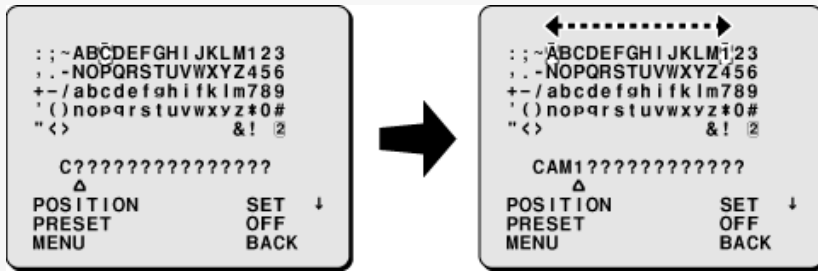


- 2 Use the $\triangle/\nabla/\triangleleft/\triangleright$ buttons to select a character for the title from the character selection panel, and press the SET button.

The selected character ("C" in the example below) appears in the first digit of the title entry field, and the cursor

moves to the next digit.

Perform the same procedure repeatedly until you enter the last character of the camera title.



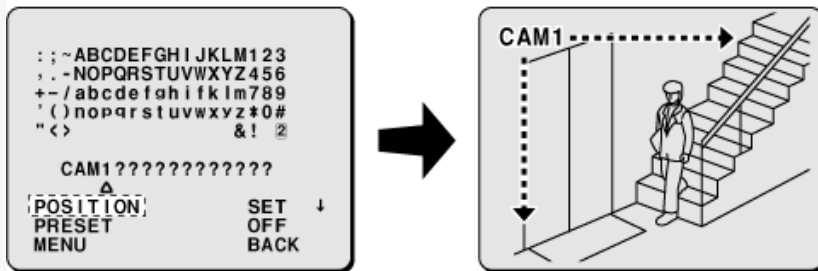
The camera title can use up to 16 characters. “?” indication for the unused digits will not be displayed in the monitor.

“(2)” in the character selection panel represents the carriage return character. When the character is entered, the carriage return is inserted (the cursor moves to the first digit of the next line).

If you want to change a character in the title, use the Δ/∇ button to move the cursor into the “title entry field: Δ ”, and then use the $\triangleleft/\triangleright$ button to move the cursor to the desired position, and enter the new character.

- 3 After completing the camera title setting, use the Δ/∇ button to select [POSITION], and press the SET button.

The camera title you set appears in the top left corner of the screen.



- 4 Use the $\Delta/\nabla/\triangleleft/\triangleright$ buttons to determine the position where you want the camera title to be displayed, and press the SET button.

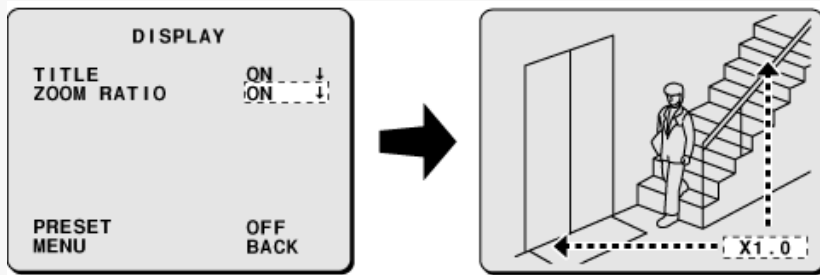
The camera title setting screen appears again.

- 5 Select [MENU] and choose “BACK” or “END” to complete the setting.

Setting the zoom magnification display position (ZOOM RATIO)

- 1 Use the Δ/∇ button to select [ZOOM RATIO], use the $\triangleleft/\triangleright$ button to choose “ON”, and press the SET button.

The current zoom magnification power appears in the right bottom corner of the screen.



- 2** Use the \triangle ∇ \triangleleft \triangleright buttons to determine the position where you want the magnification power to be displayed, and press the SET button.

The DISPLAY screen appears again.



If the display positions of the camera title and the zoom magnification power overlap, the camera title precedes in display.

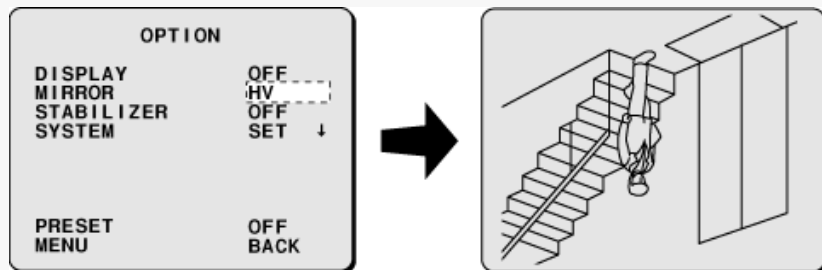
- 3** Select [MENU] and choose “BACK” or “END” to complete the setting.



Setting the Image Mirroring Function (MIRROR)

- 1 Use the \triangle/∇ button to select [MIRROR], use the \triangle/∇ button to select a mirroring mode, and press the SET button.

For example, an image will be rotated vertically and horizontally, when "HV" is selected.



Available settings:

- ▶ OFF: Normal image
- ▶ HV: Rotated vertically and horizontally.
- ▶ H: Rotated horizontally.
- ▶ V: Rotated vertically.

- 2 Select [MENU] and choose "BACK" or "END" to complete the setting.

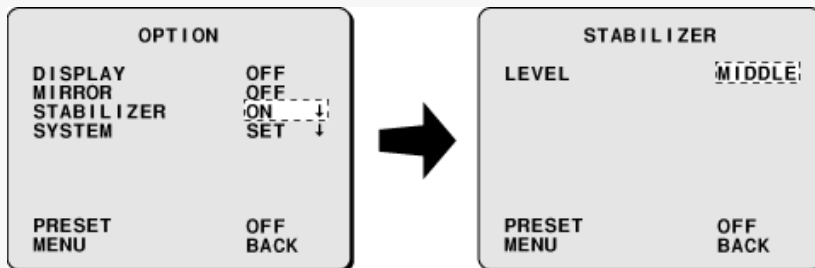


Correcting the Sway of the Camera (STABILIZER)

- 1 Use the \triangle/∇ button to select [STABILIZER], use the $\triangleleft/\triangleright$ button to choose "ON", and press the SET button.

The STABILIZER screen appears.

When you do not want to correct the sway of the camera, choose "OFF" for the [STABILIZER] setting.



- 2 Use the \triangle/∇ button to select [LEVEL], and use the $\triangleleft/\triangleright$ button to choose the correction level.

Available settings: LOW, MIDDLE, HIGH



The higher the correction level, the lower the image resolution during correction. The angle of view will also be slightly narrower.

The correction function will not work in the following condition.

- During switching images between color and black/white modes when using the Day/Night function
- When the menu screen is displayed
- Immediately after powering ON the camera (for about 1 minute)

Beside the conditions above, the correction function may not work depending on the sway level or cycle.

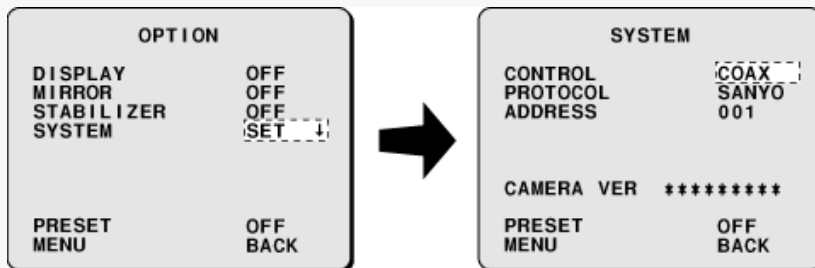
- 3 Select [MENU] and choose "BACK" or "END" to complete the setting.



Setting the Connection Parameters for the System device (SYSTEM)

- 1 Use the \triangle/∇ button to select [SYSTEM], and press the SET button.

The SYSTEM screen appears.



- 2 Use the \triangle/∇ button to select [CONTROL], and use the \triangle/∇ button to select the communication mode.

Available settings:

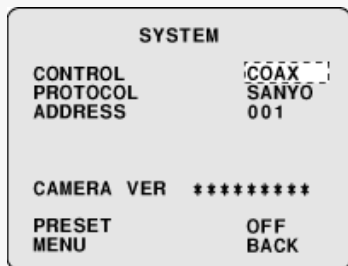
- ▶ COAX (coaxial superimposed communication): Supports Sanyo's coaxial SSP/fast SSP and PELCO-C (auto-recognition).
- ▶ 485 (RS-485 communication): Supports Sanyo's SSP/fast SSP (auto-recognition) and PELCO-D.



The VAC-70 control unit operates independent of the [PROTOCOL] setting.

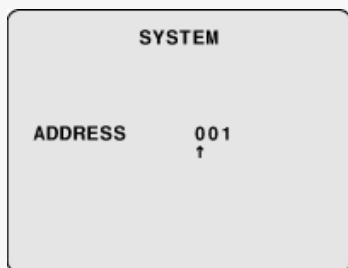
When [CONTROL] is set to "COAX"

The [PROTOCOL] setting is fixed to "SANYO".



- 1 Use the \triangle/∇ button to select [ADDRESS], and press the \triangleright button.

The ADDRESS setting screen appears.



- 2 Use the \triangleright button to select the digit and use the \triangle/∇ button to enter the number, and press \triangleright button. Repeat the procedure until the entire address is entered.

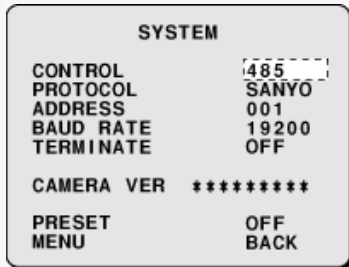
The SYSTEM screen appears again.

Valid address range: 0 to 127

3 Select [MENU] and choose “BACK” or “END” to complete the setting.

When [CONTROL] is set to “485”

The [BAUD RATE] and [TERMINATE] menu items are displayed on the screen.



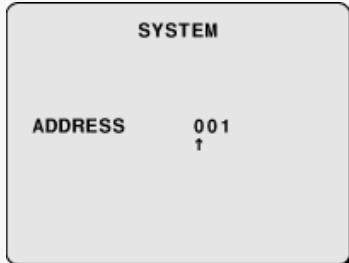
1 Use the \triangle/∇ button to select [PROTOCOL], and use the $\triangleleft/\triangleright$ button to select the communication protocol.

Available settings:

- ▶ SANYO: Supports Sanyo's SSP/fast SSP.
- ▶ PELCO: Supports PELCO-D.

2 Use the \triangle/∇ button to select [ADDRESS], and press the \triangleright button.

The ADDRESS setting screen appears.



3 Use the \triangleright button to select the digit and use the \triangle/∇ button to enter the number, and press \triangleright button. Repeat the procedure until the entire address is entered.

The SYSTEM screen appears again.

Valid address range:

- ▶ When [PROTOCOL] is set to “SANYO”: 0 to 127
- ▶ When [PROTOCOL] is set to “PELCO”: 0 to 255

4 Use the \triangle/∇ button to select [BAUD RATE], and use the $\triangleleft/\triangleright$ button to select the baud rate used for the connection.

Available settings: 19200, 9600, 4800, 2400

5 Use the \triangle/∇ button to select [TERMINATE], and use the $\triangleleft/\triangleright$ button to select the termination setting.

When you connect multiple devices, set the termination setting to “ON” on devices at both ends.

6 Select [MENU] and choose “BACK” or “END” to complete the setting.



Guide to the Setting Menu

All the setting options on the menu on this camera have already been configured to a standard value as default setting.

The description and example in the following sections assume typical usage.

You can change or adjust the settings or values as necessary.

Display Preferences for the Screen

- Changing the display language on the menu screens (LANGUAGE)
- Masking certain part of the image for protecting privacy (PRIVACY MASK)
- Reversing the live image (OPTION → MIRROR)
- Setting and displaying camera name to easily identify the camera from which the live image is sent (OPTION → DISPLAY → TITLE)

Zooming Preferences

- Changing the zooming speed (LENS → ZOOM)
- Increasing the magnification power in zooming (LENS → ZOOM)

Alarm Detection Preferences

- Detecting intruders (CAMERA → MOTION)
- Zooming in the object automatically when an alarm is detected (ALARM → ALARM IN)
- Notifying users of alarm detection on the monitor (ALARM → ALARM DISPLAY)
- Reducing detection errors of the motion sensor (CAMERA → MOTION)

Image Display Preferences

- When the object is out of focus (LENS → FOCUS)
- When the object is too bright
- When the object is dark
- When the object is hard to see in the backlight condition (CAMERA → BLC)
- When proper white balance adjustment cannot be made (CAMERA → WHITE BALANCE)
- Recording fast-moving object (CAMERA → SHUTTER → SHORT)
- Emphasizing the profile of the object (CAMERA → APERTURE)
- Adjusting the brightness or contrast level of the entire image (CAMERA → GAMMA)
- When the camera reacts to slight movements of the object (LENS → FOCUS)
- Burst occurs when the image viewing mode is switched between the color and black/white video modes (CAMERA → DAY/NIGHT)

Connection Preferences

- Connecting multiple cameras
- Operating the camera in the RS-485 or coaxial superimposed communication mode
- Connecting the camera to an external door switch or infrared sensor (ALARM → ALARM IN)
- Using an external buzzer or lamp as an alarm notification device (ALARM → ALARM OUT)

Other Useful Functions

- Switching automatically between color and monochrome modes according to the luminance change (CAMERA → DAY/NIGHT)
- Changing the monitoring condition according to the installation environment of the camera (CAMERA)
- Restricting the menu operations to specific users for security reasons (PASSWORD → PASSWORD LOCK)

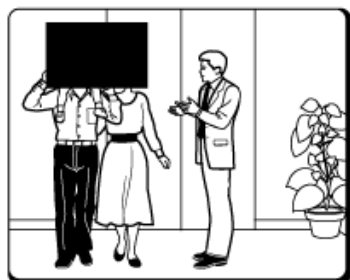
Display Preferences for the Screen

Changing the display language on the menu screens (LANGUAGE)

The default setting for the display language is English. You can change the display language as necessary.

Masking certain part of the image for protecting privacy (PRIVACY MASK)

You can set up to 4 privacy masks on the monitor screen.

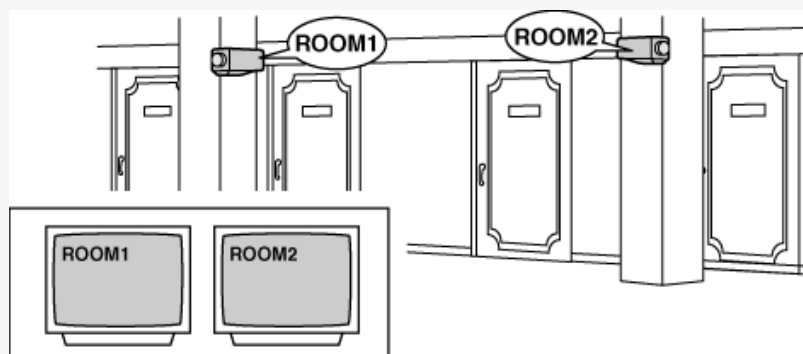


Reversing the live image (OPTION → MIRROR)

The live image can be displayed reversely by setting a mirroring mode according to your installation condition of the camera. This mode is useful, for example, when the camera is installed upside down or when performing surveillance through a mirror.

Setting and displaying camera name to easily identify the camera from which the live image is sent (OPTION → DISPLAY → TITLE)

You can display the camera's name on the monitor by setting a specific title to the camera.



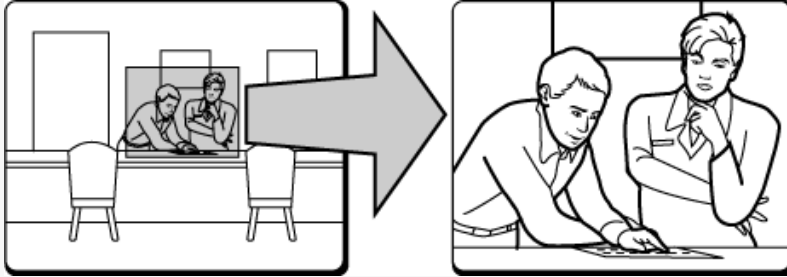
Zooming Preferences

Changing the zooming speed (LENS → ZOOM)

You can change the zooming speed for optical zoom function (the SPEED option).

Increasing the magnification power in zooming (LENS → ZOOM)

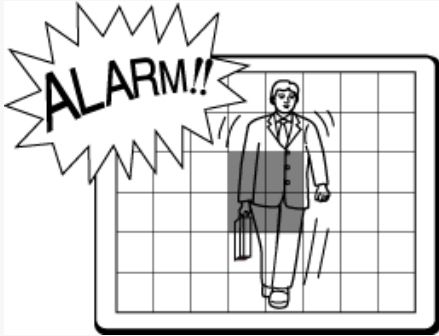
While zooming operation is achieved by the optical lens mechanism, you can zoom in the object further by setting the electronic zooming function.



Alarm Detection Preferences

Detecting intruders (CAMERA → MOTION)

The motion sensor built into the camera can detect movement of the object.



Zooming in the object automatically when an alarm is detected (ALARM → ALARM IN)

The camera can be configured to zoom in the object automatically when the alarm is detected. There are 15 available options for the magnification power in zooming.

Notifying users of alarm detection on the monitor (ALARM → ALARM DISPLAY)

You can configure the camera title to blink on the screen when the alarm is detected.

Reducing detection errors of the motion sensor (CAMERA → MOTION)

You can adjust the detection sensitivity to movement or brightness of the object.

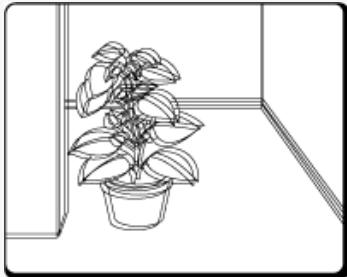


Image Display Preferences

When the object is out of focus (LENS → FOCUS)

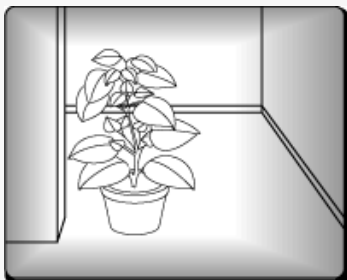
When the target object is located near the camera, adjust the nearest focusing distance to the object in [LIMIT NEAR] on the FOCUS SETTING screen.

If it is difficult to adjust the focus using the auto-focus function, use the manual focus function.



When the object is too bright

Adjust the iris level or the aperture opening value. (CAMERA → IRIS)

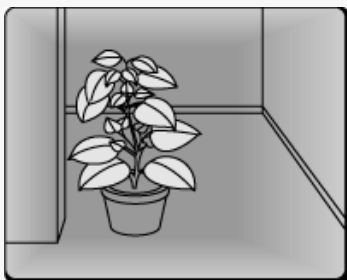


When the object is dark

Select "MIDDLE" or "HIGH" for the [MAX GAIN] setting under the AGC option. (CAMERA → AGC)

Set the electronic shutter setting to slow shutter speed (LONG). (CAMERA → SHUTTER)

Increase the level of electronic sensitivity (SENSE UP). (CAMERA → IRIS)

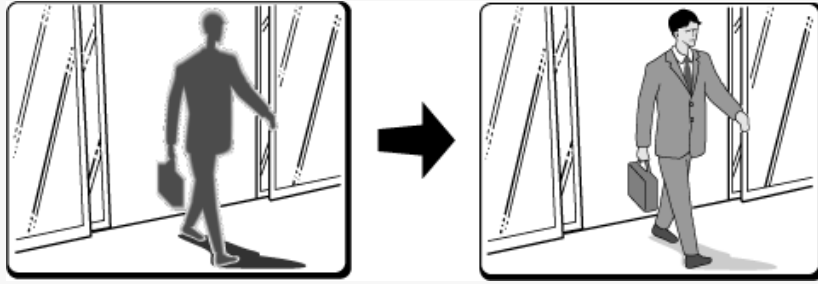


Adjust the iris level or the aperture opening value. (CAMERA → IRIS)

When noise occurs in the image because the object is dark, enable the digital noise reduction (DNR). (CAMERA → AGC)

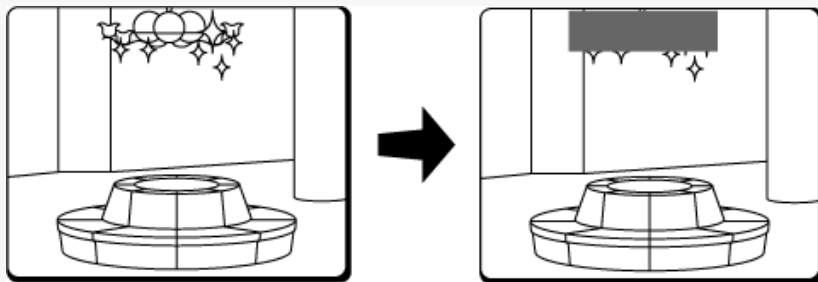
When the object is hard to see in the backlight condition (CAMERA → BLC)

Use the backlight compensation function.



When proper white balance adjustment cannot be made (CAMERA → WHITE BALANCE)

You can configure the masking when an extremely bright or dark light source exists in the surveillance area.

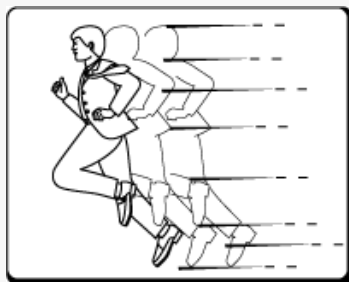


If a single color occupies the image in higher rate, the white balance adjustment may not work properly. In this case, use the smart auto white balance function by setting [SMART ATW] to "ON".

Although the camera is set to the auto trace white balance (ATW) mode by default, you may choose to set other adjustment modes.

Recording fast-moving object (CAMERA → SHUTTER → SHORT)

Set the electronic shutter to the fast mode (SHORT).



Emphasizing the profile of the object (CAMERA → APERTURE)

Enable the profile compensation function.

Adjusting the brightness or contrast level of the entire image (CAMERA → GAMMA)

Adjust the gamma correction level.

When the camera reacts to slight movements of the object (LENS → FOCUS)

Set the sensitivity in focusing ("LOW" in [SENSITIVITY]).

Burst occurs when the image viewing mode is switched between the color and black/white video modes (CAMERA → DAY/NIGHT)

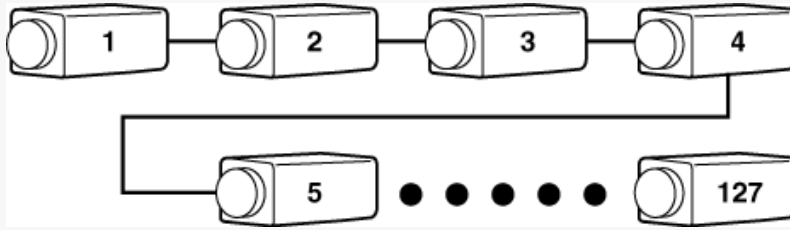
Compensate the black/white video signal by inserting the color burst signals.



Connection Preferences

Connecting multiple cameras

Set addresses to individual cameras. (OPTION → SYSTEM)



Set an unique title to each camera. (OPTION → DISPLAY → TITLE)

Operating the camera in the RS-485 or coaxial superimposed communication mode

Select a communication mode in the [CONTROL] option. (OPTION → SYSTEM)

Set addresses to individual cameras. (OPTION → SYSTEM)

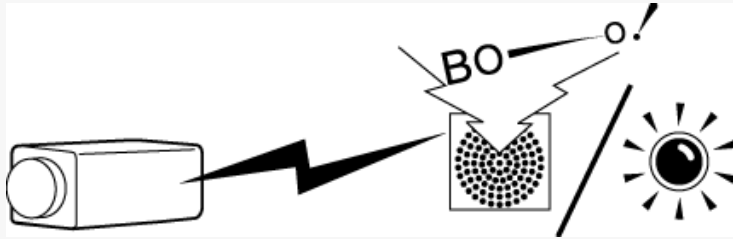
When you want to output the alarm signal from the camera to the system controller, set the [LINE OUT] option to "ON". (ALARM → ALARM IN)

Connecting the camera to an external door switch or infrared sensor (ALARM → ALARM IN)

Perform the input setting for the control terminal (ALARM IN).

Using an external buzzer or lamp as an alarm notification device (ALARM → ALARM OUT)

Perform the output setting for the control terminal (ALARM OUT).

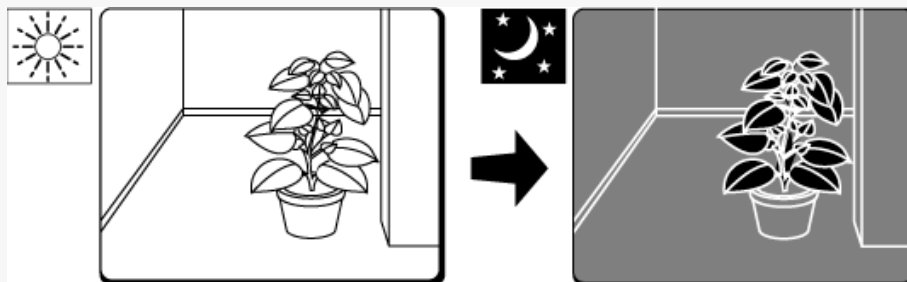


Other Useful Functions

Switching automatically between color and monochrome modes according to the luminance change (CAMERA → DAY/NIGHT)

The Day/Night function is set to "AUTO" by default. According to the luminance of day and night, the image viewing mode is switched between the color and black/white modes automatically.

If you want to adjust the timing of switching or fix the viewing mode to either the color or black/white video modes, change the option for the [DAY/NIGHT] setting.



Changing the monitoring condition according to the installation environment of the camera (CAMERA)

You can save two monitoring condition settings and select the setting according to the installation environment of the camera.

Restricting the menu operations to specific users for security reasons (PASSWORD → PASSWORD LOCK)

Use the password lock function. While the password lock function is enabled, the menu operations cannot be made unless the valid password is entered.



Troubleshooting

Performing a certain setting may limit another setting.

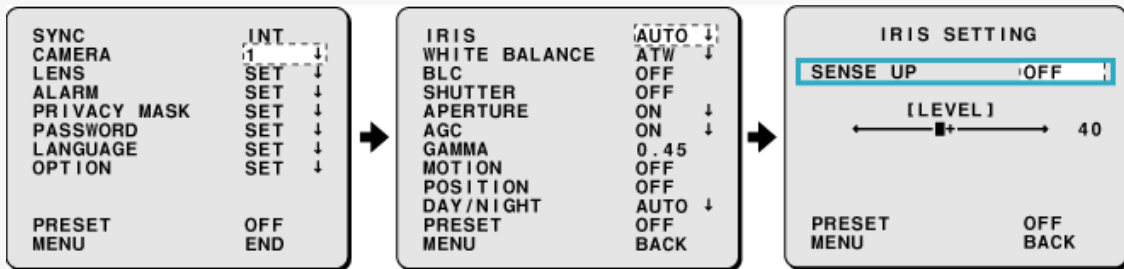
Refer to the following troubleshooting topics when in trouble for setting.

1. The [SENSE UP] setting cannot be made while "AUTO" is selected for [IRIS].
2. The "SHORT" and "LONG" options cannot be selected for the [SHUTTER] setting.
3. The auto gain control (AGC) cannot be set to "OFF".
4. The motion sensor option (MOTION) cannot be set to "ON".
5. The [V-RESO.UP] option in the ZOOM SETTING screen cannot be set to "ON".
6. The settings in the ALARM IN screen cannot be made.
7. The setting you made has been forced to be changed.



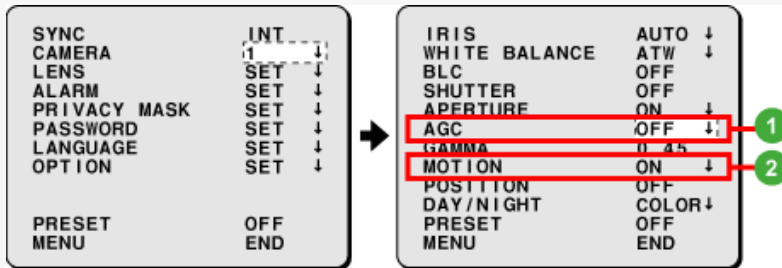


1. The [SENSE UP] setting cannot be made while “AUTO” is selected for [IRIS].

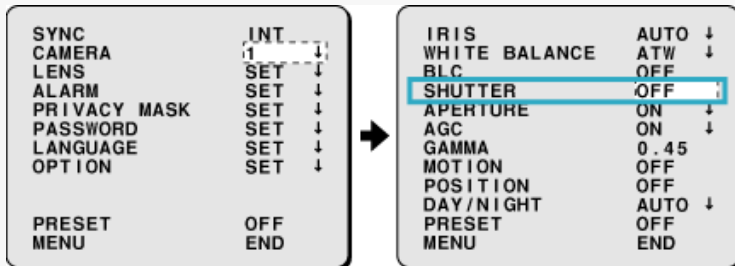


In the following conditions, the [SENSE UP] option is fixed to “OFF” and the level of electronic sensitivity cannot be configured.

- 1 When the auto gain control (AGC) is set to “OFF”
- 2 When the motion sensor option (MOTION) is set to “ON”

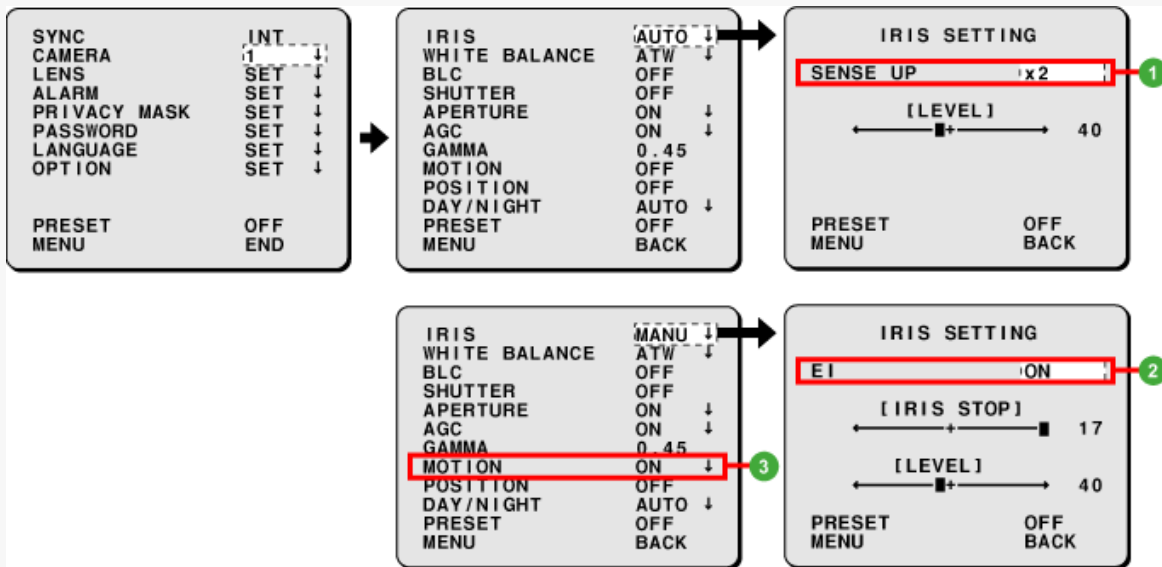


2. The “SHORT” and “LONG” options cannot be selected for the [SHUTTER] setting.

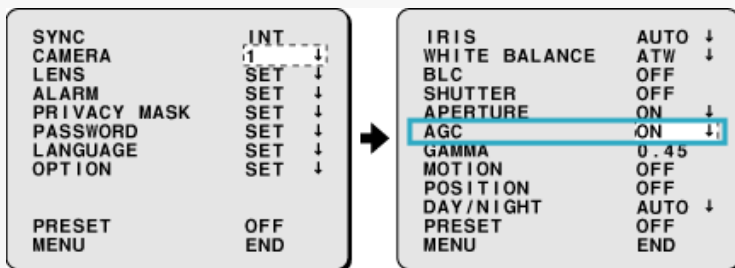


In the following conditions, the [SHUTTER] option is fixed to “OFF” and the electronic shutter setting cannot be made.

- 1 When the [SENSE UP] setting is made while “AUTO” is selected for [IRIS]
- 2 When “MANU” is selected for [IRIS] and the electronic iris (EI) option is set to “ON”
- 3 When the motion sensor option (MOTION) is set to “ON” (The fast shutter speed (SHORT) can be set.)

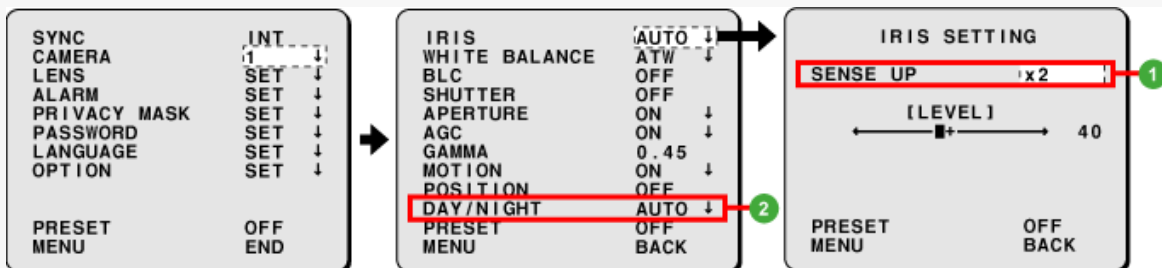


3. The auto gain control (AGC) cannot be set to "OFF".

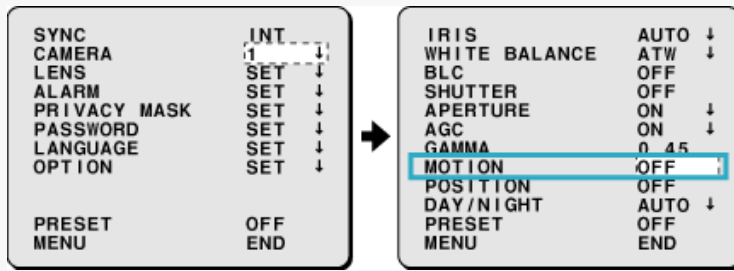


In the following conditions, the [AGC] option is fixed to "ON" and the auto gain control cannot be disabled.

- 1 When the [SENSE UP] setting is made while "AUTO" is selected for [IRIS]
- 2 When the Day/Night function (DAY/NIGHT) is set to "AUTO"

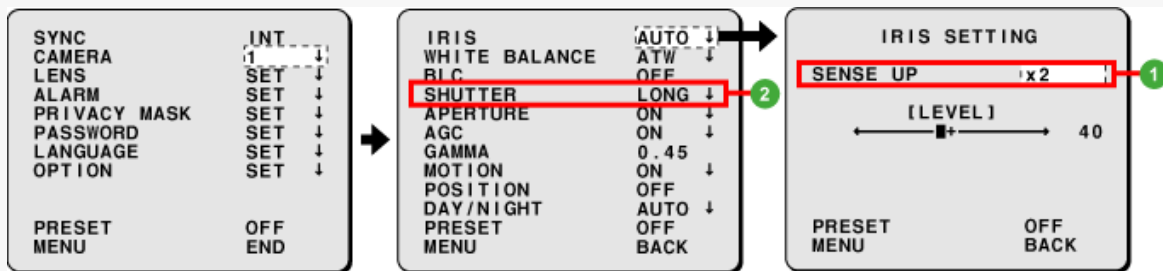


4. The motion sensor option (MOTION) cannot be set to "ON".

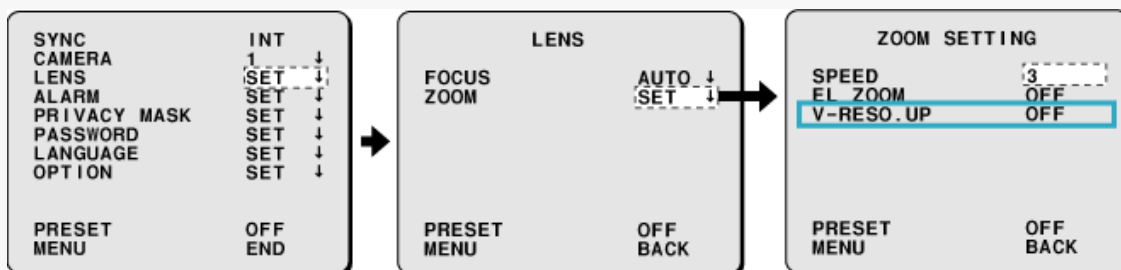


A In the following conditions, the [MOTION] option is fixed to “OFF” and the motion sensor functions cannot be configured.

- 1 When the [SENSE UP] setting is made while “AUTO” is selected for [IRIS]
- 2 When the shutter speed setting (SHUTTER) is set to “LONG”

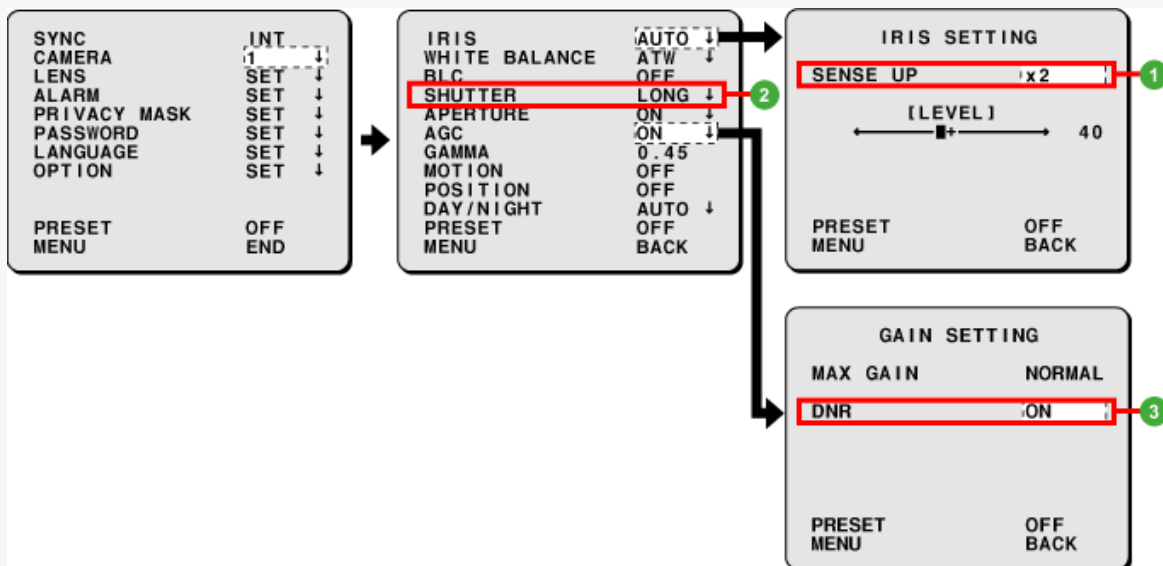


O 5. The [V-RESO.UP] option in the ZOOM SETTING screen cannot be set to “ON”.



A In the following conditions, the [V-RESO.UP] option is fixed to “OFF” and the vertical resolution increase cannot be configured.

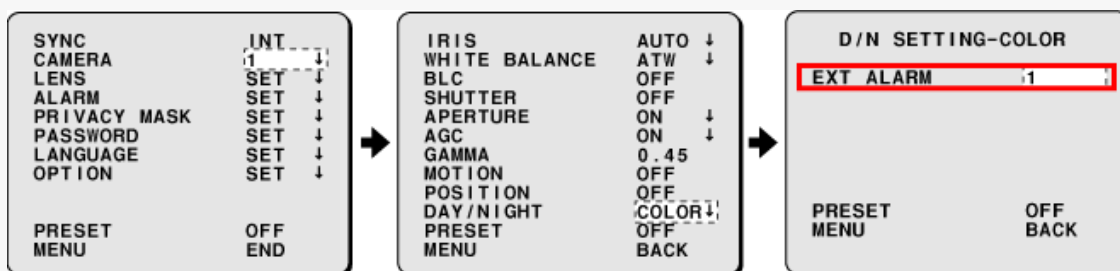
- 1 When the [SENSE UP] setting is made while “AUTO” is selected for [IRIS]
- 2 When the shutter speed setting (SHUTTER) is set to “LONG”
- 3 When “ON” is selected for [AGC] and the digital noise reduction (DNR) is set to “ON”



6. The settings in the ALARM IN screen cannot be made.



When the [DAY/NIGHT] option is set to “COLOR” and the [EXIT ALARM] option is set to other than “OFF” (1 or 2), “D/N” is displayed in the top right corner of the ALARM IN screen and the menu settings other than the [POLARITY] option cannot be made.



7. The setting you made has been forced to be changed.

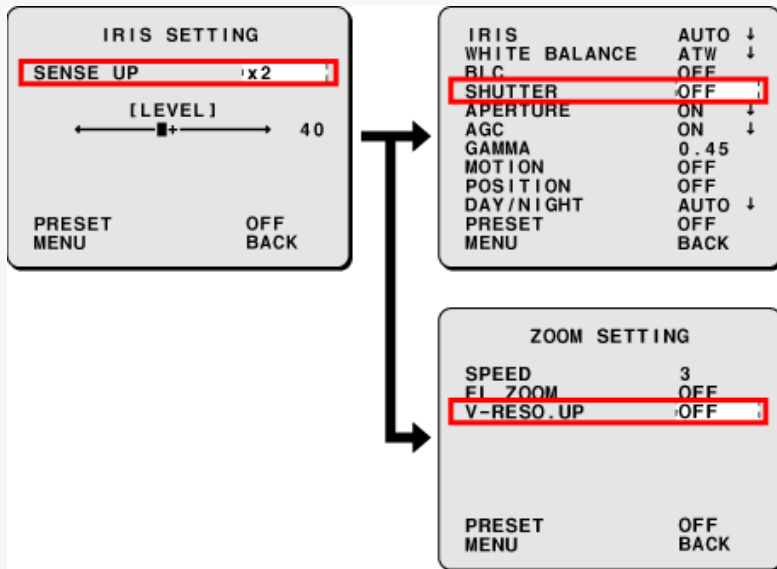


When you made the following setting, other relevant setting is forced to be changed.

The [SENSE UP] setting is made while “AUTO” is selected for [IRIS].

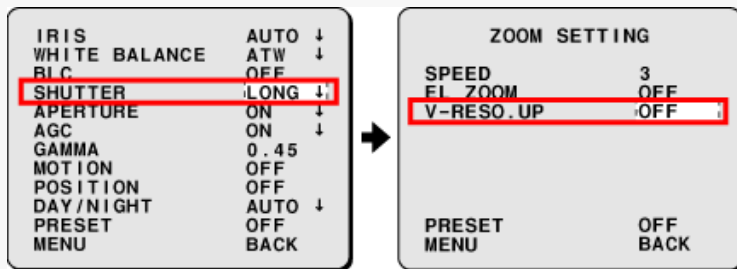
When “SHORT” or “LONG” is selected for the [SHUTTER] setting, the option is changed to “OFF”.

When the [V-RESO.UP] option in the ZOOM SETTING screen is set to “ON”, the option is changed to “OFF”.



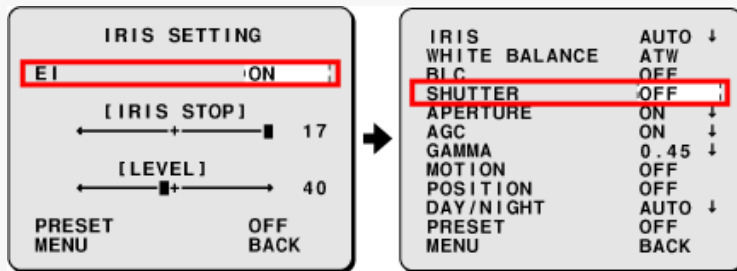
When the shutter speed setting (SHUTTER) is set to “LONG”

When the [V-RESO.UP] option in the ZOOM SETTING screen is set to “ON”, the option is changed to “OFF”.



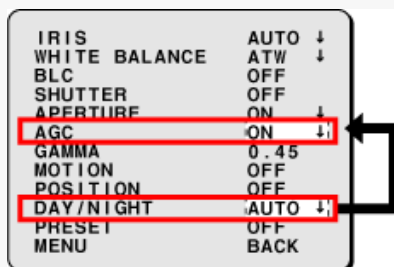
When “MANU” is selected for [IRIS] and the electronic iris (EI) option is set to “ON”

When “SHORT” or “LONG” is selected for the [SHUTTER] setting, the option is changed to “OFF”.



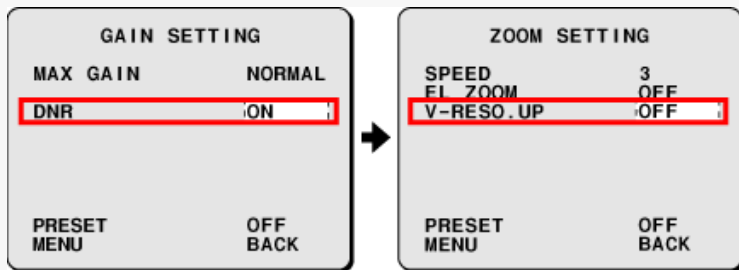
When the Day/Night function (DAY/NIGHT) is set to “AUTO”

When the [AGC] option is set to “OFF”, the option is changed to “ON”.



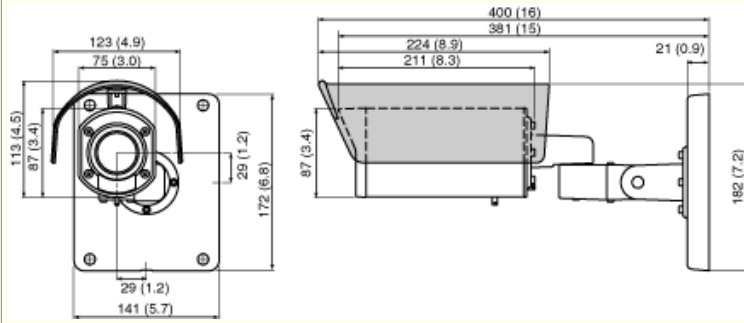
When “ON” is selected for [AGC] and the digital noise reduction (DNR) is set to “ON”

When the [V-RESO.UP] option in the ZOOM SETTING screen is set to “ON”, the option is changed to “OFF”.



Specifications

Television system	NTSC/PAL color standards
Image sensor	1/4" interline transfer CCD
Effective pixels	NTSC: 768 (Horizontal) x 494 (Vertical) PAL: 752 (Horizontal) x 582 (Vertical)
Scanning system	2:1 interlaced, 525 lines (NTSC)/625 lines (PAL)
Synchronization method	Internal synchronization/Line lock (with vertical phase adjustment)
Video output	1.0 V (p-p)/75Ω, BNC connector
Horizontal resolution	540 TV lines, typical
Lowest image illumination	0.8 lx (at F1.4, color mode, Gain: High) 0.04 lx (at F1.4, B/W mode, Gain: High)
Video S/N ratio	50 dB or more (AGC OFF)
Lens	Motorized zoom (x30 optical zoom) Auto focus, auto iris lens, f=3.5 - 105 mm (F1.4 - 3.7)
Electronic zoom	Max. x16 (combined with optical zoom gives max. x480)
Focus	AUTO, MANUAL, and One-push (available by pressing SET button in Live mode)
Day/Night function	AUTO: Switching to color or black/white mode automatically (AUTO, MID, HIGH). COLOR: Fixing the video mode to color mode/Switching between color and black/white modes automatically when an external alarm is input. B/W: Fixes the video mode to black/white mode.
Backlight compensation	Multi-spot evaluative metering (MULT), Center-weighted average metering (CENT), and Masking for backlight compensation (MASK)
White balance	Auto (ATW), Push-lock (AWC), Manual (MWB: R/B gain value adjustable), Indoor (3200), Outdoor (5600), and fluorescent (FLUO)
AGC gain	LOW, NORMAL, MIDDLE, HIGH, and Off (Gain adjustable)
Aperture compensation	ON (Horizontal and Vertical compensation settings adjustable) and OFF
Gamma correction	0.45, 1, MODE1 (Increases contrast), and MODE2 (Increases contrast further)
Electronic shutter	Fast shutter speeds (SHORT) NTSC: 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, and 1/10000 PAL: 1/50, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, and 1/10000 Slow shutter speeds (LONG) x1, x2, x4, x8, x16, and x32
Camera titles	ON/OFF (max. 16 characters, camera title position adjustable)
Privacy mask	ON/OFF, max. 4 masks (when zoom magnification is WIDE)
Electronic sensitivity boosting	OFF, x2, x4, x8, x16, and x32
Electronic iris	ON/OFF
Image stabilizer	ON/OFF
Mirror image (Invert) function	Vertical (V), Horizontal (H), Vertical and Horizontal (VH), and OFF
Motion sensor	ON (detection area size setting (SIZE), mask setting (MASKING), detection sensitivity setting (SENSITIVITY), alarm disable duration setting DURATION)) and OFF
Storable camera settings	2 patters of camera settings storable (various camera conditions, zoom setting, etc.)
Setting method	Menu screen (displayed by pressing SET button)
Alarm input	Control terminal x 2, NO (Normal Open) or NC (Normal Close) Also used for Day/Night switching.
Alarm output	Control terminal x 1, NO/NC switching, open collector
Focus/Zoom control	Control voltage: ± (6 to 12) VDC
Communication method	System connection terminals (RS-485/Coaxial, UTP (NVT built-in), support of camera control unit (VAC-70))
Operating ambient temperature/humidity	-10°C – +50°C, 90% RH max. (no condensation), -20°C – +50°C (continuously powered on)
Power source	24 VAC ± 10% (60 Hz for NTSC, 50 Hz for PAL), 12 - 15 VDC
Power consumption	4.9 W
Dimensions	



Weight

Without sunshade: Approx. 1.8 kg
 With sunshade: Approx. 2.0 g

Glossary

Illustrated Description of Functions

- Power Supply Synchronization (Line Lock)
- Gamma Correction
- Sway Compensation (STABILIZER)

Camera Terminology

- AGC (Auto Gain Control)
- Digital Noise Reduction (DNR)
- Burst Signal (BURST)
- Aperture (APERTURE)

System Terminology

- Coaxial Superimposed Communication (COAX)
- RS-485 Communication (485)
- Address (ADDRESS)
- Protocol (PROTOCOL)
- Baud Rate (BAUD RATE)
- Terminator (TERMINATE)
- SSP (Security Serial Protocol)

Network Terminology

- IP Address (IP ADDRESS)
- Port Number (PORT)
- DHCP (Dynamic Host Configuration Protocol)
- Subnet Mask (SUBNET MASK)
- Gateway (GATEWAY)

Standards Terminology

- IP66



Illustrated Description of Functions

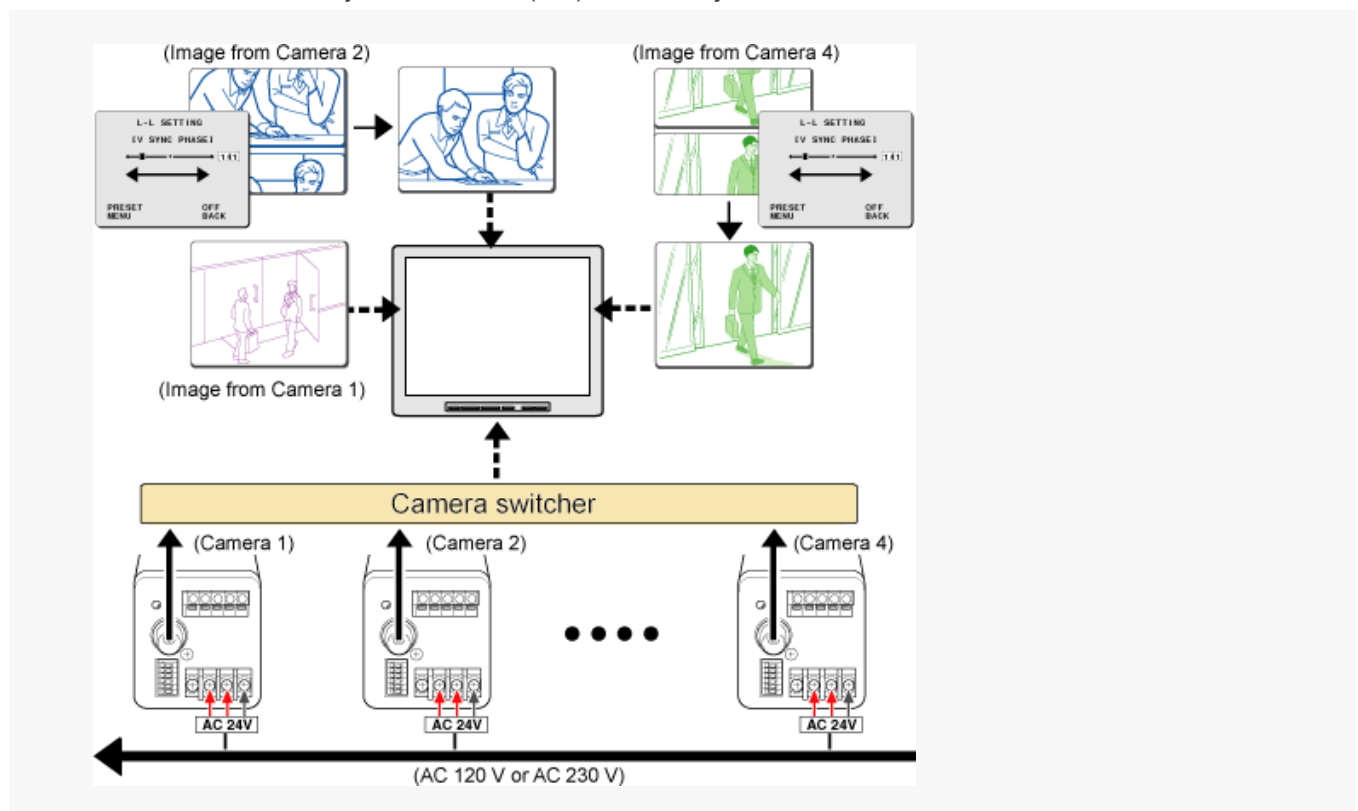
Power Supply Synchronization (Line Lock)

The line lock is a simple sync system that is used to synchronize each camera with the frequency of power supply (60 Hz in North America and 50 Hz in Europe).

The line lock is in vertical-hold control of cameras selected with a switching device, such as a camera switcher, and viewed on a single monitor screen.

For example, when the first camera (Camera 1) is connected through the camera switcher, the monitor screen does not cause vertical image displacement. However, when the second camera (Camera 2) is connected and selected, vertical image displacement may result. If that happens, the image of the second camera must synchronize with that of the first camera.

→ Refer to “Power Source Synchronization (L-L)” for the adjustment method.



Gamma Correction

Gamma (γ) refers to the ratio of input or output voltage to image brightness. Whenever an image captured by a camera is viewed on a monitor screen, the ratio should be as close as possible to 1 in order to reproduce the image as natural as possible.

The luminosity of the monitor screen changes according to the strength of signal input from the camera. The numerical value showing the level change of luminosity according to the strength change of signal input is called gamma value.

The level of luminosity does not change in proportion to the strength of input signal. The changes of the level and strength are expressed with a curve in a graph showing the strength change of signal input along the X-axis and the level change of luminosity along the Y-axis. Moreover, the strength of signal input varies with the type of monitor screen. In order to display the image as natural as possible, the gamma value needs adjustment. A usual CRT monitor screen has a gamma value of 2.2. In this model, the contrast of the image is adjustable at four different levels according to the change in luminosity of the image.

Gamma 0.45: (Fig. 1)

A usual CRT monitor screen has a gamma value of 2.2. If the gamma value of the camera is 0.45, the image will look natural (i.e., $2.2 \times 0.45 = 1$).

Gamma 1: (Fig. 2)

When the gamma value is 1, the angle of gradient of the graph will become 45°, in which case the signal output of the camera is in direct proportion to the signal input.

MODE1: (Fig. 3)

When the gamma value is more than 1, the angle of gradient of the graph will exceed 45° and the contrast of the image will become higher than usual.

MODE2: (Fig. 4)

When the gamma value is more than 1, the angle of gradient of the graph will exceed 45° and the contrast of the image will become far higher than usual.

- ▶ The term “gamma” came to be used because the curve expressed by the exponent used at the time of gamma compensation resembles the Greek character γ .

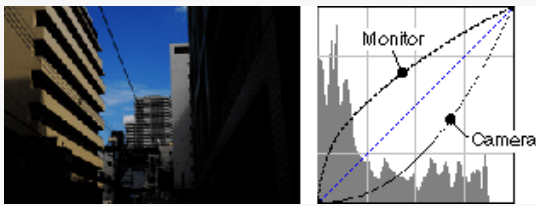


Fig. 1. Gamma Adjustment: 0.45

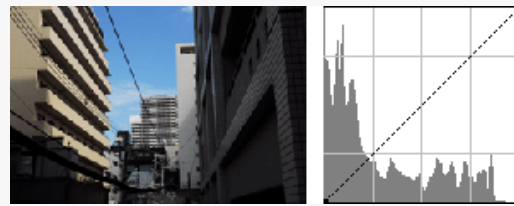


Fig. 2. Gamma Adjustment: 1

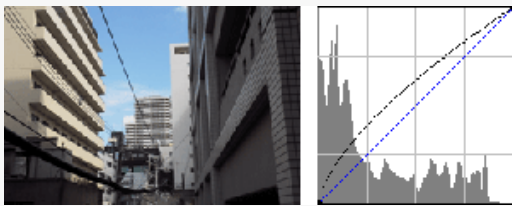


Fig. 3. Gamma Adjustment: MODE1

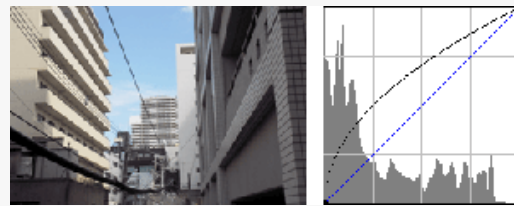


Fig. 4. Gamma Adjustment: MODE2

Sway Compensation (STABILIZER)

If a camera is installed in the street, for example, the stabilizer makes it possible to set the compensation level of the camera to LOW, MIDDLE, or HIGH according to the blurring level of the camera. When a compensation level is set for the camera, the electronic zoom will expand the image (i.e., the angle of view will change). With the level set to HIGH, the angle of view will become the narrowest, when the level of compensation is the greatest, and the sway of the image will be suppressed most effectively. The resolution of the image, however, will drop.



▶ Present condition



▶ LOW (about 1.05x)



▶ HIGH (about 1.2x)



▶ MIDDLE (about 1.1x)



Camera Terminology

AGC (Auto Gain Control)

The AGC is an electronic circuit of a camera. If the captured picture signal of the camera is weak, the AGC will automatically increase the sensitivity of the camera. On the other hand, if the picture signal is strong, the AGC will automatically lower the sensitivity, thus maintaining the level of signal output constant regardless of the contrast difference of each shooting object.

Digital Noise Reduction (DNR)

Noise may be conspicuous when the illuminance of a monitored image drops. The DNR is a function that discriminates and removes only the noise from the brightness and color signals of the image, thus reproducing a beautiful high-quality image.

Burst Signal (BURST)

A color sync signal required for color reproduction. Usually, the monochrome signal is not superimposed with any burst signal. If there is any image disorder when the image is switched from color to black and white with a peripheral device such as a frame switcher connected, however, the burst signal will be superimposed on the monochrome signal.

Aperture (APERTURE)

Contour compensation. The more the contour of a video image is emphasized, the higher a sense of resolution of the video image will be.



System Terminology

Coaxial Superimposed Communication (COAX)

A communication method to transmit both picture and communications signals via a single coaxial cable.

RS-485 Communication (485)

RS-485 is a serial telecommunications standard set by the Electronic Industries Alliance (EIA).

RS-485, which is backwardly compatible with RS-422, supports buss-type multipoint connections of up to 32 devices.

Address (ADDRESS)

A unique number for identifying a camera on a system.

The address setting range of this model varies with the protocol setting.

Protocol (PROTOCOL)

A set of rules or standards designed to enable devices to connect with each other and exchange data.

The item SANYO, which supports SANYO's SSP/fast SSP protocol, or PELCO, which supports the PELCO-D protocol, can be selected when this model is in RS-485 communication.

Baud Rate (BAUD RATE)

A unit of modulation rate per second. The higher the rate is, the larger the amount of data transmitted in a definite period will be.

The baud rate can be set to 2400, 4800, 9600, or 19200.

The speed of transmission is expressed by bps (bits per second) as well, where the number of bits shows the amount of data transmitted per second.

Terminator (TERMINATE)

It is necessary to set up a terminator between devices that exchange signals. Otherwise, signal reflection or disorder will occur at the terminating point, thus causing malfunctions.

SSP (Security Serial Protocol)

SANYO's RS-485 communications protocol.



Network Terminology

IP Address (IP ADDRESS)

The IP address is the address information allocated to each device connected to a TCP/IP network. In the IPv4 (Internet Protocol version 4) format, the 32-bit address is divided into four 8-bit sections and represented as “192.168.0.2” for example. On a TCP/IP network, the IP address is used to identify network devices.

Port Number (PORT)

In addition to the IP address, a TCP/IP network also uses the port number as the auxiliary address to identify individual programs running on the networked computers. Assuming that the IP address represents a company address, the port number is a contact number; and the actual data transmission occurs based on the combination of the IP address and the port number. The port number is represented as a 16-bit number and specified in the range of 0 to 65535.

DHCP (Dynamic Host Configuration Protocol)

DHCP is a protocol used by a network server to automatically allocate IP address and other network information to clients on the network.

Subnet Mask (SUBNET MASK)

The subnet mask refers to the value used to obtain the network address of a subnet (segment) from an IP address in a subnetted network. In the IP address, the portion excluding the network address is the host address, which is used to identify individual computers on the network.

Gateway (GATEWAY)

On the camera's IP ADDRESS SETTING screen, you set the default gateway, which serves as a relay contact point when communicating with external networks. Terminal PCs will transmit data to the default gateway.



Standards Terminology

IP66

IP (International Protection) refers to the international protection standard grades specified by the IEC (International Electrotechnical Commission) and JIS (Japanese Industrial Standards).

This camera meets the requirements of “IP66”, which means it provides excellent protection against water and dust for outdoor use.

However, the camera cannot be immersed in water or used under high water pressure.

