

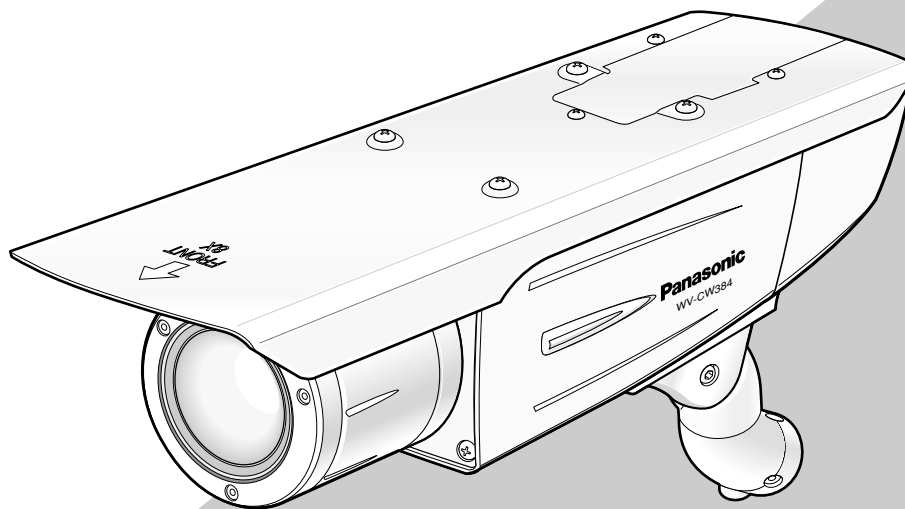
Panasonic

Operating Instructions

Color CCTV Cameras

Model Nos. **WV-CW384**

WV-CW380



WV-CW384 is shown above.

Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.

No model number suffix is shown in this manual.

ENGLISH VERSION

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives 2006/95/EC and 2004/108/EC.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatieve documenten, overeenkomstig de bepalingen van Richtlijnen 2006/95/EC en 2004/108/EC.

Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med standarder eller andre normative dokumenter i følge bestemmelserne i direktivene 2006/95/EC og 2004/108/EC.

Vi deklarerar härmed vårt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med standarddokument, eller andra normativa dokument som framställs i direktiv nr. 2006/95/EC och 2004/108/EC.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 2006/95/EC ja 2004/108/EC säädöksiä.

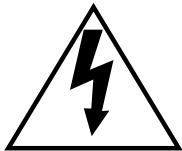
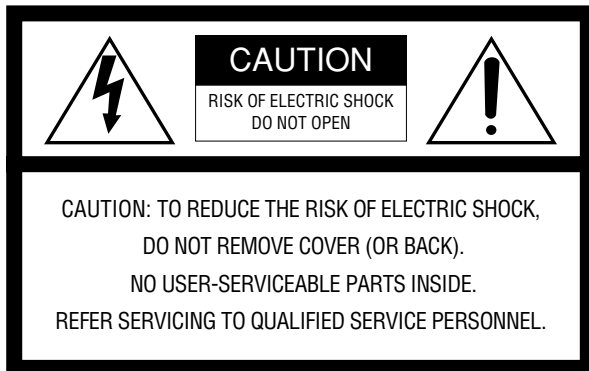
Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som følger bestemmelsene i direktivene 2006/95/EC og 2004/108/EC.

WARNING:

- This apparatus must be earthed.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- The connections should comply with local electrical code.

CAUTION:

Before attempting to connect or operate this product, please read the label on the bottom.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION:

An ALL-POLE MAINS SWITCH with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.

For U.K.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.

WARNING: This apparatus must be earthed.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code.

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wire in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

The wire which is coloured **green-and-yellow** must be connected to the terminal in the plug which is marked with the letter **E** or by the earth symbol \perp or coloured **green** or **green-and-yellow**.

The wire which is coloured **blue** must be connected to the terminal in the plug which is marked with the letter **N** or coloured **black**.

The wire which is coloured **brown** must be connected to the terminal in the plug which is marked with the letter **L** or coloured **red**.

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Important Safety Instructions

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Clean only with dry cloth.
- 6) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 7) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 8) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 9) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 10) Only use attachments/accessories specified by the manufacturer.
- 11) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



- 12) Unplug this apparatus during lightning storms or when unused for long periods of time.

Limitation of Liability

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THE THIRD PARTY'S RIGHT.

THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE ADDED TO THE INFORMATION HEREIN, AT ANY TIME, FOR THE IMPROVEMENTS OF THIS PUBLICATION AND/OR THE CORRESPONDING PRODUCT (S).

Disclaimer of Warranty

IN NO EVENT SHALL MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

- (1) ANY DAMAGE AND LOSS, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
- (2) PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
- (3) UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
- (4) INCONVENIENCE OR ANY LOSS ARISING WHEN IMAGES ARE NOT DISPLAYED, DUE TO ANY REASON OR CAUSE INCLUDING ANY FAILURE OR PROBLEM OF THE PRODUCT;
- (5) ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
- (6) ANY CLAIM OR ACTION FOR DAMAGES, BROUGHT BY ANY PERSON OR ORGANIZATION BEING A PHOTOGENIC SUBJECT, DUE TO VIOLATION OF PRIVACY WITH THE RESULT OF THAT SURVEILLANCE-CAMERA'S PICTURE, INCLUDING SAVED DATA, FOR SOME REASON, BECOMES PUBLIC OR IS USED FOR THE PURPOSE OTHER THAN SURVEILLANCE.

Preface

Panasonic's WV-CW384 and WV-CW380 cameras introduce high picture quality by use of Super-Dynamic 1/3-inch type {1/3"} CCD and digital signal processing LSIs. These cameras are designed for installation on the wall or the ceiling, using the supplied camera mount bracket.

Features

Introduction of SUPER-D3 (super dynamic function)

Integration of SUPER-D3 into the CCD and signal processing circuit has achieved approximately 128 times higher dynamic range as compared with conventional camera. Therefore, a photographic subject on which much illuminance difference exists resulting from bright and dark areas can be naturally displayed in an image.

Auto back focus function (ABF) equipped

The back focus adjustment can be performed through the operation buttons on this unit and the setup menu. The back focus can be remotely adjusted through the system controller (option) even after installation of this unit. The auto back focus function also allows users to correct out of focus when changing between color and black-and-white images.

High sensitivity achieved thanks to noise reduction function

The introduction of low noise circuit design has achieved excellently high sensitivity resulting in the minimum illuminance of 0.65 lx in the color mode and 0.09 lx in the black-and-white mode.

Night monochrome image activation function equipped

No operation is required at night because the image automatically changes from the color mode to the black-and-white mode at low illuminance.

Motion detector function equipped

If motion is observed in the monitor, the camera is covered with a cloth, a cap, or the like, or the camera direction is changed during monitoring, an alarm signal is provided.

Precautions

This product has no power switch.

Power is supplied from an external 12 V DC/24 V AC (WV-CW384) or 220 V to 240 V AC (WV-CW380) power-supply device. Refer to service personnel for how to turn on/off the power.

To keep on using with stable performance

- Parts of this product may deteriorate and it may shorten lifetime of the product when using in locations subject to high temperatures and high humidity.
Do not expose the product to direct heat such from a heater.
- Use this product at temperature within $-30\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ * and humidity below 90 %.
* $-10\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ at 12 V DC

Do not drop metallic parts through slots.

This could permanently damage this product. Turn the power off immediately and contact qualified service personnel for service.

Do not rub the edges of metal parts with your hand.

Failure to observe this may cause injury.

Do not attempt to disassemble this product.

To prevent electric shock, do not remove screws or covers. There are no user-serviceable parts inside. Ask qualified service personnel for servicing.

Handle this product with care.

Do not abuse this product. Avoid striking, shaking, etc. The product could be damaged by improper handling or storage.

Cleaning this product body

Turn the power off when cleaning the product. Use a dry cloth to clean the product. Do not use strong abrasive detergent when cleaning the product body. When the dirt is hard to remove, use a mild detergent and wipe gently. Then, wipe off the remaining detergent with a dry cloth. Otherwise, it may cause discoloration. When using a chemical cloth for cleaning, read the caution provided with the chemical cloth product.

Clean the lens with care.

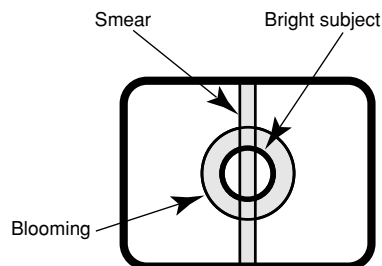
Do not clean the lens with strong or abrasive detergents. Use lens tissue or a cotton tipped applicator and ethanol.

Discoloration on the CCD color filter

When continuously shooting a bright light source such as a spotlight, the color filter of the CCD may have deteriorated and it may cause discoloration. Even when changing the fixed shooting direction after continuously shooting a spotlight for a certain period, the discoloration may remain.

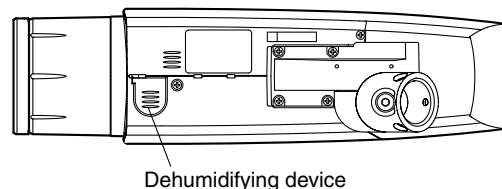
Do not aim this product at strong light sources.

A light source such as a spot light causes a blooming (light bleeding) or a smear (vertical lines).



About the dehumidifying device

- This product has dehumidifying device to keep the inside at low moisture level, preventing condensation and quickly dissipating dew if produced.
- Dew may be produced depending on the conditions of temperature, humidity, winds, and rain, and it may take time to dehumidify.
- Never seal the surfaces of the dehumidifying device.



Turn the circuit breaker off which supplies this product with the power when abnormal conditions are encountered.

Do not operate this product beyond the specified temperature, humidity or power source ratings.

Use this product at temperature within $-30\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ * and humidity below 90 %. The input power source is 12 V DC/24 V AC (WV-CW384) or 220 V to 240 V AC (WV-CW380).

* $-10\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ at 12 V DC

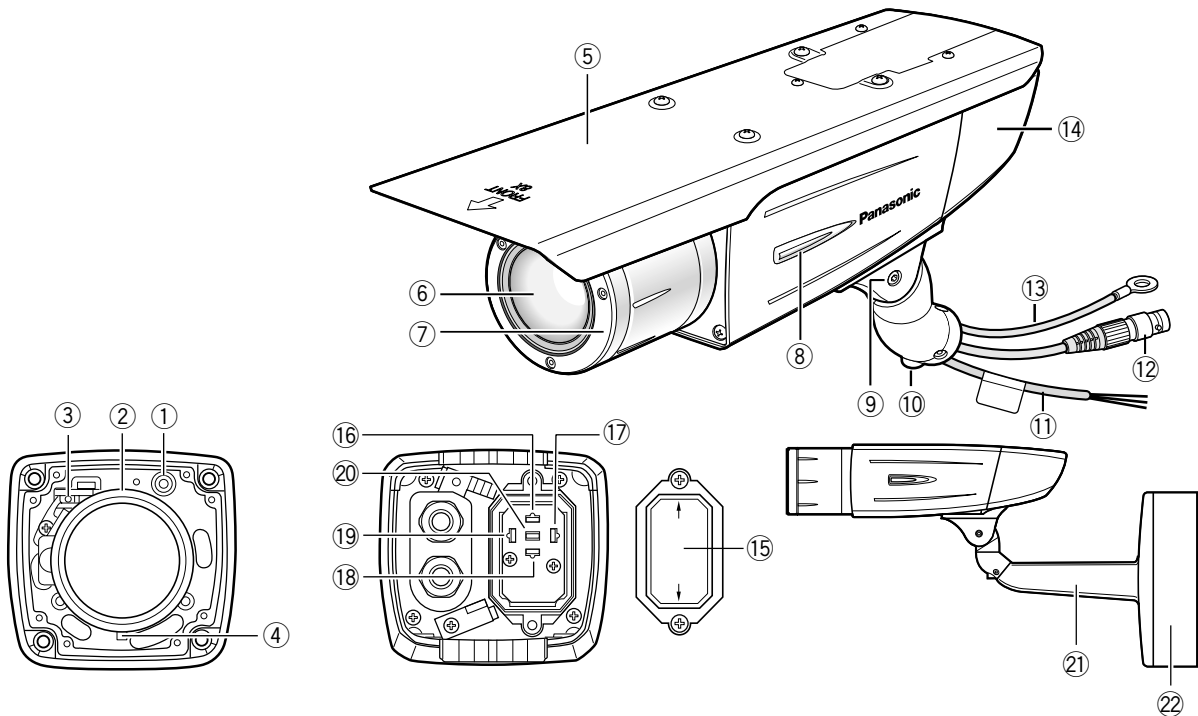
Use at low temperatures

- To operate the camera at temperatures of $-10\text{ }^{\circ}\text{C}$ or lower, it will take 30 minutes or more after turning on the power to warm up the camera.
- Images may be disturbed because the built-in heater is automatically toggled between ON and OFF resulting from a change in usage environment.

What to do if OVER HEAT appears on the display.

This message indicates that the inside of this product has become extremely hot. Immediately turn off the product and contact your dealer.

Major Operating Controls and Their Functions



**① Monitor output jack
(ø3.5 mm mini jack (monaural))**

Connects to a monitor for adjustment to adjust the view angle and focus.

② Zoom adjustment ring
Adjusts the zoom position. (☞ page 16)

③ Auto-back-focus button
Activates the auto back focus function.

④ Focus lock knob
Locks the focal point. (☞ page 16)

⑤ Sunshield (accessory)

⑥ Front glass

⑦ Lens cover
Protects the lens. The lens cover is removed at lens adjustment. After lens adjustment, the fixing screws shall be securely tightened. (☞ page 15)

⑧ LED
Lights, blinks, or goes off depending on settings. (☞ page 31)

⑨ Tilting lock screw
Locks the tilt position. (☞ page 15)

⑩ Panning lock screw
Locks the panning position. (☞ page 15)

⑪ Power cord

Caution:

This cord supplies 12 V DC/24 V AC (WV-CW384) or 220 V to 240 V AC (WV-CW380) from an external power source.

⑫ Video output cable

⑬ Safety wire

⑭ Rear cover

⑮ Switch cover

This cover is removed at operating the operation buttons. After the button operation, the fixing screws shall be securely tightened. (☞ page 17)

⑯ - ⑳ Operation buttons

⑯ Up button (UP)

⑰ Right button (RIGHT)

⑱ Down button (DOWN)

⑲ Left button (LEFT)

⑳ Set button (SET)

㉑ Camera mount bracket (accessory)

㉒ Adapter box (accessory)

Precautions for Installation

Installing place

Contact your dealer for assistance if you are unsure of an appropriate place in your particular environment.

Make sure that the installation area is strong enough to hold this product, such as a concrete ceiling. When the installation area is not strong enough, reinforce and strengthen it.

Avoid installing this product in the following locations.

- Locations where a chemical agent is used such as a swimming pool
 - Locations subject to steam and oil smoke such as a kitchen
 - Locations near flammable gas or vapor
 - Locations where radiation or x-ray emissions are produced
 - Locations subject to strong magnetic field or radio waves
 - Locations where corrosive gas is produced
 - Locations where it may be damaged by briny air such as seashores
 - Locations where the temperature is not within $-30\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}^*$.
- * $-10\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ at 12 V DC
- Locations subject to vibrations (This product is not designed for on-vehicle use.)

Be sure to remove this product if it is not in use.

White balance

White balance may be not adjusted appropriately in the following cases.

- When a subject is extremely less white or nearly single colored
- When a subject is in the outdoors in the morning or evening or in the low illuminance state
- When a subject is in the atmosphere of extremely different color temperature (e.g. under color illumination)

Keep the video output cable away from the lighting cable.

Failure to observe this may cause noise.

Radio interference

When this product is used near TV/radio antenna, strong electric field or magnetic field (near a motor or a transformer), images may be distorted and noise sound may be produced. In such a case, run the camera cable through specialized conduit tubes.

Mounting screws

Only the fixing screws are provided to fix this product with the provided mount bracket. It is necessary to procure screws or bolts to mount the product. Prepare them according to the material and strength of the area where the product is to be installed.

The screws and bolts must be tightened with an appropriate tightening torque according to the material and strength of the installation area. After tightening the screws or bolts, perform visual check to ensure tightening is enough and there is no backlash.

Piping for cables

If this product is operated outdoors, be sure to install connecting tubes and run the cables through the tubes to protect the cables from being frozen or direct sunlight.

Installations/Connections

Caution:

ONLY CONNECT THIS TO 24 V AC OR 12 V DC CLASS 2 POWER SUPPLY. (WV-CW384)

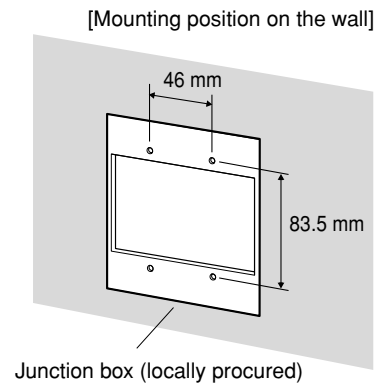
■ Preparations

The camera can be mounted either of the following ways.

- To mount the camera directly on the wall
- To mount the camera on the wall using an adapter box

Note:

- The screws that secure the camera mount bracket on a wall are not supplied. Prepare the screws according to the material, structure, strength and other factors of the mounting area and the total weight of objects to be mounted.



Important:

- Prepare the mounting screws according to the material of the area where the camera mount bracket is to be installed. In this case, wood screws and nails should not be used. Recommended tightening torque M4: 1.6 N·m
- Required pull-out capacity of a single screw/bolt is 196 N or more.
- If a ceiling board such as plaster board is too weak to support the total weight, the area shall be sufficiently reinforced.
- When using the provided adapter box, make sure that the drain slits do not face upward.

■ Camera installation

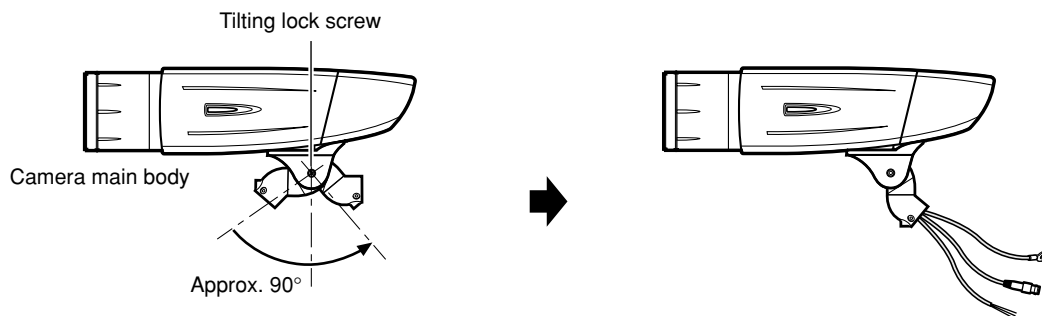
1 Secure the camera to the camera mount bracket

The tilt angle is locked downward at shipment.

1. Loosen the tilting lock screw approx. 1 rotation and adjust the tilt angle of the camera to the horizontal position.
2. Tighten the tilting lock screw again after tilt angle adjustment.

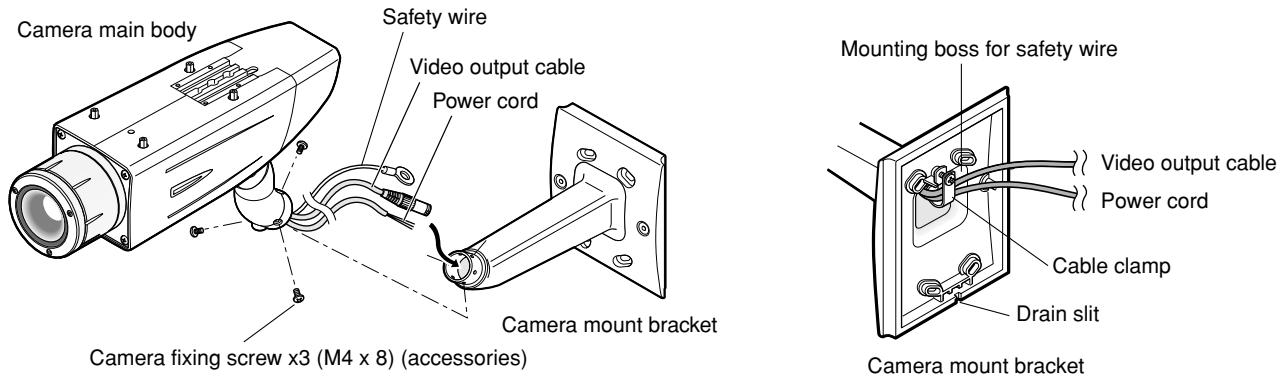
Note:

- Use a hexagonal wrench with width across flats of 4 mm (locally procured) to loosen or tighten the tilting lock screw.



3. Pass the video output cable, power cord and safety wire through the camera mount bracket from the camera side to the wall side and use the cable clamp to bundle the cables and wire.

4. Secure the camera to the camera mount bracket with the 3 camera fixing screws (accessories).



5. Remove the screw from the mounting boss for safety wire of the camera mount bracket and secure the safety wire with the screw.

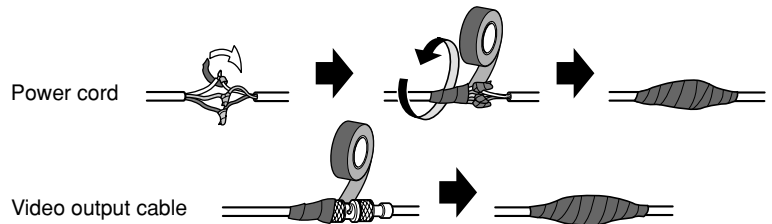
Important:

- Ensure that the safety wire is firmly secured. Recommended tightening torque: 0.59 N·m

Important:

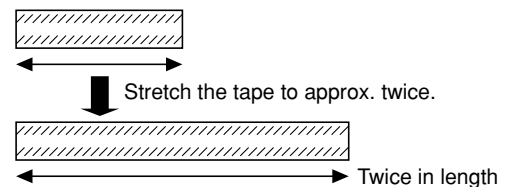
<Waterproof treatment>

- To install this product outdoors, be sure to waterproof the cables. The camera main body is waterproof, but the mount bracket and adapter box are not waterproof.
- To install this product outdoors, use waterproof silicon rubber or the like to apply waterproof treatment to the camera mount bracket, adapter box, cable access hole, screw holes, and screws.
- To install this product on a wall, face the drain slit of the camera mount bracket downward. Do not block the drain slit. Do not waterproof the drain slit, either.
- Be sure to use the supplied waterproof tape at the connection parts of the power cord and video output cable to apply waterproof treatment.



<How to wind the supplied waterproof tape>

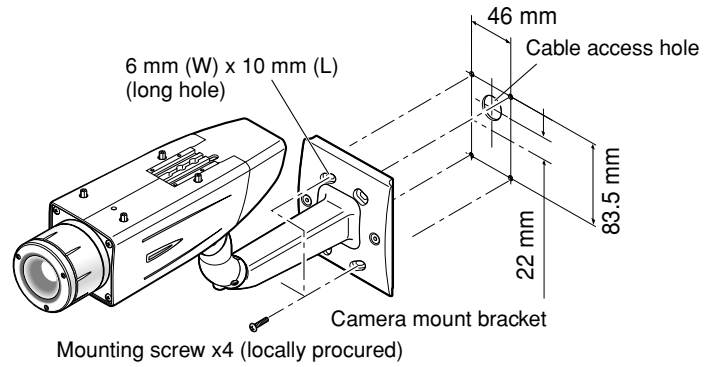
- Stretch the tape by approx. twice (see the illustration at right) and wind it around the cables. Insufficient tape stretch causes insufficient waterproofing.
- Wind the cable with tape in a half-overlapping manner.



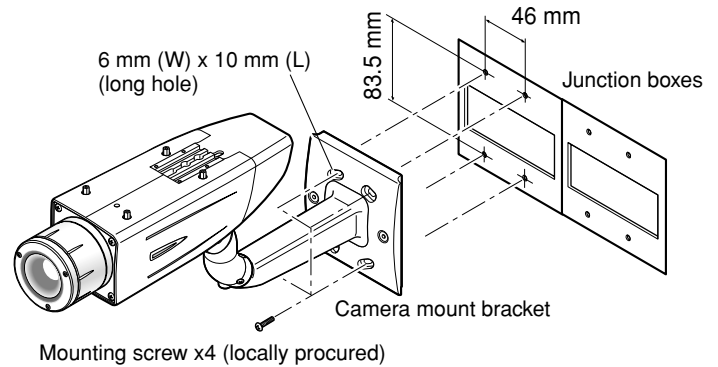
2 Secure the camera mount bracket

- **When the camera is directly installed on a wall**

Use 4 screws (locally procured) to secure the camera mount bracket to a wall or a junction box (locally procured).

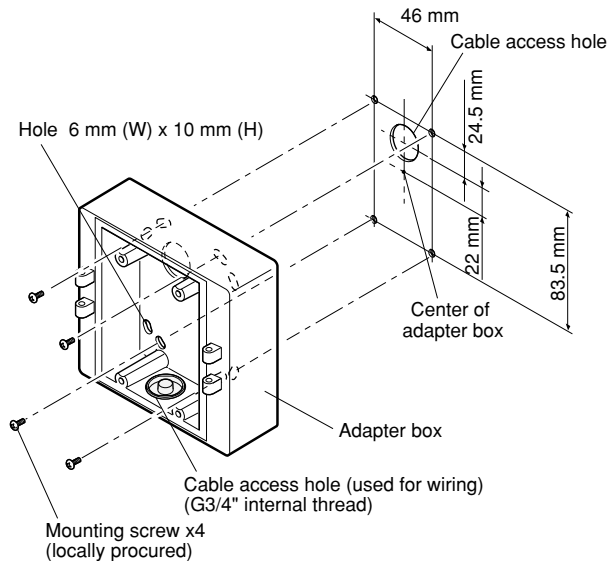


If a junction box is used, putting the boxes side by side is recommended as shown in the illustration at right. (for easy cable passing)

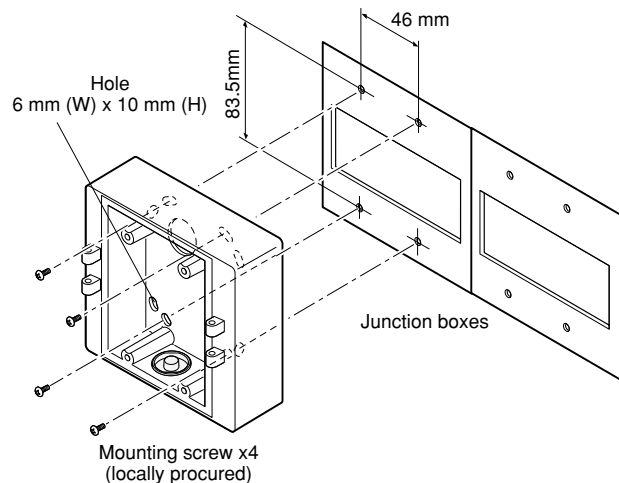


- **When the camera is installed on a wall using the adapter box**

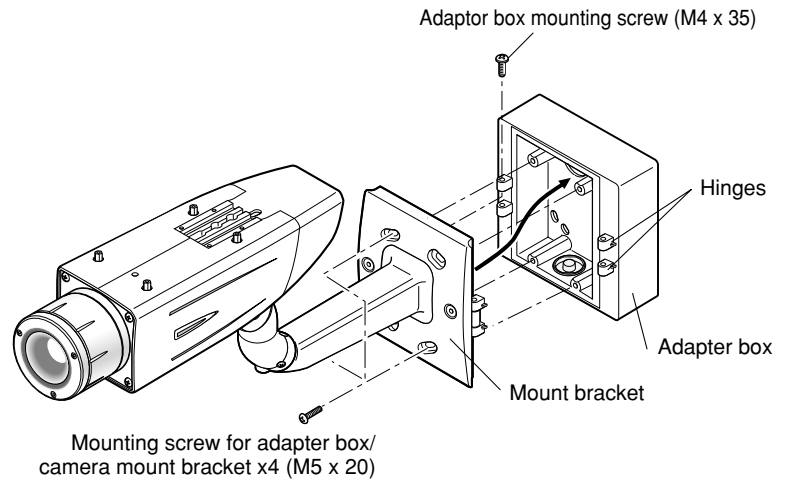
1. Use 4 screws (locally procured) to secure the adapter box to a wall or a junction box (locally procured).



- If a junction box is used, putting the boxes side by side is recommended as shown in the illustration at right. (for easy cable passing)

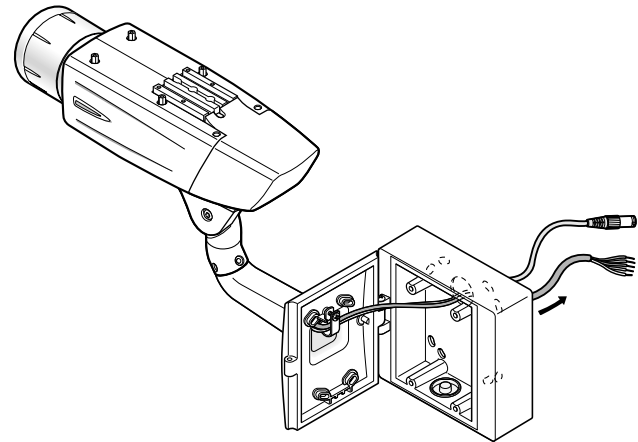


2. Attach the camera mount bracket to the left or right hinges of adapter box.

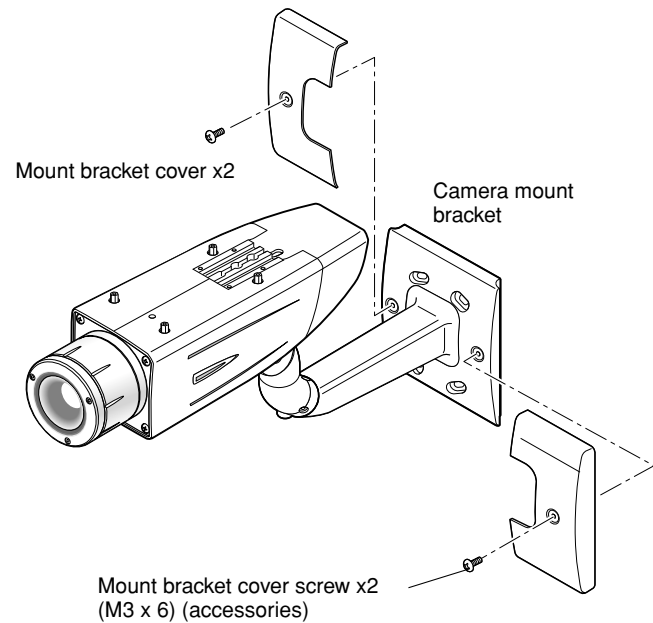


Note:

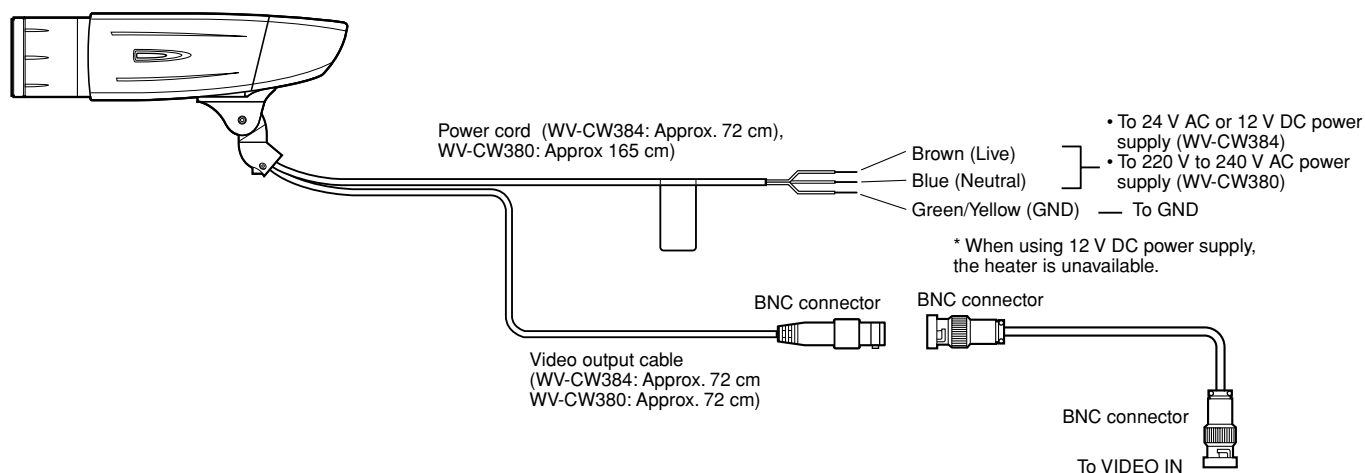
- The right or left hinges of the adapter box shall be selected so as to prevent the motion of the camera mount bracket from being interfered with by obstructions such as a wall when the camera mount bracket is connected to the hinges of the adapter box.



3 Secure the mount bracket covers to the camera mount bracket with the 2 mount bracket cover screws (accessories).



4 Make a connection



Video output connection

The video output connector is connected to the monitor or other system devices with a coaxial cable (locally procured).

The maximum extensible length is shown in the table.

Type of coaxial cable		RG-59/U (3C-2V)	RG-6/U (5C-2V)	RG-11/U (7C-2V)	RG-15/U (10C-2V)
Recommended maximum cable length	m	250	500	600	800

Power connection

Precaution:

The following connections should be made by qualified service personnel or system installers in accordance with NEC 725-51.

• Wire colors & functions

Camera power cord

<WV-CW384>

Wire Color	24 V AC	12 V DC
Brown	24 V AC (L)	Positive
Blue	24 V AC (N)	Negative
Green/Yellow	To GND	To GND

<WV-CW380>

Wire Color	
Brown	220 V to 240 V AC (L)
Blue	220 V to 240 V AC (N)
Green/Yellow	To GND

Cautions:

- Be sure to connect the GND (grounding) lead of the camera and grounding terminal of the power supply when using a 24 V AC (WV-CW384) or 220 V to 240 V AC (WV-CW380) power source.
- Shrinking the cord-entry seal is a onetime procedure. Do not shrink the cord-entry seal until it has been ascertained that unit is functioning.

- ONLY CONNECT THIS TO 24 V AC or 12 V DC CLASS 2 POWER SUPPLY.
- To prevent fire or electric shock hazard, the UL listed wire WV-1 style 1007 should be used for the cord for Input Terminals.
- Do not use a transformer larger than 10 VA.

Cord length and wire gauge

<WV-CW384>

24 V AC

The recommended cord length and copper wire size are shown in the table for reference.

The voltage supplied to the camera should be between 19.5 V AC and 28 V AC.

Recommended wire gauge for 24 V AC line.

Copper wire size (AWG)		#24 (0.22 mm ²)	#22 (0.33 mm ²)	#20 (0.52 mm ²)	#18 (0.83 mm ²)
Wire length (Approx.)	m	20	30	45	75

12 V DC

The recommended resistance and copper wire size are shown in the table for reference.

The voltage supplied to the camera should be between 10.5 V DC and 16 V DC.

Resistance of copper wire [at 20 °C]

Copper wire size (AWG)	#24 (0.22 mm ²)	#22 (0.33 mm ²)	#20 (0.52 mm ²)	#18 (0.83 mm ²)
Resistance (Ω/m)	0.078	0.050	0.03	0.018

"L", "R", "V_A", and "I" shall satisfy the inequality below.

$$10.5 \text{ V DC} \leq V_A - 2(R \times I \times L) \leq 16 \text{ V DC}$$

L : Cord length (m)

R : Resistance of copper wire (Ω/m)

V_A : DC output voltage of power supply unit

I : DC current consumption (A). See the specification.

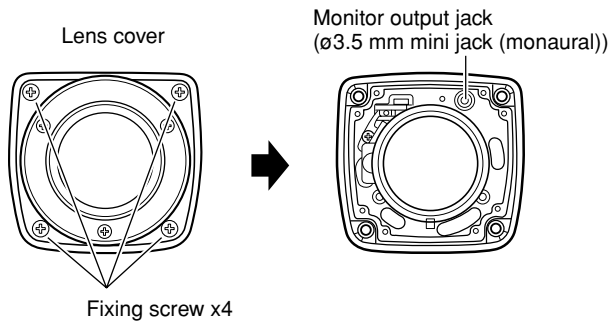
Important:

- When using 12 V DC power supply, the heater is unavailable.

5 Be sure to view the monitor for adjustment when the camera angle is adjusted.

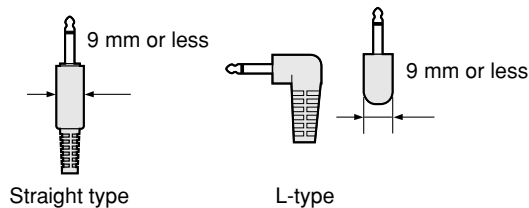
Supply power to this unit, connect the monitor for adjustment (e.g. a small LCD) to the monitor output connector, and adjust the camera angle (turn off the power after view angle adjustment for safety).

1. Loosen the 4 fixing screws of the lens cover to remove the lens cover.
2. Connect the monitor for adjustment to the monitor output connector.

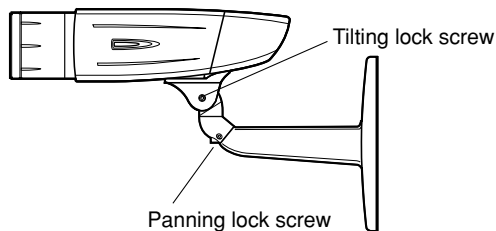


Note:

- The plug dimensions in the illustration below shall be observed for the monitor for adjustment.



3. Repeat the steps (1) and (2) to adjust the camera angle.
 - (1) Loosen the panning lock screw and rotate the camera head horizontally to adjust panning.
 - (2) Loosen the tilting lock screw and rotate the camera head vertically to adjust tilting.
 - (3) Tighten the panning lock screw and tilting lock screw after camera angle adjustment.



Important:

- After camera angle adjustment, the panning lock screw and tilting lock screw shall be securely tightened.
Recommended tightening torque: 2.45 N·m

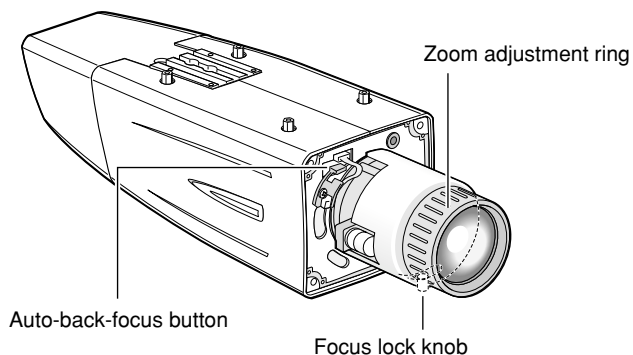
Notes:

- Use a hexagonal wrench with width across flats of 4 mm (locally procured) to loosen or tighten the panning lock screw and tilting lock screw.
- Approximately 1 rotation of loosening the panning lock screw and tilting lock screw allows camera angle adjustment. Do not loosen the screws beyond necessity.
- The camera body shall be held when the panning lock screw or tilting lock screw is loosened.
- Focus adjustment (see page 16) shall be performed when panning and tilting adjustments are performed.

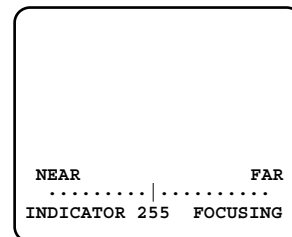
6 Adjust the focus

Focus adjustment must be performed when camera angle (page 15) adjustment are performed.

- Repeat the steps (1) and (2) to adjust the view angle and focus.
 - Rotate the zoom adjustment ring to adjust the view angle between TELE and WIDE.
 - Loosen the focus lock knob, make coarse adjustment of the focus, and then tighten the focus lock knob.



- Press the auto-back-focus button after adjusting the view angle while viewing the monitor for adjustment.
 - The focus position indicator is displayed in the lower part of the screen, and the back focus is automatically adjusted.



- To perform fine adjustment of the back focus after automatic back focus adjustment, use the operation buttons through the setup menu. (page 31)

Notes:

- No operation for 10 seconds or more automatically clears the focus position indicator.
 - To change the angle of view by moving the zoom adjustment ring, also move the focus lock knob to adjust the focus.
-

<How to adjust the focus>

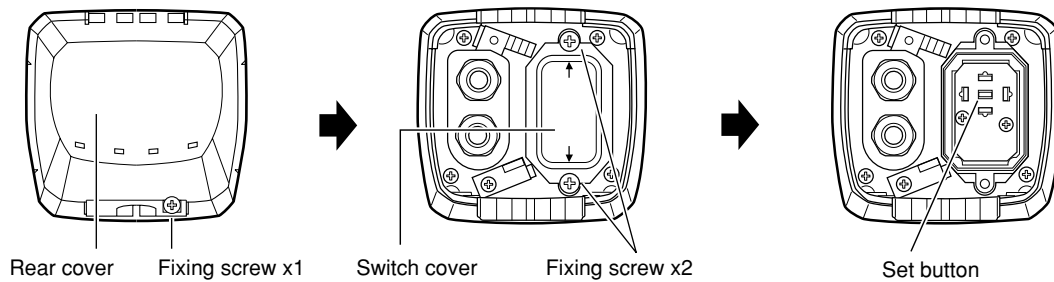
- When an auto iris lens is used to shoot a photographic subject, the originally adjusted focus may be slightly off depending on the iris state resulting from the focal depth of the lens. In such a case, open the aperture by darkening the subject as much as possible in the same way of taking picture, and then adjust the focus. Defocus can be prevented. Use of "ABF" of "BACK-FOCUS SETUP" in the setup menu (page 31) allows users to adjust the focus optimally in the range of the capability to automatically follow the variation in illuminance. (Note: The adjusted focal point is not necessarily the same as the optimal focal point at the illuminance.)
 - The out-of-focus level in the near-infrared light region may be higher than that in the visible light region. Setting "C/L ←→ B/W" of "BACK-FOCUS SETUP" to "AUTO" or "PRESET" in the setup menu allows users to adjust the focus in both the near-infrared light and visible light regions. (The variation in illuminance is not followed after focus adjustment.)
-

<How to use varifocal lens/zoom lens>

- Reset the back focus position to restore the default position before the back focus adjustment. (Hold down the right and left buttons among the operation buttons simultaneously for 2 seconds or more, or move the cursor to "MANUAL-ADJ" of "BACK-FOCUS SETUP" in the setup menu and hold down the right and left buttons simultaneously for 2 seconds or more after pressing the setting button.)
-

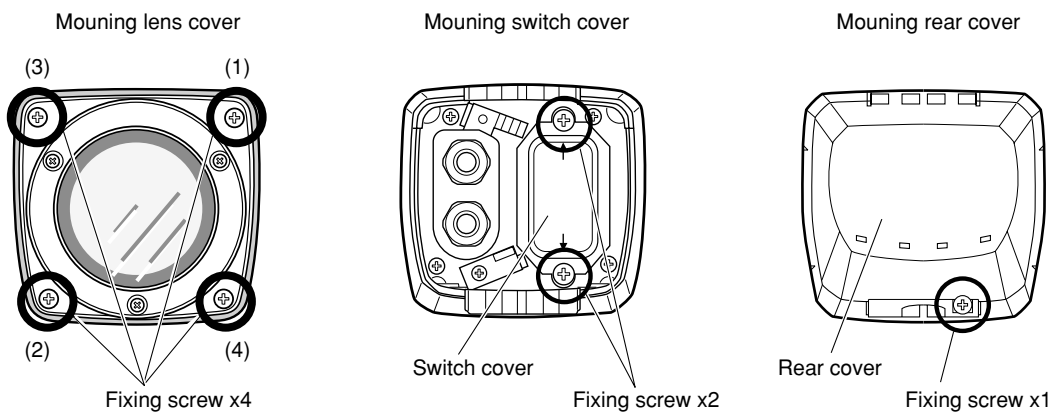
<Fine adjustment of the back focus through the setup menu>

1. Loosen the 1 fixing screw of the rear cover to remove the rear cover.
2. Loosen the 2 fixing screws of the switch cover to remove the switch cover.
3. Hold down the setting button for 2 seconds or more to call up the top screen of the setup menu. And then adjust the back focus. For further information, refer to page 35.



7 Mount the cover

1. Attach the desiccant (accessory) to the inner bottom side of the lens cover.
2. Mount the lens cover, switch cover, and rear cover.

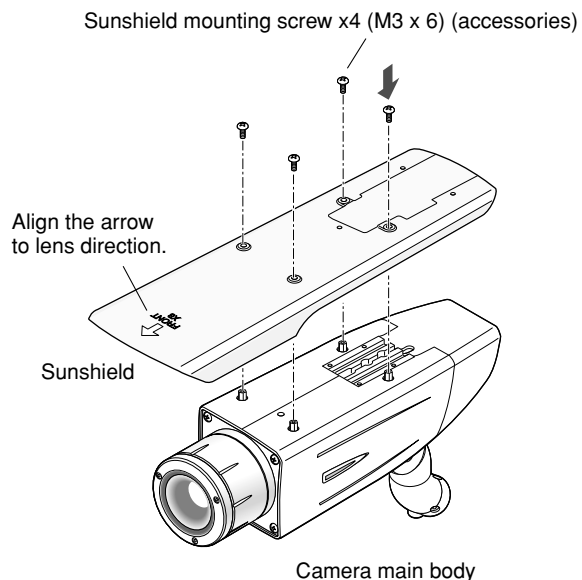


Important:

- The tightening torque described below shall be followed for the 2 fixing screws of switch cover and the 4 fixing screws of lens cover.
Recommended tightening torque: 0.59 N·m
 - Be sure to attach the desiccant (accessory). Refer to the instructions for the desiccant for how to attach it.
 - The tightening sequence of the 4 fixing screws of the lens cover shall be observed and repeated twice as described in the illustration above.
((1) → (2) → (3) → (4), twice)
-

8 Mount the sunshield

Mount the sunshield on the camera with the 4 sunshield mounting screws (accessories).

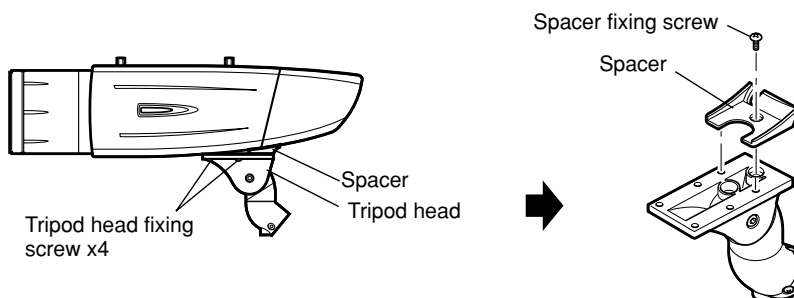


Notes:

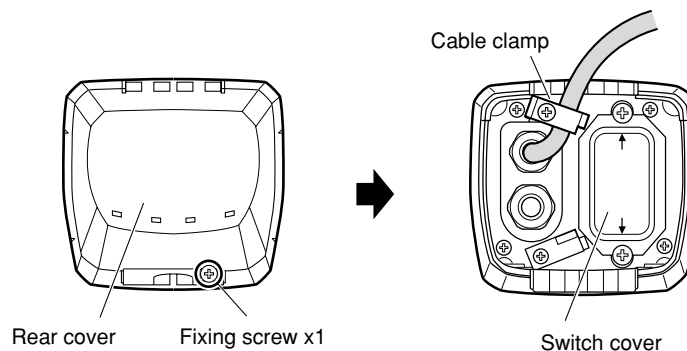
- Be sure to use the 4 sunshield mounting screws (accessories). Recommended tightening torque: 0.59 N·m
 - The "FRONT" side of the sunshield shall be on the lens side.
-

9 When the mounting surface is changed to the top surface of the camera body

1. Remove the 4 tripod head fixing screws from the camera body and remove the tripod head.
2. Loosen the spacer fixing screw of the tripod head and remove the spacer.



3. Loosen the fixing screw and remove the rear cover.
4. Position the cable clamp topside to pass the video output cable and power cord upward. And then, mount the rear cover.



5. Mount the tripod head on the top of the camera body with the 4 tripod head mounting screws that were removed in the step 1.

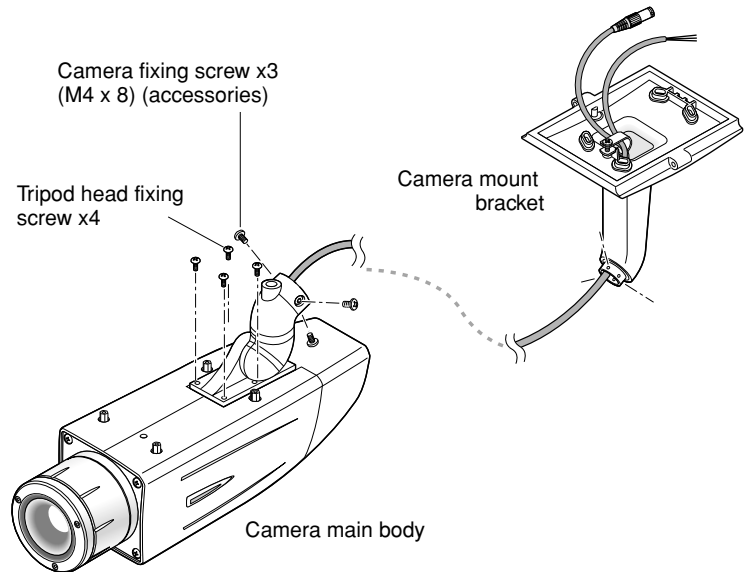
Important:

- Caution shall be taken to prevent the video output cable and power cord from being caught between the camera body and tripod head.
-

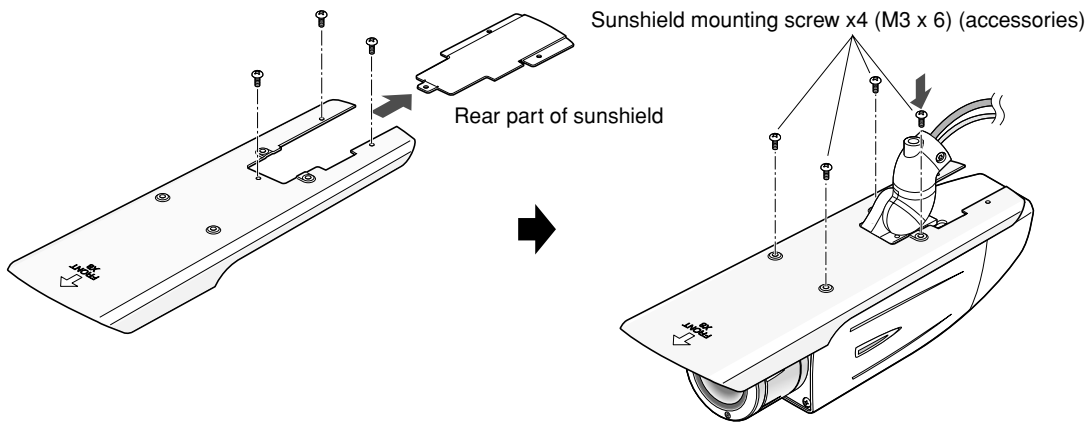
- Secure the camera to the camera mount bracket with the 3 camera fixing screws (accessories).
Pass the video output cable, and power cord and safety wire through the camera mount bracket and secure the safety wire to the camera mount bracket.

Important:

- Be sure to use the screws that were removed from the tripod head.
- Recommended tightening torque: 0.59 N·m

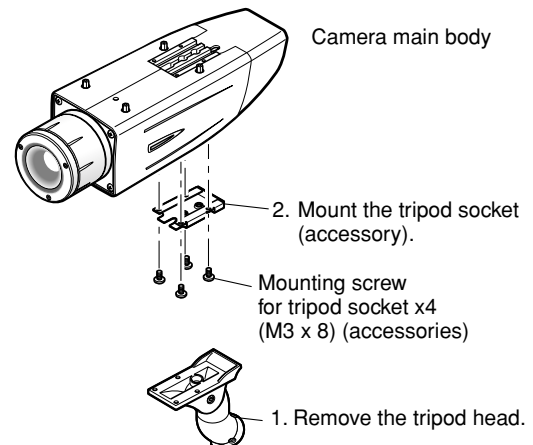


- Mount the sunshield on the camera body with the 4 sunshield mounting screws (accessories) after removing the sunshield backside.



10 When the tripod socket (accessory) is used (when a different camera mount bracket is used)

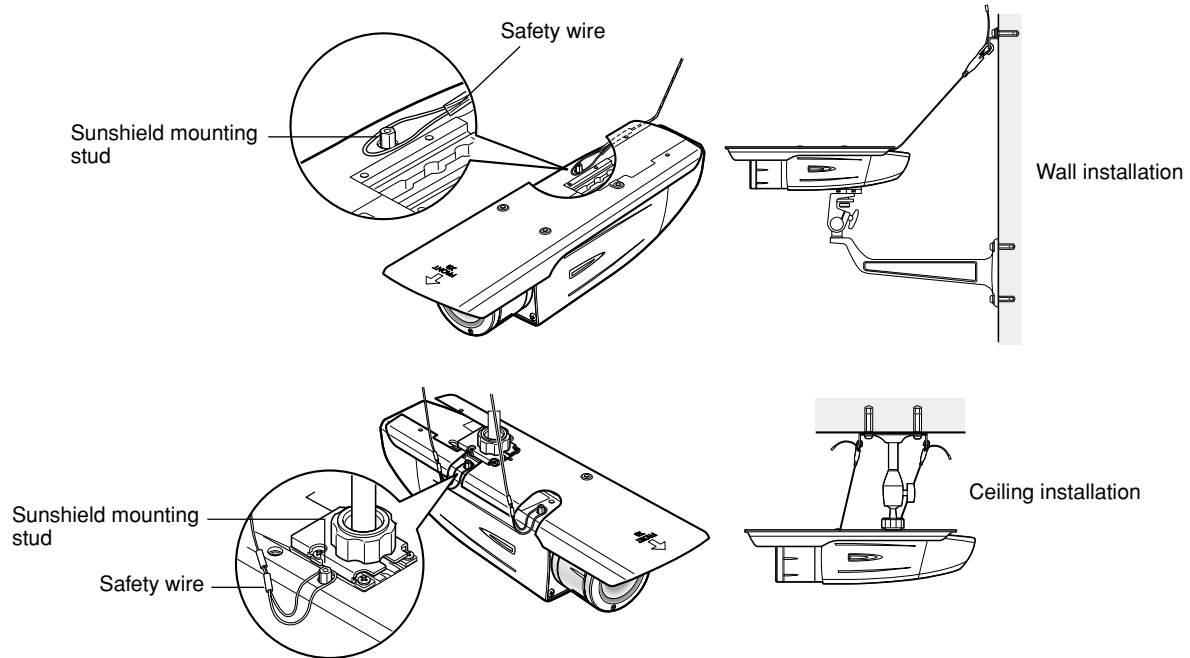
- Remove the 4 tripod head fixing screws from the camera body and remove the tripod head. Disassemble the tripod head and pull out the video output cable and power cord.
- Mount the tripod socket (accessory) with the 4 mounting screws for tripod socket (accessories).



3. Use a safety wire (locally procured) to take measures against a fall of the camera according to the installation position.

	Camera mount bracket	Safety wire
For wall installation	WV-831	WV-Q140
For ceiling installation	WV-7010A	WV-Q141

4. Hook the tip (ring portion) of the safety wire on the sunshield mounting stud and screw the sunshield to secure the safety wire.



5. Refer to the instructions of the safety wire for the following steps.

Important:

- Be sure to use the 4 mounting screws for tripod socket (accessories).
Use of screws with inappropriate length may damage the unit.
 - The 4 screws removed from the tripod head cannot be used.
 - The camera mount brackets, WV-831 and WV-7010A, and the safety wires, WV-Q140 and WV-Q141, are designed to be used indoors. For outdoor installation, use the camera mount bracket in the accessories.
-

About Setup Menus

Before operation, setup of this camera is required. On the setup menu, you can check current settings and perform settings to meet requirements.

The following is an example of setup procedure when LANGUAGE is set to ENGLISH.

Settings items of the camera setup page

Setup item	Description	Reference Pages
CAMERA	Configure the settings relating to camera operations	
CAMERA ID	The camera title can be edited and displayed on the screen.	23
ALC	Configure the light control method.	24
SHUTTER	Select the shutter speed.	25
AGC	Select the method of the gain adjustment.	26
SENS UP	Adjust the sensitivity.	26
SYNC	Configure the method of the synchronization.	26
WHITE BAL	Select the method of the white balance adjustment.	27
MOTION DET	Configure the settings for the motion detection function.	27
DNR	Configure the settings for the DNR (Digital Noise Reduction) function.	29
RESOLUTION	Select a horizontal resolution mode.	29
BW MODE	Configure the settings relating to the BW mode such as the settings for switching between the color mode and the BW mode.	29
PRIVACY ZONE	It is possible to mask a designated zone and as a privacy zone.	30
EL-ZOOM	Adjust the electronic zoom.	30
STABILIZER	Select "ON" or "OFF" to determine whether or not to use the image stabilizer to prevent shaky images.	31
LED	Performs the settings for LED.	31
BACK-FOCUS	Select the method of the flange-back (back focal) length adjustment and adjust the flange-back (back focal) length minutely.	31
SPECIAL		32
CHROMA GAIN	Adjust the chroma level (color density).	32
AP GAIN	Adjust the aperture level.	32
PEDESTAL	Adjust the pedestal level (brightness).	32
PIX OFF	Correct image defects such as scratches.	32
CAMERA RESET	Reset the settings of setup menu to the default settings.	33
SER.NO.	Check the serial number of this camera.	33
LANGUAGE	Select the language to display the setup menu.	23

■ Basic operation

The following are descriptions of how to configure each setup item using the operation buttons (refer to page 8) on the camera. Setup using an optional system controller is also available.

Note:

The illustrations below are the examples to be displayed on a video monitor.

1. Hold down the [SET] button for around 2 seconds.
→ The top page will be displayed.
2. Move the cursor onto "END" by press the [UP] or [DOWN] button.

```

MODEL WV-CW380 SERIES
CAMERA ↓
BACK-FOCUS ↓
SPECIAL ↓
LANGUAGE ↓

END  SETUP  DISABLE
  
```

3. Press the [SET] button after moving the cursor onto "SETUP" by pressing the [RIGHT] button.
→ The "DISABLE" indication will change into "ENABLE" and the settings will become editable.

```

MODEL WV-CW380 SERIES
CAMERA ↓
BACK-FOCUS ↓
SPECIAL ↓
LANGUAGE ↓

END  SETUP  ENABLE
  
```

4. Move the cursor onto the desired setup item and press the [SET] button.
→ The setup page of the selected setup item will be displayed.

```

**CAMERA SETUP** 1/2
CAMERA ID  OFF ↓
ALC        ALC ↓
SHUTTER    OFF
AGC        ON (HIGH)
SENS UP    OFF
SYNC       INT
WHITE BAL  ATW1 ↓
MOTION DET OFF
DNR        HIGH
RESOLUTION HIGH
BW MODE ↓
  
```

5. Configure the settings for each item.
Select setup item: Move the cursor by pressing the [UP] or [DOWN] button.

Change the parameter: Press the [LEFT] or [RIGHT] button.

Display the detailed settings page of the setup item: Press the [SET] button when the setup item with the ["↓"] mark is selected.

Go back to the previous page: Move the cursor onto "RET" and press the [SET] button.

Go back to the top page: Move the cursor onto "TOP" and press the [SET] button.

```

**CAMERA SETUP** 2/2
PRIVACY ZONE OFF
EL-ZOOM     OFF
STABILIZER  OFF
LED         ON

RET  TOP  END
  
```

6. To exit from the SETUP menu and display images from the camera, move the cursor onto "END" and press the [SET] button.

Notes:

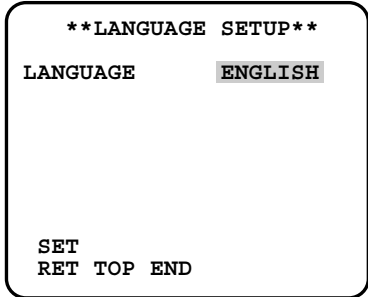
- To prevent erroneous operations, the "DISABLE" indication will always be displayed when the top page is displayed from the camera. To operate the SETUP menu, switch the "DISABLE" indication to the "ENABLE" indication first.
 - The cursor position will be displayed highlighted.
-

Setting Procedures

First, select a language for menu display and camera ID display.

Language Setup (LANGUAGE SETUP)

1. Select LANGUAGE on the top menu and press the [SET] button.
→ The LANGUAGE SETUP menu opens.
2. Select a language. The default setting is English.
Available languages: ENGLISH, FRANÇAIS, ESPAÑOL, DEUTSCH, ITALIANO, РУССКИЙ, CHINESE or JAPANESE
3. Select SET on the menu and press the [SET] button.

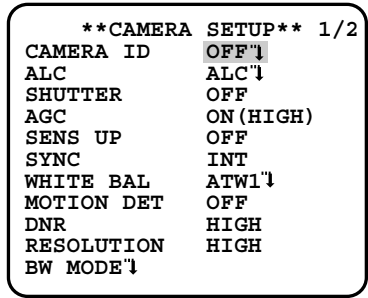


1. Camera Identification Setting (CAMERA ID)

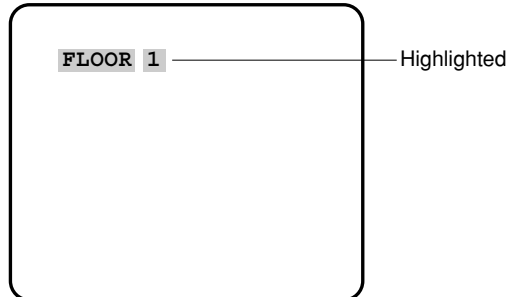
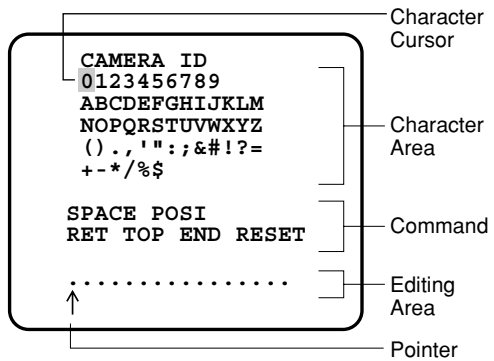
Assign a name to the camera using up to 16 characters to display it overlaying on the camera picture in the selected position.

Note: If you change the language selection after the assignment of camera ID, it will be erased.

1. On the CAMERA SETUP menu, select ON↓ or OFF↓ for CAMERA ID and press the [SET] button.
ON↓: Displays entered camera ID.
OFF↓: Does not display the ID.
→ The CAMERA ID menu opens.
2. Select a character from the character area and press the [SET] button.
→ The selected characters are displayed in the editing area.



3. Repeat these procedures until all characters are entered.
 - To enter a blank space, select SPACE and press the [SET] button.
 - To replace a specific character in the editing area:
 1. Move the cursor to the editing area and then move the pointer to the character to be replaced pressing the [LEFT] and [RIGHT] buttons.
 2. Move the cursor to a candidate character in the character area and press the [SET] button.
 - To erase all characters of the camera ID, select RESET and press the [SET] button.
- Note:** For Chinese language, up to 8 characters can be entered.



4. To specify the ID display position:

1. Select POSI and press the [SET] button.
→ The entered camera ID will be highlighted on the screen.
2. Move it into the appropriate position and press the [SET] button.
→ The position is determined and the screen will return to the CAMERA ID menu.

Note: Keep pressing any of [LEFT], [RIGHT], [UP], or [DOWN] button for a second or more to move the camera ID faster as necessary.

2. Light Control Mode Setting (ALC)

Select a light control mode depending on the lens type mounted.

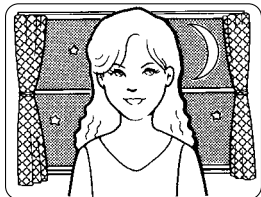
ALC↓: Is applicable to the auto iris lens. SUPER-D3 is available with this selection.

2-1. ALC Mode with SUPER-D3 ON

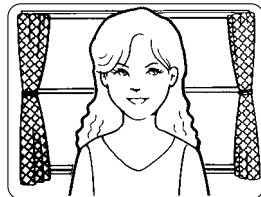
Super Dynamic 3 Function (SUPER-D3)

In the SUPER-D3 mode, more photometric weight is given to the center of the screen than to the edge where a bright backlight would most likely be located.

SUPER-D3 ON

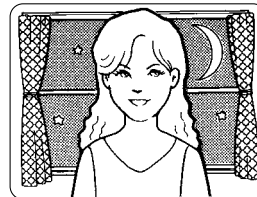


Nighttime

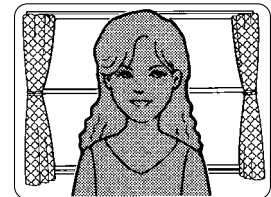


Daytime

SUPER-D3 OFF



Nighttime



Daytime

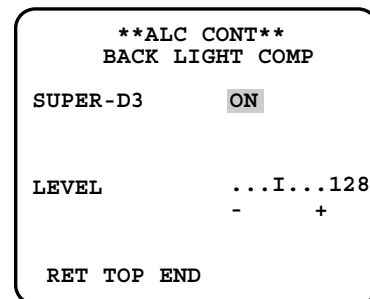
SUPER-D3 ON: Enables SUPER-D3 to compensate backlight automatically.

SUPER-D3 OFF: Enables manual setting to compensate backlight.

Notes:

- When set to ON, the available parameters for SHUTTER and SENS-UP will be limited as shown on the next page.
- Set SUPER-D3 to OFF when noise in a bright portion, flickerings, or color deterioration are observed.

1. Move the cursor to ALC and press the setting button.
→ The ALC CONT menu opens.
2. Select ON for SUPER-D3.
3. Adjust the video output level (LEVEL) by moving the "I" cursor. It may be better to adjust LEVEL slightly higher.



4. Gain Control Setting (AGC)

Select an automatic gain control mode. This setting raises the gain and brightens the image under low light conditions. The default setting is ON (HIGH).

Available modes: ON (HIGH), ON (MID), ON (LOW), OFF

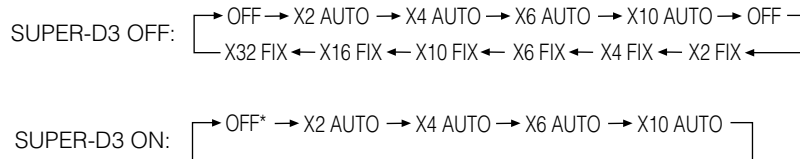
5. Electronic Sensitivity Enhancement (SENS UP)

Select a proper enhancement rate when the camera is set to ALC mode. The higher rate you select, the brighter the picture will be. The default setting is OFF.

AUTO: Sets AGC to ON and adaptively raises the sensitivity up to the selected amplification rate, for example 10 times when set to X10 AUTO.

FIX: Raises the sensitivity fixedly to the selected rate.

OFF: Does not raise the sensitivity.



* Default

Notes:

- Some types of system controllers may not operate some of the SENS UP functions. If this happens, use the operation buttons on the camera.
- When you select AUTO for SENS UP and ON for SUPER-D3, the SENS UP function has priority so that the SUPER-D3 function is not activated automatically.
- While the SENS UP function is selected, noise, spots or a whitish phenomenon may appear in the picture when the sensitivity of the camera is increased. This is a normal phenomenon.
- Only when OFF, X2 FIX, or X2 AUTO is selected for sensitivity enhancement (SENS UP), it is possible to perform ABF adjustment or to select AUTO for C/L ↔ B/W on the BACK-FOCUS SETUP menu. When a sensitivity rate other than X2 FIX or X2 AUTO is selected, use PRESET and FIX for C/L ↔ B/W on the BACK-FOCUS SETUP menu.

6. Synchronization Setting (SYNC)

1. Select a sync mode.

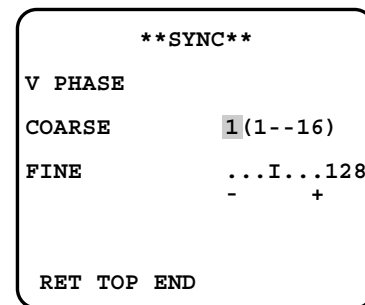
VD2: Multiplexed vertical drive, highest priority

LL: Line-Lock, follows the phase of supplied AC power, 2nd priority

INT: Internal sync, lowest priority

Notes:

- Selection is not available when VD2 is added to the camera. Selection from LL is available when the respective sync is added.
- When LL is selected, phase adjustment is required.



2. Line-Lock Vertical Phase Adjustment (V PHASE)

- Select LL and press the [SET] button.
- Prepare a dual-trace oscilloscope and supply it with the video output of the camera to be adjusted and that of the reference camera.
- Set the oscilloscope to the vertical rate and expand the V-sync portion.
- Select a proper COARSE phase from 16 steps (22.5 degrees/step) that makes the two video signals on the oscilloscope the closest.

- Select a proper FINE phase so that the two video signals on the oscilloscope come as close as possible.

Notes:

- Moving the "I" cursor across the +/- end will shift the FINE range.
- Press the [LEFT] and [RIGHT] buttons simultaneously to reset the V PHASE to the default (0 degree).
- Keep pressing the [LEFT] and [RIGHT] buttons for a second to move the "I" cursor faster if necessary.
- Spike noise if contained in the AC mains may disturb synchronization of LL.

7. White Balance Setting (WHITE BAL)

Select a mode for WHITE BAL on the CAMERA SETUP menu. The default setting is ATW1.

ATW1: Is automatically adaptable to the color temperatures of 2 700 K - 6 000 K.

ATW2: Is automatically adaptable to the use of sodium lamps (2 000 K - 6 000 K).

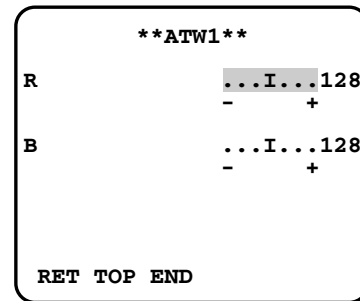
AWC: Is automatically adaptable to the color temperatures of 2 000 K - 10 000 K.

Notes:

- When ATW1 or ATW2 is selected, no further operation is required.
- ATW1 and ATW2 do not appear on the setup menu of the system controller.
- Select AWC in the following cases: the color temperature is out of the 2 000 K - 6 000 K range, the scene contains mostly high color temperatures such as blue sky or sunset, or the scene is dim.
- When AWC is selected, the AWC setting is required.

AWC Setting

1. Select AWC and press the [LEFT] button.
→ AWC will change to AWC → PUSH SW.
2. Press the [SET] button.
→ PUSH SW will be highlighted while the AWC setting is performed.
Note: If the white balance is not set, PUSH SW is being highlighted.
3. Press the [RIGHT] button.



Manual Fine Adjustment

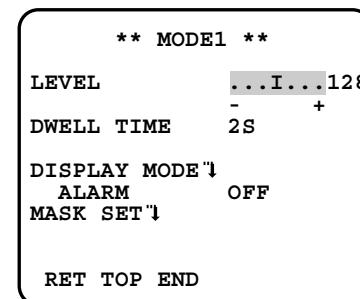
Perform fine adjustment as necessary.

1. Select WHITE BAL and press the [SET] button.
→ Fine adjustment menu of ATW or AWC will open.
2. Adjust finely R (Red) and B (Blue) gain by moving the "I" cursor.

8. Motion Detection Setting (MOTION DET)

When a series of changes in pictures is detected, the camera outputs an alarm to the external device such as a disk recorder. The recorder will start recording the pictures.

1. Select a mode for MOTION DET on the CAMERA SETUP menu.
The default setting is OFF.
OFF: Disables the alarm output.
MODE1: Outputs alarm when a series of motions is detected.
MODE2: Outputs alarm when a series of scene changes is detected.
→ The MODE1 menu opens when you select MODE1 and press the [SET] button.



2. Adjust for LEVEL to optimize the sensitivity of detection.

3. Select a dwell time. The default setting is 2S.

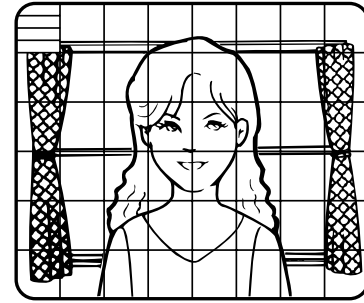
Available time (second): 2, 5, 10, 30

The next detection will be performed after the set time elapses.

4. Select MASK SET and press the [SET] button.

→ A 48-split screen opens.

- Specify non-detection (mask) and detection areas in the same way as described earlier in 2-2 ALC Mode.
- Hold down the [SET] button for 2 seconds to return to the MODE1 menu.



Note: Perform the setting of mask area after STABILIZER in the CAMERA SETUP menu is set to OFF.

5. Select ON or OFF for ALARM under DISPLAY MODE.

ON: Outputs an alarm

OFF: Does not output an alarm. This is applicable any of the following controllers are used: WV-RM70, WV-CU550 series, WV-CU161, WV-CU360, WV-CU650, WV-CU850, WV-CU950

6. Select DISPLAY MODE and press the [SET] button to see the current settings.

When a motion is detected, the area will blink.

- Press the [SET] button to return to the MODE1 menu.

7. As necessary, repeat to perform LEVEL adjustment and MASK setting by checking on the DISPLAY MODE screen.

Notes:

- In systems other than Panasonic, select OFF for MOTION DET to prevent system devices from confusing time-code signal with alarm signal.
- Set MASK SET over the areas where leaves or curtains etc. are swaying.
- Adjust the detection level to prevent detection from confusing motion with noise under low light conditions.
- It takes around 0.2 seconds for the alarm signal to reach the VCR's alarm terminal after detection.
- The motion/scene change detection is not specifically intended to prevent theft or fire.

Motion Detector

The motion detector divides the screen into 48 blocks and monitors changes in the luminance in each block. When it detects any change (movement) in the image, it outputs an alarm signal. When a change (movement) in the image is detected while in the auto mode, the alarm signal is output and the camera stops at the preset position for a specified amount of time.

Demo Mode

The demo mode divides the screen into 48 blocks and monitors changes in the luminance in each block. It also masks any part of the picture where there is a change in average luminance that exceeds the currently specified detection sensitivity level. The demo mode results can be used to determine the optimum detection sensitivity level (step 2) and the areas of the screen that need to be masked (step 4).

About MODE2 of Motion Detection

- The camera will detect a scene change in the following cases.
 - When the lens is fully sprayed or covered with a cloth, lid, or the like
 - When the camera direction is suddenly changed
- The camera will not detect a scene change in the following cases.
 - When a cloth with patterns covers the lens and it sways in the wind
 - When some portions in the screen are not veiled
 - When the screens are similar in scene patterns although the camera direction has changed
- The camera will faultily detect a scene change in the following cases.
 - When an obvious brightness change arises (ex. On/Off of the lamps)
 - When objects move continuously such as traffic in busy streets

9. Digital Noise Reduction Setting (DNR)

Select a DNR mode suitable to the camera site conditions. The default setting is HIGH.

HIGH: Greatly reduces noise, though it produces afterimages when objects move.

LOW: Slightly reduces noise, and produces less afterimages.

10. Resolution Setting (RESOLUTION)

Select a horizontal resolution mode. The default setting is HIGH.

NORMAL: Resolves more than 480 TV lines.

HIGH: Resolves typically 540 TV lines, though noise may increase when SENSE UP is activated in low lighting conditions.

11. Black and White Mode Setting (BW MODE)

1. Select BW MODE on the CAMERA SETUP menu and press the [SET] button.

→ The BW MODE menu opens.

2. Select a mode for BW. The default setting is OFF.

AUTO1: Sets the mode to black-and-white if the picture is dark or to color if the picture is bright enough.

AUTO2: Functions the same as AUTO1, except this is applied to the use near infrared light. (wavelength ≥ 800 nm).

ON: Sets the mode to black-and-white.

OFF: Sets the mode to color.

Notes:

- There may be cases where AUTO1 or AUTO2 does not function well if the camera is aimed at subjects continuously moving or a scene filled with a single color such as a blue sky.
- It is possible to set up the back-focus mode to compensate for defocus liable to happen when the camera automatically switches between the color and black-and-white modes. Refer to page 31. Back-focus Setting for details.

→ When AUTO1 or AUTO2 is selected, LEVEL and DURATION TIME appear.

3. Select a threshold LEVEL to switch between the color and black-and-white mode. The default setting is HIGH.

HIGH: Switches the mode at approx. 5 lx illumination.

LOW: Switches the mode at approx. 1 lx illumination.

4. Select a duration time to determine whether to switch the mode. The default setting is 30 seconds.

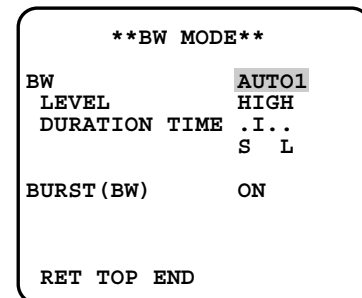
Available time: (Short) 10 s ↔ 30 s ↔ 60 s ↔ 300 s (Long)

5. Select a burst signal mode. The default setting is ON.

ON: Supplies the (color) burst signal with black-and-white composite video.

OFF: Supplies no burst signal.

Note: Using ON is usually recommended. Try both ON and OFF to match to connected devices (recorders, monitors, etc.) that have different characteristics.



12. Privacy Zone Setting (PRIVACY ZONE)

Perform settings of up to eight privacy zones where you wish to veil the monitor screen.

1. Select ON(1), ON(2) or OFF for PRIVACY ZONE on page 2 of the CAMERA SETUP menu and press the [SET] button. The default setting is OFF.

ON (1): Veils the zone with grey.

ON (2): Veils the zone with mosaic.

OFF: Displays pictures normally.

→ The ZONE NUMBER selection menu opens.

2. Select a zone number on the top line using the [LEFT] and [RIGHT] buttons and press the [SET] button. The zone number followed by an asterisk * indicates that it has been already registered.

→ POSITION, SCALE, and a frame appear on the menu.

3. Select →PUSH SW for POSITION and press the [SET] button.

→ Position selection becomes available.

4. Move the picture portion to be veiled to the center of the frame using the [LEFT], [RIGHT], [UP], or [DOWN] button.

5. Select →PUSH SW for SCALE and press the [SET] button.

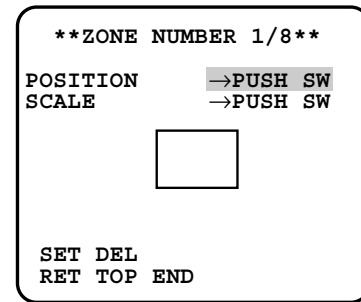
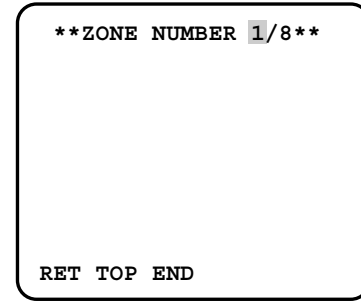
→ Zone scale adjustment becomes available.

6. Adjust the zone scale using the [LEFT], [RIGHT], [UP], or [DOWN] button.

7. To apply the settings, move the cursor to SET and press the [SET] button.

→ The screen returns to the ZONE NUMBER selection menu.

To delete the settings, select DEL and press the [SET] button.



13. Electronic Zoom (EL-ZOOM)

1. Move the cursor to EL-ZOOM.

2. Select ON or OFF by pressing [LEFT] and [RIGHT] buttons.

The default setting is OFF.

ON: x2 electronic zoom is available with the ZOOM switch on the controller.

OFF: The electronic zoom function is disabled.

3. While the cursor is on EL-ZOOM, press the [SET] button. The EL-ZOOM menu appears.

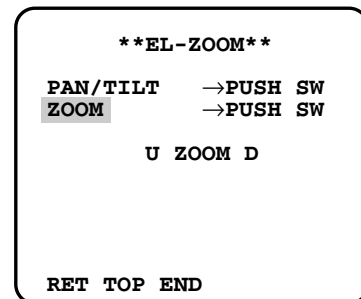
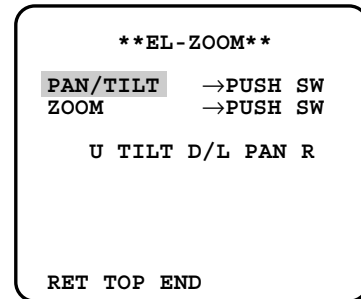
4. Move the cursor to PUSH SW for ZOOM and press the [SET] button to display the ZOOM setting menu.

5. Press the [UP] or [DOWN] button to zoom in or out the image.

6. Move the cursor to PUSH SW for PAN/TILT and press the [SET] button. The PAN/TILT setting menu appears.

7. Press [LEFT], [RIGHT], [UP], or [DOWN] button to change the angular field of view.

8. To return to the EL-ZOOM menu, press the [SET] button.



14. Auto Image Stabilizer (STABILIZER)

This function electronically compensates for an unstable camera image due to movement of a mounting pole or bracket. The default setting is OFF.

ON: Automatically compensates for an unstable image.

OFF: Image stabilizer will not operate.

Notes:

- When set to ON, some effective pixels on the edge of the CCD are used by the stabilization function. This may result in a small reduction in resolution and a narrower angle of view. After activating the image stabilizer function, check that the field of view is correct.
- Image stabilization may not function where there is excessive camera movement or when the scene is low light or low contrast objects.

15. LED Setting (LED)

"ON" or "OFF" is selected to decide whether or not to use the LED located on the side of this unit.

ON (default): Blinks the LED when the motion detector function (☞ page 27) detects a change in an image. Lights in the cases other than the above.

OFF: Keeps the LED unlit.

16. Back-focus Setting (BACK-FOCUS SETUP)

Perform adjustment of the back-focus (flange-back: the gap between the lens and focal plane) remotely on this menu using a system controller. After installation, you can perform this adjustment when defocus arises that may be caused by long-term use, environmental changes, etc.

Important: Do not use the ABF function for continuous or repetitive purposes (ex. autofocus etc.). This function is to be used to correct defocus caused by switching between color and black - and - white when/after installing the camera.

1. Select BACK-FOCUS on the top menu and press the [SET] button.
→ The BACK-FOCUS SETUP menu opens.

2. Select ABF and press the [SET] button.
→ Adjustment is automatically performed.

Notes:

- Performing ABF will function to obtain the best focus around the center areas in a scene.
- Performing ABF is available only when OFF, X2 AUTO, or X2 FIX is selected for SENS UP.
- Using the ABF function under low light conditions may cause noise.

3. Select MANUAL-ADJ and press the [SET] button if manual adjustment is required.
The manual back-focus adjustment screen will open.

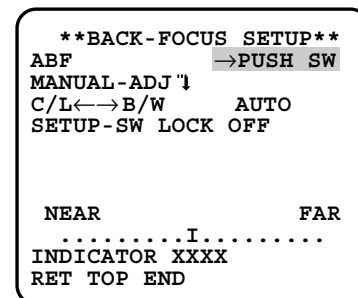
- Use the [LEFT] or [RIGHT] buttons to move the "I" cursor and obtain a proper focus.
→ Refer to the 4-digit number on the second bottom line. The larger the number is, the better the focus will be.
- Select RET and press the [SET] button to go back to the menu setup.

4. Select a mode for C/L ↔ B/W. The default setting is AUTO.

AUTO: Adjusts the back-focus automatically every time the camera switches the mode between color and black-and-white. AUTO is usable only when OFF, X2 AUTO, or X2 FIX is selected for SENS UP.

PRESET: Adjusts the back-focus to the positions for color mode and black-and-white mode that are preset by performing step 2 (automatic) or step 3 (manual) under the respective light conditions.

FIX: Fixes the back-focus after adjustment.



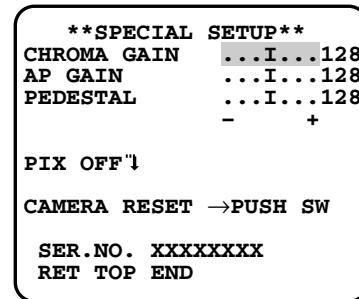
- Select ON or OFF for SETUP-SW LOCK. The default setting is OFF.
OFF: Enables the [SET] button to open the back-focus adjustment screen while the camera picture is displayed.
ON: Disables the [SET] button from opening the back-focus adjustment screen.
- To reset the back-focus to the default setting, press the [LEFT] and [RIGHT] buttons simultaneously.

Notes:

- Select FIX or PRESET and adjust manually the back-focus when automatic adjustment is hindered by the following conditions.
 - Dirt or a water drip attached to window glass
This causes defocus on the object beyond the glass.
 - Objects in low lighting conditions
 - Objects extremely bright
 - Flat contrast objects such as white wall or fine felt
 - Objects placed on the outskirts of the scene
 - More than one object placed with a certain depth
 - An object having a certain depth
 - Objects continuously moving such as busy streets
 - Objects extremely flickering
 - Objects consisting of parallel horizontal lines such as a window shade
- Matsushita Electric Industrial Co., Ltd shall not be responsible for any inconvenience, damage or loss caused by or attribute to inappropriate settings for the ABF function.

17. Special Menu (SPECIAL SETUP)

Select SPECIAL on the top menu and press the [SET] button.
 → The SPECIAL SETUP menu opens.



17-1. Chroma Level Setting (CHROMA GAIN)

Move the "I" cursor to adjust the chroma level.

17-2. Aperture Gain Setting (AP GAIN)

Move the "I" cursor to adjust the aperture gain level.
 Lower the level when moire (a kind of noise, optical interference) appears on the screen as part of minute crosshatch pattern, etc.

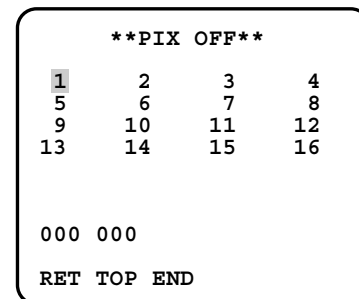
17-3. Pedestal Level Setting (PEDESTAL)

Move the "I" cursor to adjust the pedestal level (black level).

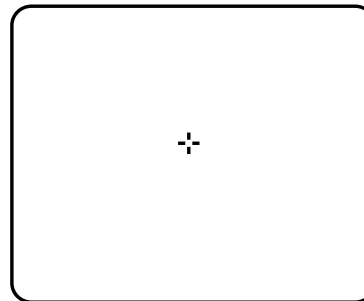
17-4. Pixel Compensation Setting (PIX OFF)

Perform settings to compensate a maximum of 16 blemish pixels on the pickup device.

- Select PIX OFF and press the [SET] button.
 → The PIX OFF menu opens with numbers from 1 to 16.
- Select a number and press the [SET] button.
 → The PIX OFF assignment screen opens with a + cursor.



3. Move the cursor to the center of a blemish position until its appearance becomes less obvious. Finally, press the [SET] button.
 - The horizontal and vertical positions (coordinate) of the blemish will be displayed with a 6-digit number on the second bottom line.
 - The blemish position is registered to be compensated.
 - The screen returns to the PIX OFF menu that displays the number followed by an asterisk if it has been registered.



4. Repeat above steps as necessary.
5. To cancel a registration, select an asterisked number in the PIX OFF menu and press the [SET] button.
 - The PIX OFF assignment screen opens.
 - Hold down the the [LEFT] and [RIGHT] buttons simultaneously for 2 seconds or more.
 - The PIX OFF menu appears displaying the number without an asterisk if its registration has been cancelled.

17-5. To reset to the default settings (CAMERA RESET)

1. Select CAMERA RESET.
 - The PUSH SW is highlighted.
2. While holding down the [LEFT] and [RIGHT] buttons, press the [SET] button for 2 seconds or more.
 - The camera will return to the default settings.

Note: PIX OFF setting cannot be initialized.

17-6. The serial number of the camera will be displayed. (SER. NO.)

Troubleshooting

Before asking for repairs, check the symptoms with the following table.

Contact your dealer if a problem cannot be solved even after checking and trying the solution in the table or a problem is not described below.

Symptom	Cause/solution	Reference pages
No image displayed	<ul style="list-style-type: none"> Are the power cord and coaxial cable connected appropriately? → Check whether the connection is appropriately established. 	14
	<ul style="list-style-type: none"> Is the monitor luminance appropriately adjusted, or is the contrast appropriately adjusted? → Check whether the monitor settings are appropriate. 	-
Blurred image	<ul style="list-style-type: none"> Is the lens of the camera soiled with dirt or dust? → Check whether the lens of the camera is clean. 	-
	<ul style="list-style-type: none"> Is the focus adjusted correctly? → Check if the focus is adjusted correctly. 	16
Damaged power cord sheathing	<ul style="list-style-type: none"> The power cord is damaged. Use of the damaged cord may cause electric shock or fire. Turn off the power immediately and request repair to your dealer. 	-
Heated portion of power cord during use.		
Warmed power cord or loosened connection by bending or stretching during use.		
LED not lit	<ul style="list-style-type: none"> Is power supplied to the camera? → Check whether power is supplied to the camera. 	-
	<ul style="list-style-type: none"> Is "ON" selected for the LED setting? → Check whether "ON" is selected for the LED setting. 	31

Specifications

● Color CCTV Cameras

Power source and power consumption:	WV-CW384: 24 V AC 50 Hz, 18 W, 12 V DC, 560 mA WV-CW380: 220 V to 240 V AC, 50 Hz, 14 W
Image sensor:	1/3-inch type interline transfer CCD
Effective pixels:	752 (H) x 582 (V)
Scanning area:	4.8 mm (H) x 3.6 mm (V)
Scanning system:	2:1 interlace
Scanning frequency:	Horizontal: 15.625 kHz, Vertical: 50.00 Hz
Synchronization:	Multiplexed vertical drive (VD2), line-lock (LL), internal (INT)
Resolution:	Horizontal: 570 TV lines (BW mode) 540 TV lines typ., 520 TV lines min. (color mode, resolution: HIGH) Vertical: 400 TV lines (at center)
Minimum illumination:	Color mode: 0.65 lx (sensitivity up OFF, AGC HIGH: F1.6, WIDE) 0.065 lx (sensitivity up 10x, AGC HIGH: F1.6, WIDE)* BW mode: 0.09 lx (sensitivity up OFF, AGC HIGH: F1.6, WIDE) 0.009 lx (sensitivity up 10x, AGC HIGH: F1.6, WIDE)* * Converted value
Signal-to-noise ratio:	50 dB (AGC Off)
Dynamic range:	54 dB typ
Video output:	1.0 V[P-P] PAL composite/75 Ω , BNC connector
Monitor output:	1.0 V[P-P] PAL composite/75 Ω , \varnothing 3.5 mm mini jack (monaural)
Functions	
Camera title:	Up to 16 characters (alphanumeric characters, marks)
Light control:	ALC
Super-Dynamic 3:	ON/OFF
Electronic shutter speed:	OFF (1/50), 1/120, 1/250, 1/500, 1/1 000, 1/2 000, 1/4 000, 1/10 000
Gain control:	ON (HIGH)/ON (MID)/ON (LOW)/OFF
Sensitivity up:	OFF, X2 AUTO, X4 AUTO, X6 AUTO, X10 AUTO, X2 FIX, X4 FIX, X6 FIX, X10 FIX, X16 FIX, X32 FIX
Synchronization:	VD2/LL/INT
White balance:	ATW1/ATW2/AWC
Video motion detection:	MODE1/MODE2/OFF
Digital noise reduction:	HIGH/LOW
Resolution:	NORMAL/HIGH
Color/BW:	AUTO1/AUTO2/ON/OFF
Privacy zone:	ON(1)/ON(2)/OFF
Electronic zoom:	ON*/OFF (* Up to 2x)
Image stabilizer:	ON/OFF
LED:	ON/OFF
Back-focus:	ABF (AUTO/PRESET/FIX), MANUAL-ADJ
Special:	CHROMA GAIN, AP GAIN, PEDESTAL, PIX OFF
Language:	ENGLISH, FRANÇAIS, ESPAÑOL, DEUTSCH, ITALIANO, РУССКИЙ, CHINESE or JAPANESE
Ambient operating temperature:	-30 °C to +50 °C* * -10 °C to +50 °C at 12 V DC
Ambient operating humidity:	90% or less (no condensation)
Water resistance:	Camera: IEC60529 (IP66, Against ingress of water with harmful effects powerful jetting)* * Applicable only when the installation and waterproof process are done properly.
Dimensions:	82 (W) mm x 78 (H) mm x 301 (D) mm
Weight:	1.5 kg
Finish:	Lens cover: Aluminum die cast with silver metallic coating Main body: AES resin with silver metallic coating

● **Lens**

Focal length: f=5 mm - 40 mm (8x variable focal lens)
F number: F1.6 (WIDE) - F1.9 (TELE)
Focus range: ∞ - 1.2 m
Angle of view: Horizontal: 6.6° (TELE) - 52.0° (WIDE)
Vertical: 5.0° (TELE) - 39.6° (WIDE)

● **Camera mount bracket**

Adjusting angle: Panning range: ±100°
Tilting range: +30°, -90°
Dimensions: 125 (W) mm x 125 (H) mm x 143 (D) mm
Weight: 240 g
Finish: Aluminum die cast with silver metallic coating

● **Adapter box**

Dimensions: 133 (W) mm x 133 (H) mm x 50 (D) mm
Weight: 510 g
Finish: Aluminium die cast with silver metallic coating

Weights and dimensions indicated are approximate.

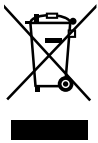
Standard Accessories

Operating Instructions (this document) 1 pc.

The following are for installation.

- Camera mount bracket 1 pc.
- Mount bracket cover 2 pcs.
- Sunshield 1 pc.
- Tripod socket 1 pc.
- Adapter box 1 pc.
- Camera fixing screws (M4 x 8) 4 pcs.
(incl. 1 spare screw)
- Mount bracket cover screws (M3 x 6) 3 pcs.
(incl. 1 spare screw)
- Adapter box mounting screw (M4 x 35) 1 pc.
- Mounting screws for adapter box/camera mount bracket (M5 x 20) 5 pcs.
(incl. 1 spare screw)
- Sunshield mounting screws (M3 x 6) 5 pcs.
(incl. 1 spare screw)
- Mounting screws for tripod socket (M3 x 8) 4 pcs.
- Desiccant 1 pc.
- Waterproof tape 1 pc.

Information on Disposal for Users of Waste Electrical & Electronic Equipment (private households)



This symbol on the products and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.

For proper treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your local retailer upon the purchase of an equivalent new product.

Disposing of this product correctly will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. Please contact your local authority

for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union

This symbol is only valid in the European Union.

If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

Matsushita Electric Industrial Co., Ltd.

Osaka, Japan

<http://panasonic.net>

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Panasonic Services Europe GmbH

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