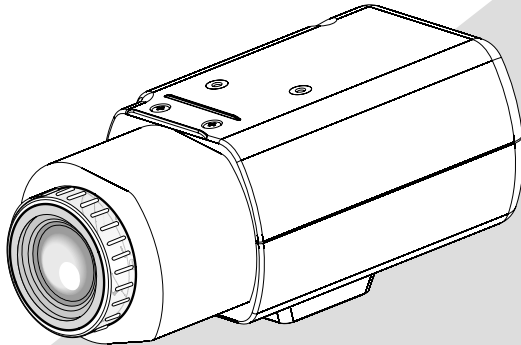


PRO

Installation Guide Color CCTV Camera

Model No: **WV-CP310/G, WV-CP314E**
WV-CP300/G, WV-CP304E



This illustration represents WV-CP300/G.
Lens: Option

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

The model number is abbreviated in some descriptions in this manual.

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.

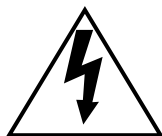
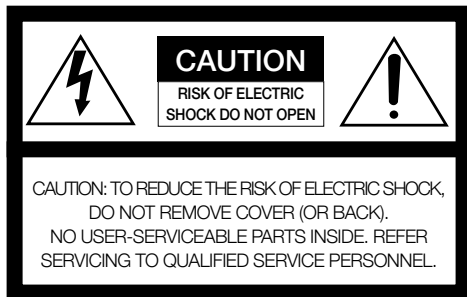
Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatieve documenten, overeenkomstig de bepalingen van Richtlijnen 2006/95/EC en 2004/108/EC.

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 de standarder 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.



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.

WARNING:

- To prevent fire or electric shock hazard, do not expose this apparatus to rain or moisture.
- The apparatus should not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, should be placed on the apparatus.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- To prevent injury, this apparatus must be securely attached to the floor/wall/ceiling in accordance with the installation instructions.
- The mains plug or an appliance coupler shall remain readily operable.
- The installation shall be carried out in accordance with all applicable installation rules.
- This product has no power switch. When turning off the power, turn off a Power Supply or remove a power cable.
- The connections should comply with local electrical code.

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Important safety instructions

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) 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.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) 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.



- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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 i-PRO 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 ANY PURPOSE.

Preface

This product is a 1/3-type CCD color CCTV camera. Connection of this product to a video monitor allows users to use this product as a monitoring camera.

- WV-CP310/G: 220 - 240 V AC power supply, with color/black-and-white mode switch function
- WV-CP314E: 24 V AC, 12 V DC power supply, with color/black-and-white mode switch function
- WV-CP300/G: 220 - 240 V AC power supply, with easy black-and-white mode switch function
- WV-CP304E: 24 V AC, 12 V DC power supply, with easy black-and-white mode switch function

About notations

The following notations are used when describing the functions limited for specific models. The functions without the notations are supported by all models.

CP310: The functions with this notation are available when using the model WV-CP310/G and WV-CP314E.

CP300: The functions with this notation are available when using the model WV-CP300/G and WV-CP304E.

Features

Introduction of newly developed high-resolution CCD

The introduction of the newly developed CCD with 976 horizontal pixels has led to a horizontal resolution of as high as 650 TV lines.

High sensitivity achieved because of noise reduction function

Sensitivity at the following minimum illuminations has been accomplished for color images because of the introduction of low noise circuit design (F1.4):

0.08 lx (color), 0.008 lx (black-and-white) **CP310**

0.08 lx (color), 0.05 lx (black-and-white) **CP300**

Day/Night conversion function equipped **CP310**

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

Bright images can be captured at night because of automatic switching of IR filters at low illuminance.

Motion detection function (VMD) equipped

The motion of an object is detectable. The acts of covering the camera with a cloth, a cap or other acts and changing the camera direction during surveillance can be detected.

Note:

- The VMD function is not the dedicated function to prevent thefts, fires, etc. We are not responsible for any accidents or damages caused by applying the function for the above purposes.
-

About the user manuals

The operating instructions of the camera consist of 2 sets: this book and operating instructions (PDF).

This book explains how to install the camera.

Refer to the "Operating Instructions (PDF)" on the provided CD-ROM for descriptions of how to perform the unit settings. Adobe® Reader® is required to read PDF. When the Adobe® Reader® is not installed on the PC, download the latest Adobe® Reader® from the Adobe web site and install it.

Trademarks and registered trademarks

Adobe, Acrobat Reader and Reader are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Precautions

Refer installation work to the dealer.

Installation work requires technique and experiences. Otherwise injury or damage to this product may result.

Be sure to consult the dealer.

Do not insert any foreign objects.

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

Do not attempt to disassemble or modify this product.

Failure to observe this may cause fire or electric shock.

Consult the dealer for the repair or inspections.

Stop operation immediately when something is wrong with this product.

When smoke goes up from this product or the smell of smoke comes from this product, continued use will result in fire, injury, or damage to the product.

Turn the power off immediately and contact qualified service personnel for service.

Select an installation area that can support the total weight.

Selecting an inappropriate installation surface may cause the product to fall down or topple over, resulting in injury.

Installation work shall be started after sufficient reinforcement.

Periodic inspections shall be conducted.

Rust on the metal parts or screws may cause the product to fall down resulting in injury or accidents.

Consult the dealer for the inspections.

This product shall be installed in a vibration-free place.

Failure to observe this may cause screws and bolts to be loosened and consequently to fall resulting in injury.

Install this product in a location high enough to avoid people and objects from bumping the product.

Failure to observe this may cause a drop resulting in injury or accidents.

Do not strike or give a strong shock to this product.

Failure to observe this may cause injury or fire.

Turn the power off when do wiring of this product.

Failure to observe this may cause electric shock. A short circuit or wrong wiring may cause fire.

Do not use this product in an atmosphere of flammable gases.

Failure to observe this may cause injury by explosion.

Avoid installing this product in locations where it is subject to damage by salt or corrosive gas.

Otherwise the mounting fixtures will deteriorate, causing the product to fall down and leading to accidents.

Tighten screws and mounting fixtures to the specified torque.

Failure to observe this may cause a drop resulting in injury or accidents.

[Precautions for use]

This product is designed to be used indoors.

This product is not operable outdoors.

This product has no power switch.

When turning off the power, turn off a circuit breaker.

To keep on using with stable performance

Parts of this product may deteriorate and it may shorten the lifetime of this product when using in locations subject to high temperatures and high humidity. (Recommended operating temperature: +35 °C or lower)

Do not expose this product to direct heat sources such as a heater.

Handle this product with care.

Do not drop this product, nor apply shock or vibration to this product.

Failure to observe this may cause trouble.

Noise on monitor

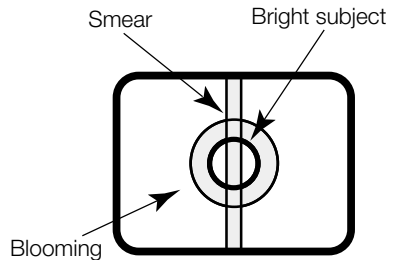
This product is equipped with a super sensitive CCD. Therefore, noise may appear on the monitor. This phenomenon is not trouble.

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).



Cleaning this product body

Turn the power off when cleaning this product. Do not use strong abrasive detergent when cleaning this product. Otherwise, it may cause discoloration.

Synchronous mode setting

Image synchronous mode of this camera indicates internal synchronization (INT) only. Set the multiplexed vertical drive (VD2) as OFF when the camera is connected to the system controller of the company.

Precautions for installation

i-PRO assumes no responsibility for injuries or property damage resulting from failures arising out of improper installation or operation inconsistent with this documentation.

This product is designed to be used indoors.

This product is not operable outdoors. Do not expose the product to direct sunlight for hours and do not install the product near a heater or an air conditioner. Otherwise, it may cause deformation, discoloration and malfunction. Keep the product away from water and moisture.

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 the product, such as a concrete ceiling.
- Install the camera in the foundation area of the architecture or where sufficient strength is assured.
- If a ceiling board such as plaster board is too weak to support the total weight, the area shall be sufficiently reinforced.

Avoid installing this product in the following locations.

- Location where it may get wet from rain or water splash.
- 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 where corrosive gas is produced, Locations where it may be damaged by briny air such as seashores.

- Locations where the temperature is not within $-10\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$.
- Locations subject to vibrations (This product is not designed for on-vehicle use.)
- Locations subject to condensation as the result of severe changes in temperature.

Avoid moist or dusty places to install this system.

Otherwise, lifetime of the internal parts may be shortened.

Avoid installing this product in a place with a high level of noise.

Installation near an air conditioner, an air cleaner, a vending machine, or the like causes noise.

Avoid installing and connecting during a lightning storm. Otherwise, an electric shock or fire may be caused.

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

Do not damage the power plug or cable.

Keep the camera cable away from the lighting cable.

Failure to observe this may cause noise.

Radio interference

When the camera 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 steel conduit tubes.

Locally procure the screws

Screws are not supplied with this product. 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.

Screw tightening

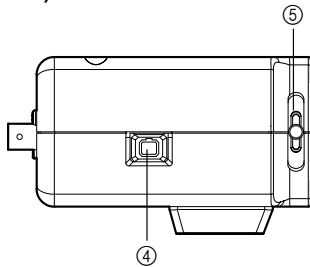
- The screws and bolts must be tightened with an appropriate tightening torque according to the material and strength of the installation area.
- Do not use an impact driver. Failure to observe this may cause overtightening and consequently damage to the screws.
- When a screw is tightened, make the screw at a right angle to the surface. After tightening the screws or bolts, perform visual check to ensure tightening is enough and there is no backlash.

Power cord (only for WV-CP300/G, WV-CP310/G)

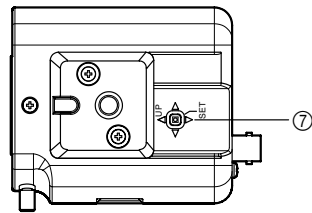
Connect the power cord securely. Run the power cord so that no load is applied to the cord when panning or tilting the camera. (Failure to observe this may disconnect the power cord, and accordingly no image is displayed.)

Major operating controls and their functions

(Side view)

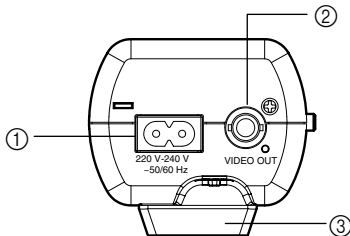


(Bottom view)



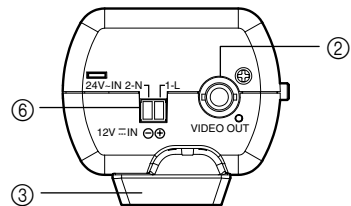
(Rear view)

<WV-CP300/G, WV-CP310/G>

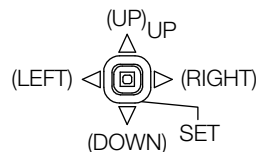


- ① **AC power input terminal [220 V-240 V ~50/60 Hz]**
<Only for WV-CP300/G, WV-CP310/G>
Connect with the supplied power cord.
- ② **Video output connector [VIDEO OUT]**
Provides video output to system units.
- ③ **Tripod mount base**
This is used to install the camera onto the mount bracket (locally procured).
- ④ **ALC lens connector**
Connects to ALC lens (4-pin).
- ⑤ **Back focus adjustment screw**
Adjusts the back focus distance and image focal length.
- ⑥ **Power input terminal [12V ⎓IN, 24V-IN]**
<Only for WV-CP304E, WV-CP314E>
The power supply of 24 V AC or 12 V DC is connected to this terminal.
- ⑦ **Setup button [SET]**
Press the [SET] button once and the "FOCUS ADJUSTMENT" screen will be displayed. Hold down the [SET] button for more than 2 seconds and the setup menu screen will be displayed.

<WV-CP304E, WV-CP314E>



- [LEFT]/[RIGHT]: Press the [RIGHT] or [LEFT] button to move to the right or left in the menu, or change the displayed values.
- [UP]/[DOWN]: Press the [UP] or [DOWN] button to move up or down in the menu.



- (The directions of "UP", "DOWN", "LEFT" and "RIGHT" are as shown when you are directly facing "UP".)
- [SET]: Press this button in the menu to confirm the selected value or function. In addition, this button is used to open submenus.

Installation and connection

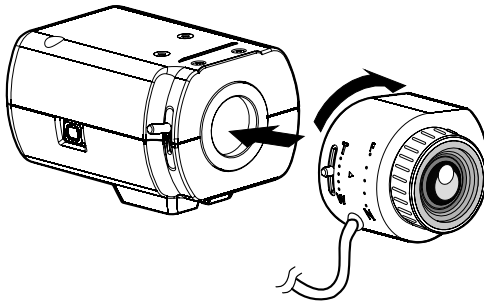
Important:

- Follow the installation and connection procedure below to ensure safety.

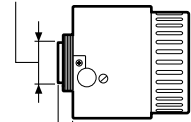
1 Rotate the lens (option) clockwise slowly to mount the lens.

Important:

- CS-mount lens can be used on this camera. For use of C-mount lens, use the C-mount adaptor (option).
- For prevention of damage to the camera body, use a lens with protrusion of 5.5 mm or less from the flange surface.



Protrusion from mount:
 $\phi 20$ mm or less



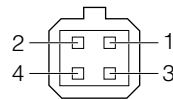
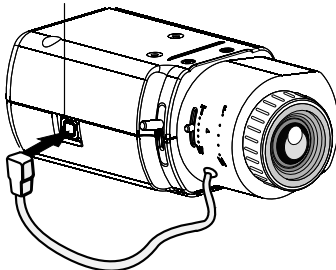
Protrusion from flange:
 5.5 mm or less

Optional dedicated lens

Lens type		Model No.
ALC lens for 1/3-type CCD cameras	2x vari-focal	WV-LZA61/2S
		WV-LZA62/2
	8x vari-focal	WV-LZ62/8S

2 Connect the lens cable to the ALC lens connector of the camera.

ALC lens connector



Pin No.	
1	Dump ⊖
2	Dump ⊕
3	Drive ⊕
4	Drive ⊖

3 Installation of safety wire

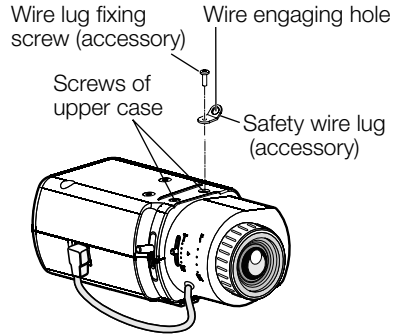
The following example shows the installation of safety wire:

Important:

- Be sure to install safety wire between the camera and the installation position to prevent unexpected injury caused by fallen camera.
 - Ensure that the safety wire is installed. Consult the dealer about installation.
-

3-1 Attach the safety wire lug (accessory) to the screw hole of the mount base with screw (accessory).

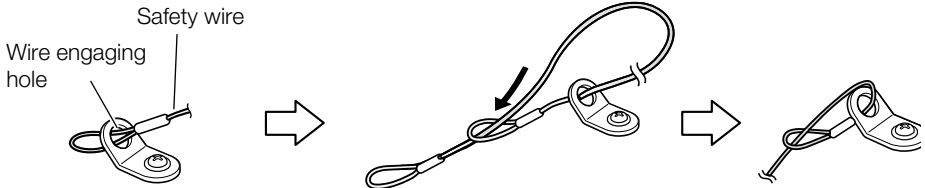
- ① Loosen one screw in the front portion of the camera upper case. (Either left or right)
- ② Be sure to attach the safety wire lug (accessory) with the wire lug fixing screw (M2.5 × 8 mm) provided in the accessories.



Important:

- Be sure to attach the safety wire lug (accessory) with the screw provided in the accessories. Using screw of different length may cause camera drop or damage.
 - Do not install the safety wire lug at places other than the two screw holes of the upper case.
 - Do not install the safety wire lug on the projections of the upper case. (Install the safety wire lug between the two projections)
 - Recommended tightening torque: 0.39 N·m.
-

3-2 Engage the safety wire with the wire engaging hole.



- ① Pass one end of the safety wire eyelet through the wire engaging hole.
- ② Pass the other end of the safety wire through the eyelet.

4 Installation of camera mount bracket (locally procured)

Secure the camera mount bracket (locally procured) to the installation position, and mount the camera on the camera mount bracket.

Prepare mounting screws according to the material of the area where the camera mount bracket (locally procured) is to be installed. The installation method may be different depending on the material of the area where the bracket is to be installed.

- When installing on steel: Fix with bolts and nuts (M6 or M8).
- When installing on concrete: Fix with expansion anchor bolts (M6 or M8).
- Use mount bracket with strength 5 times of the total weight of the camera body and lens.
- The height and length of the camera mount bracket must be appropriate to ensure the use of the safety wire in the accessories.

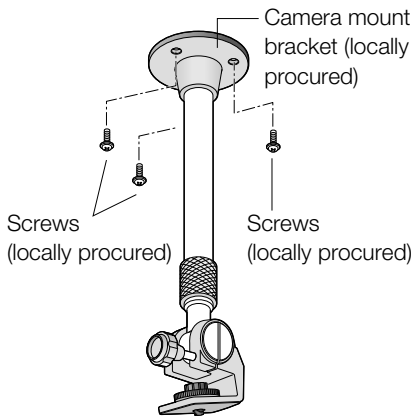
The mounting conditions of the camera mount bracket (locally procured) are described as follows:

Installation place	Recommended screw	Number of screw	Minimum pull-out strength (per 1 pc.)
On ceiling	M6 or M8	3 pcs.	196 N
On wall	M8	4 pcs.	921 N

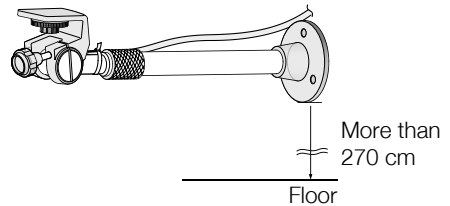
Important:

- Refer to the operating instructions of the camera mount bracket (locally procured) for the mounting angle of the camera mount bracket for a ceiling or wall.
- When the camera mount bracket is mounted on a wall, be sure to observe the mounting height described on the illustration.

<Installation sample on a ceiling>



<Installation sample on a wall>



5 Mount the camera on the camera mount bracket

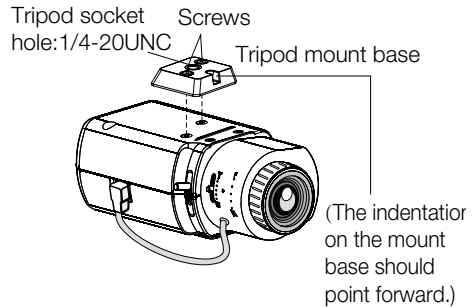
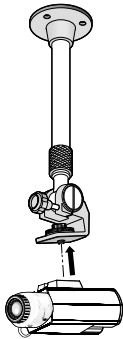
Follow the instruction of camera mount bracket to mount the camera on the camera mount bracket, and aware of the followings:

- Be sure to install the tripod mount base and safety wire before attaching the camera to the camera mount bracket.
- Change the tripod mount base position when attaching the camera to the ceiling mount bracket. Observe the following precautions at this time.

If it is needed to restore the tripod mount base to its original position, also observe the following precautions.

- When attaching an optional tripod mount base on the top or bottom of the camera, use the removed screws to attach the tripod mount base. Use of longer or shorter screws may cause the camera or tripod to fall causing damage. (Recommended tightening torque: 0.39 N·m).

<Installation sample on a ceiling>



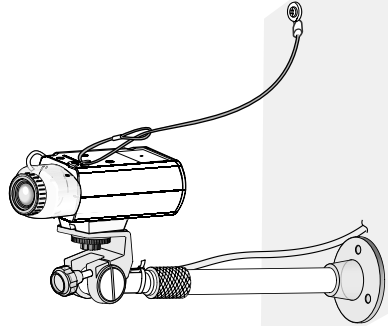
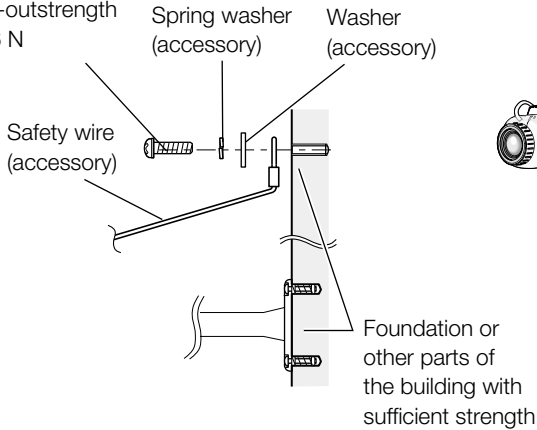
6 Attach safety wire (accessory) to the ceiling or wall.

Attach the safety wire to the foundation or other parts of the building with sufficient strength (minimum pull-out strength 196 N).

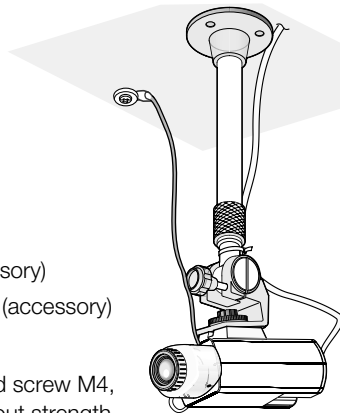
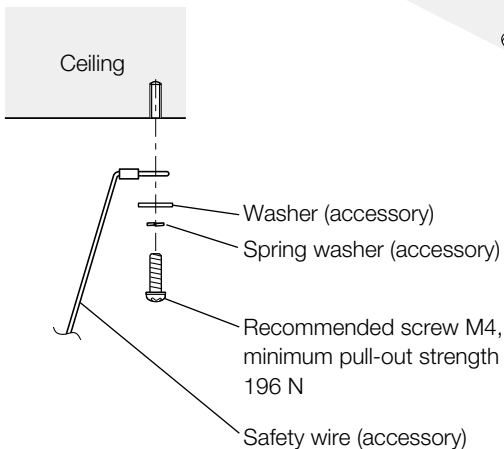
Prepare screws according to the condition of the attachment position. Use the safety wire (accessory), washer (accessory) and spring washer (accessory).

<When attached to the wall>

Recommended screw M4, minimum pull-out strength 196 N



<When attached to the ceiling>

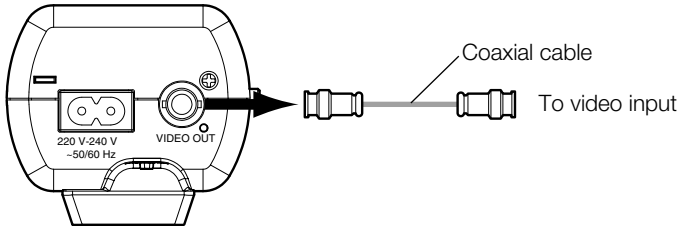


7 Connect the video output.

Important:

- Be sure to turn off the power of each device before connecting.
- Be sure to secure the coaxial cable connectors.

Connect a coaxial cable (locally procured) to the video output connector.

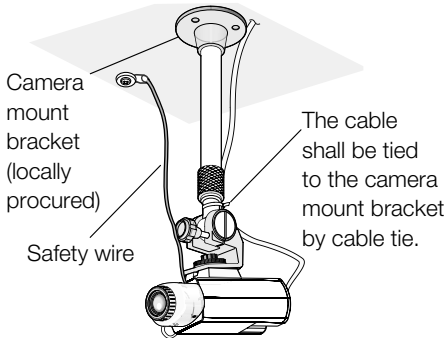


8 Use a cable tie (locally procured) to attach the coaxial cable to the camera mount bracket.

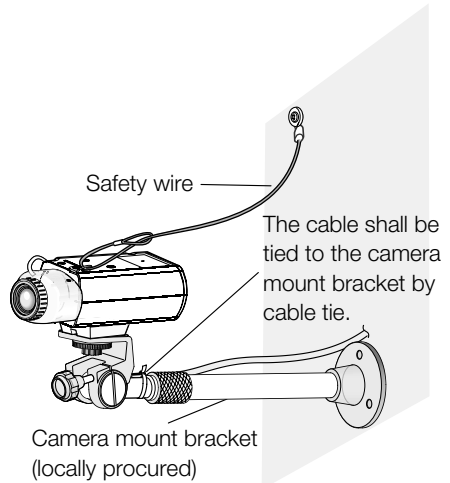
Important:

- The cable tie shall be made of metallic or durable material to be strong enough because the coaxial cable plays the role of camera drop prevention measures in case.

<Installation sample on a ceiling>



<Installation sample on a wall>



9 Turn on the power.

WV-CP300/G, WV-CP310/G

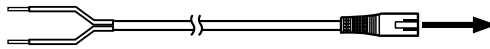
Use the power cord (accessory) to connect the power supply.

Important:

- The included power cord is the dedicated power cord of this product. Do not use it with other devices.

220 V-240 V AC,
50/60 Hz

Power cord (accessory)



Caution:

- The camera shall be connected with cord set with plug. Plug for respective country shall be mounted on the Power cord by a qualified electrical.

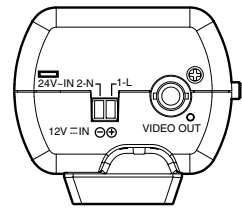
WV-CP304E, WV-CP314E

Important:

- Use 24 V AC or 12 V DC power supply that is insulated from 220 V-240 V AC power.
- The power supply is automatically switchover either 24 V AC or 12 V DC. No setting is required with this camera.

- ① Loosen the screw of the power cord plug (accessory).
- ② Connect the power supply of 24 V AC or 12 V DC to the power cord plug.

Strip the end of the wire by 3 mm to 7 mm, and twist the stripped part of the wire sufficiently to avoid short circuit. Specification of power cord (wire): AWG #16 - #24, Single core, twisted



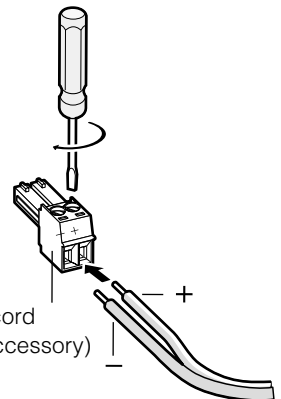
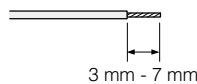
Power supply
(24 V AC
or 12 V DC)

Important:

- Check whether the cord core is fully inserted into the power cord plug.

<Ratings>

	24 V AC	12 V DC
-	2-N	⊖ (GND)
+	1-L	⊕



Power cord
plug (accessory)

- ③ Tighten the screw of the power cord plug.
- ④ Connect the power cord plug to the power supply terminal on the rear side of the camera.

Important:

- Make sure that the power cord plug is inserted fully into the power supply terminal.

Connection of power cord

When connecting the power cord, use connectors that are designed for the power cord, and be careful not to let the power cord fall off.

In addition, waterproofing work is needed at the joint, e.g., wrapping waterproof tape around the joint.

Cable length and wire gauge

24 V AC

The recommended cable length and wire gauge are shown in the table for reference. The voltage supplied to the power terminals of the camera should be within 19.5 V AC and 28 V AC.

The recommended wire size for 24 V AC power cord is shown below:

Copper wire size (AWG)		#24 (0.205 mm ²)	#22 (0.325 mm ²)	#20 (0.519 mm ²)	#18 (0.833 mm ²)	#16 (1.307 mm ²)
Length (approx.)	(m)	20	30	45	75	120

12 V DC

Calculation of the relation among the cable length, resistance, and power supply.

The voltage supplied to the camera shall be between 10.8 V DC and 16 V DC.

$$10.8 \text{ V DC} \leq VA - 2 (R \times I \times L) \leq 16 \text{ V DC}$$

L : Cable length (m)

R : Resistance of copper wire (Ω /m)

VA: DC output voltage of power supply unit

I : DC current consumption (A)

See specifications.

Resistance of copper wire [at 20 °C]

Copper wire size (AWG)	#24 (0.205 mm ²)	#22 (0.325 mm ²)	#20 (0.519 mm ²)	#18 (0.833 mm ²)	#16 (1.307 mm ²)
Resistance Ω /m	0.083	0.052	0.033	0.020	0.013

10 Adjust the camera angle by loosening the screw of the camera mount bracket while viewing the video monitor.

Be sure to loosen the screw of the camera mount bracket when the camera angle is adjusted. If the camera angle is changed when the screw is tight, excessive force is applied to the camera mount bracket and camera, and accordingly they may be damaged. Be sure to tighten the screw securely after camera angle adjustment.

11 Adjust the focus.

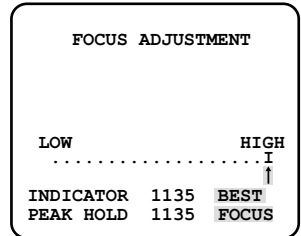
To use a fixed-focal lens

When adjusting the focus with a fixed-focal lens, use the back focus adjustment knob.

Adjust the focus with the focus assist function

The view angle and aperture can be adjusted according to the distance of the photographic subject. Adjust the view angle and focus when adjusting the camera angle.

- ① Loosen the zoom lock knob. Adjust the view angle with the zoom and focus ring according to the photographic subject.
- ② Tighten the zoom lock knob.
- ③ Press the [SET] button.
→ The "FOCUS ADJUSTMENT" screen will appear.
The focus assist function will be activated to perform the optimum adjustment.
- ④ When the focus ring is positioned near the best focus position, the position will automatically be memorized as the "PEAK HOLD" position (the higher the value is, the closer it is to the focus point).
- ⑤ When the focus ring is moved, the current focus position will be indicated on "INDICATOR". Adjust the focus position so that the indicator value goes close to the "PEAK HOLD" position.
- ⑥ When the indicator value goes to the best focus position, "BEST FOCUS" will be displayed in reverse at the lower right corner of the screen.
- ⑦ Press the [SET] button again to close the "FOCUS ADJUSTMENT" menu. (No operation for 3 minutes also closes the menu.)



Important:

- If the view angle changes during adjustment, press the [SET] button to close the "FOCUS ADJUSTMENT" screen (once the view angle changes, the "PEAK HOLD" and "INDICATOR" values will also change), and repeat from step ③ after the view angle is fixed.
 - When shooting in the following place or following subjects, press the [SET] button again to close the "FOCUS ADJUSTMENT" screen. Adjust to the best focus position while viewing the image.
 - Frequently moving subject
 - Subject with large illuminance change
 - Subject with low illuminance
 - Too bright or reflective subject
 - Subject through a window
 - Place where the lens easily becomes dirty
 - Subject with less contrast such as white wall
 - Subject with remarkable depth
 - Subject with heavy flicker
 - Subject with horizontally parallel lines such as a shutter
-

Setup menu

Performing each setting item in the setup menu should be completed in advance to use this unit. Perform the settings for each item in accordance with the installation conditions and customer requirements.

List of setup menu

Setup item	Description
CAMERA ID	This item specifies the camera title. The camera title that indicates the camera location and other information about the camera is created with alphanumeric characters and symbol, and then displayed on the screen.
CAMERA	Performs the camera operation settings.
SCENE 1/ SCENE 2	Selects a scene file. It is possible to register and save the settings as a scene file in case that it is necessary to change the settings such when shooting at night.
ALC/ELC	Selects the method of controlling the quantity of light in accordance with the lens to be used.
SHUTTER	Specifies the electronic shutter speed.
AGC	Specifies gain adjustment.
SENS UP	Specifies electronic sensitivity enhancement.
WHITE BAL	Specifies white balance adjustment.
DNR	Selects the level of the digital noise reduction function.
D&N (IR/ELE)	Performs each setting regarding the black-and-white mode such as switching between color and black-and-white images.
VMD	Performs settings regarding VMD (Video Motion Detection).
SYSTEM	Performs the settings regarding the camera system such as synchronization and privacy zone.
SYNC	Only INT method can be used.
PRIVACY ZONE	Hides undesired portions in the camera shooting area.
STABILIZER	Decides whether or not to enable the image stabilizer.
EL-ZOOM	Switches the electronic zoom on and off.
UPSIDE-DOWN	Flips the camera images vertically or horizontally.
LDC	Adjusts the Lens distortion correction to convert the image so that it matches the square monitor.
SPECIAL	
CHROMA GAIN	Adjusts the chroma level (color density).
AP GAIN	Adjusts the aperture level.
PEDESTAL	Adjusts the pedestal (brightness) level.
PIX OFF	Corrects image defects such as flaws.
COMMUNICATION	Performs the communication setting of the system with a receiver into which this unit is integrated.
CAMERA RESET	Restores the settings in the setup menu to the default settings.
SER.NO.	Displays the serial number of this unit.
LANGUAGE	Selects a language to be used in the setup menu.

Basic operation

The operations in the setup menu are performed with the operation buttons after calling up the setup menu on the connected video monitor.

The description below explains how to operate the setup menu basically. Screenshots of WV-CP310/G are shown as an example.

Screenshot 1

Hold down the [SET] button for about 2 seconds to call up the top screen of the setup menu.

```
MODEL WV-CP310 SERIES
CAMERA ID OFF
CAMERA ↵
SYSTEM ↵
SPECIAL ↵
LANGUAGE ↵

END SETUP DISABLE
```

Step 1

Press the [UP] or [DOWN] button to move the cursor to "END".

Step 2

Press the [RIGHT] button to move the cursor to "SETUP", and press the [SET] button to change the setup mode from "DISABLE" to "ENABLE".

Screenshot 2

The setup mode changes to "ENABLE", and the setup menu becomes ready to be set.

```
MODEL WV-CP310 SERIES
CAMERA ID OFF
CAMERA ↵
SYSTEM ↵
SPECIAL ↵
LANGUAGE ↵

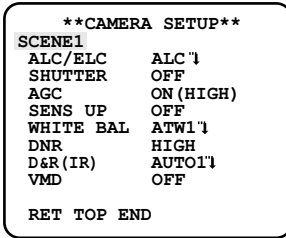
END SETUP ENABLE
```

Step 3

Move the cursor to the item to be set, and press the [SET] button.

Screenshot 3

The selected setup screen in the setup menu appears on the screen.



Note:

- If the top screen of the setup menu is called up with the operation buttons while the camera is operated, the setup mode is always "DISABLE" to prevent operation errors.
To perform settings in the setup menu, change the setup mode to "ENABLE".
 - The cursor is a reversely highlighted part.
-

Step 4

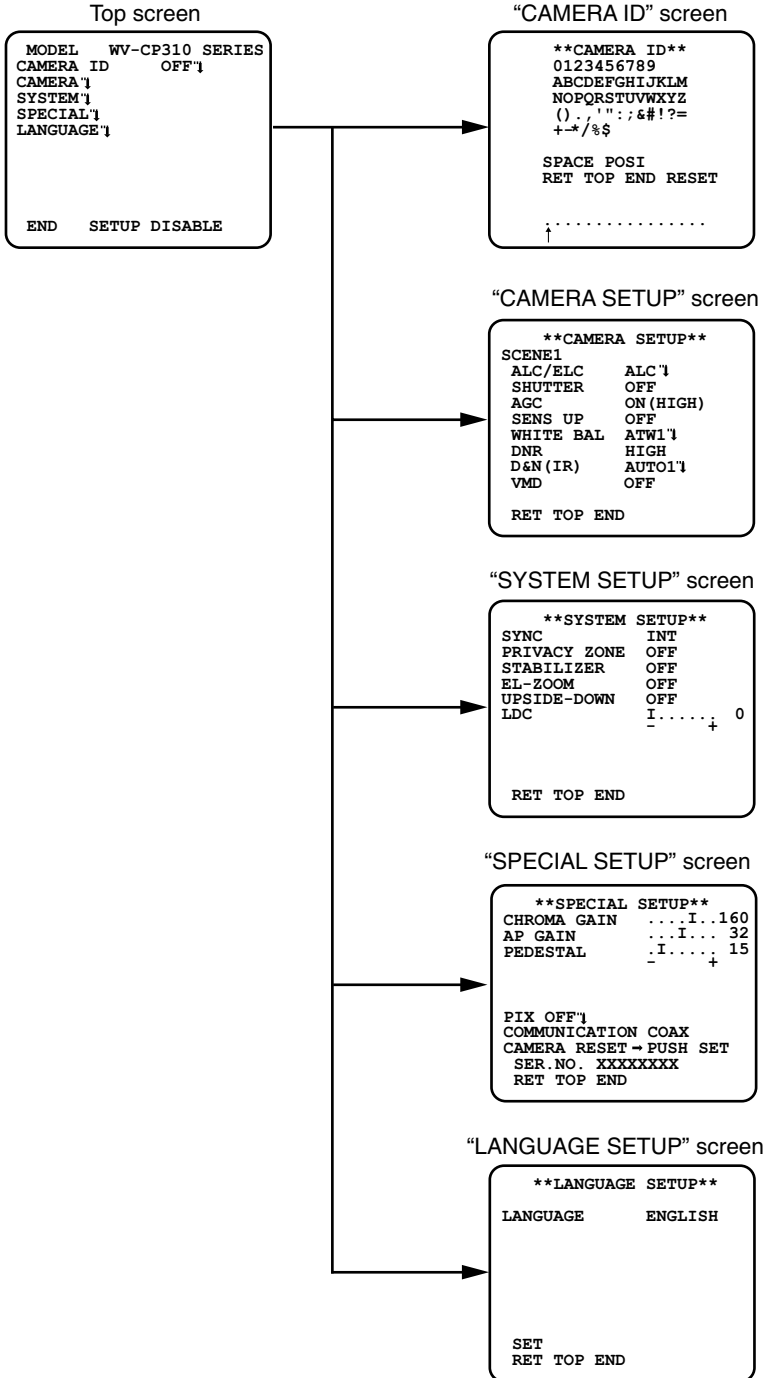
Perform the settings for each item.

- **Selection of setting item:**
Press the [UP] or [DOWN] button to move the cursor.
- **Change of settings:**
Press the [RIGHT] or [LEFT] button.
- **Display of advanced setup screen:**
Press the [SET] button when "▼" is attached to the target setting item.
- **Return to previous setup screen:**
Move the cursor to "RET" and press the [SET] button.
- **Return to the top screen:**
Move the cursor to "TOP" and press the [SET] button, to display the top screen of the setup menu.

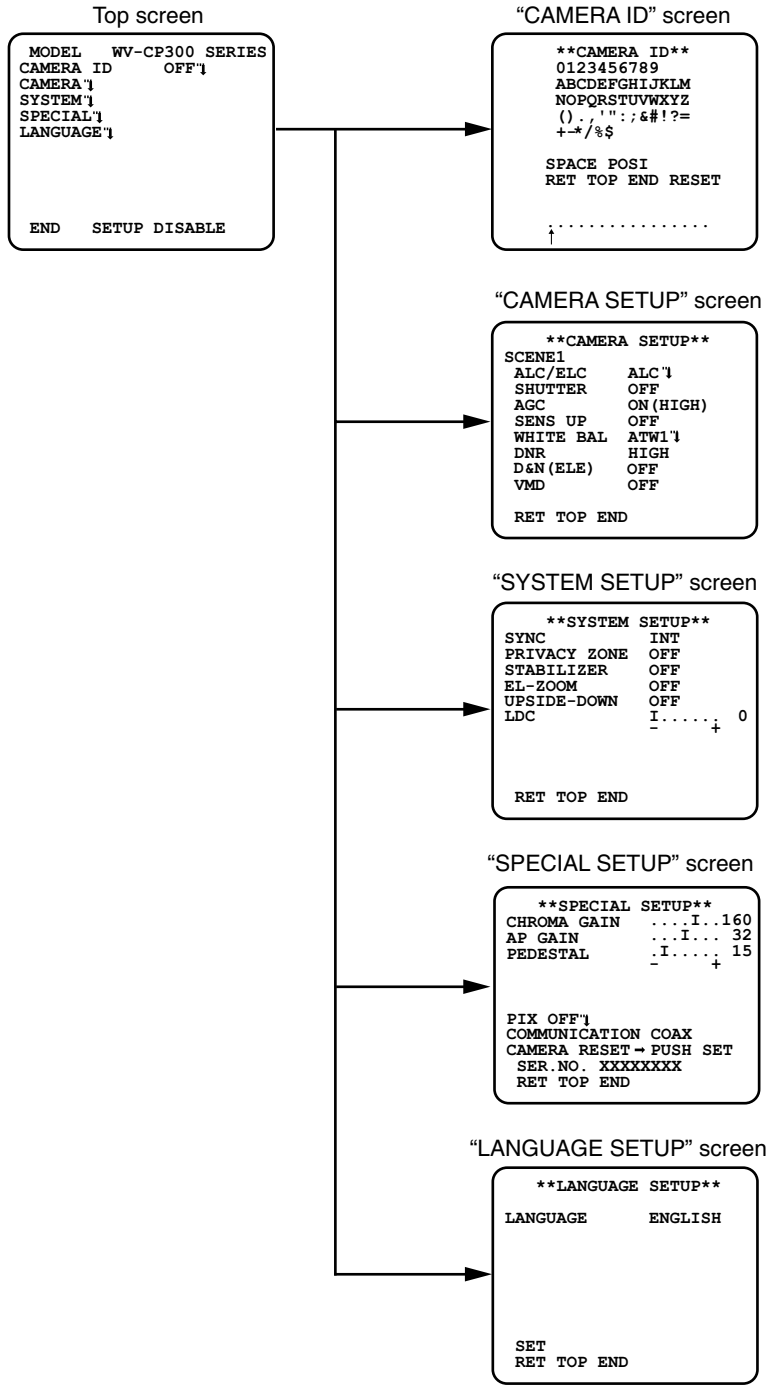
Step 5

Move the cursor to "END" and press the [SET] button to return to the camera image screen, or wait about 5 minutes and the setup menu will automatically close.

Screen transition diagram CP310



Screen transition diagram CP300



Troubleshooting



Before asking for repairs, confirm the causes 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 page
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. 	19~20
	<ul style="list-style-type: none"> Is the monitor brightness appropriately adjusted, or is the contrast appropriately adjusted? → Check whether the monitor settings are appropriate. 	-
	<ul style="list-style-type: none"> Is the lens cap detached? → Check whether the lens cap is removed. 	-
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. 	21
Black line in image	<ul style="list-style-type: none"> Is the connected system controller set to multiplexed vertical drive (VD2)? → Check whether the connected system controller is set correctly. 	9
Damaged power cord sheathing	<ul style="list-style-type: none"> The power cord, power connector, or power plug is damaged. Continuous use of the damaged cord, connector, or plug may cause electric shock or fire. Disconnect the power plug immediately and request repair from your dealer. 	-
Heated portion of power line consisting of power cord, connector, and power plug during use		
The temperature of power cord rises or falls when the power cord is bent or stretched during use		

Specifications

General

	WV-CP310/G	WV-CP300/G	WV-CP314E	WV-CP304E
Power source	220 V - 240 V AC 50/60 Hz		24 V AC 50/60 Hz, 12 V DC	
Power consumption	2.3 W		24 V AC: 2.1 W, 12 V DC: 180 mA	
Image sensor	1/3-type interline transfer CCD			
Effective pixels	976 (H) × 582 (V)			
Scanning area	4.8 mm (H) × 3.6 mm (V)			
Scanning system	2:1 interlace			
Scanning line	625 lines			
Horizontal scanning frequency	15.625 kHz			
Vertical scanning frequency	50.00 Hz			
Synchronization	Internal (INT)			
Horizontal resolution	650 TV lines			
Vertical resolution	400 TV lines			
Video output	1.0 V [p-p] PAL composite video signal 75 Ω			
Signal-to-noise ratio	52 dB (AGC OFF)			
Minimum illumination	0.08 lx (color mode)			
	0.008 lx (black-and-white mode)	0.05 lx (black-and-white mode)	0.008 lx (black-and-white mode)	0.05 lx (black-and-white mode)
ALC lens drive	DC drive			
Lens mount	CS-mount			
Ambient operating temperature	-10 °C to +50 °C			
Ambient operating humidity	Less than 90 %			
Dimensions	101 mm (L) × 72 mm (W) × 55 mm (H)		81 mm (L) × 72 mm (W) × 55 mm (H)	
Mass	Approx. 180 g (Power cord excluded)		Approx. 160 g	Approx. 150 g
Camera title	Chinese: up to 8 characters; English letter, numbers and symbols: up to 16 characters.			
Light control mode setting	ALC/ALC+/ELC			
Back light compensation	ON/OFF			
Auto black stretch	ON/OFF			
Shutter speed	OFF (1/50), 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/120000 (s)			
Auto gain control	ON (HIGH/MID/LOW), OFF			
Sensitivity up	OFF/AUTO (×2, ×4, ×6, ×10, ×16, ×32)/FIX (×2, ×4, ×6, ×10, ×16, ×32, ×64, ×128, ×256, ×512)			
White balance	ATW1/ATW2/AWC			
Digital noise reduction	LOW/HIGH			
Day&Night (IR)	AUTO1/AUTO2/ON/OFF 			
Day&Night (Electric)	AUTO/OFF 			

	WV-CP310/G	WV-CP300/G	WV-CP314E	WV-CP304E
Video motion detection	OFF/MOTION DETECTION/SCENE CHANGE			
Number of scene file	2			
Privacy zone	ON (1)/ON (2)/OFF			
Image stabilizer	ON/OFF			
Electronic zoom	ON (up to 2x)/OFF			
Upside-down	ON/OFF			
Lens distortion correction	0 to 255			

※ Values of weight and dimensions are approximate. The specification is subject to change without notice.

Standard accessories

CD-ROM* 1 pc.

Installation Guide (this book) 1 pc.

* The CD-ROM contains the operating instructions and installation guide (PDF).

The following parts are used during installation procedures:

Power cord (only for WV-CP300/G and WV-CP310/G)

(Approx. 1.8 m) 1 pc.

Power cord plug

(only for WV-CP304E and WV-CP314E) 1 pc.

Safety wire lug 1 pc.

Safety wire (Approx. 300 mm) 1 pc.

Wire lug fixing screws (M2.5 × 8 mm) 2 pcs. (including 1 for replacement)

Washer 1 pc.

Spring washer 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.

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