



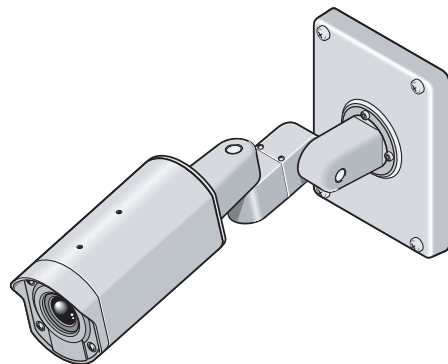
VCC-XV400

INSTRUCTION MANUAL (Warranty attached)

COLOR CCD camera

About this manual

Before installing and using the camera, please read this manual carefully. Be sure to keep it handy for later reference.



Approvals: IP66

This camera has been certified to IP66 standard when properly installed.

Use only an IP66 certified enclosure or an electrical box.

Depending on the conditions of use, installation and environment, please be sure to make the appropriate settings and adjustments. If you need help with installation and/or settings, please consult your dealer.

MAIN FEATURES

- Complies with IP66 international waterproof rating
 - 1/4-inch CCD solid-state image device
 - Number of pixels: 410,000 pixels
 - High sensitivity, minimum required illumination of 0.04 lx (F1.4, Gain high and B/W mode)
 - Horizontal resolution of 520 TV lines
 - Vari-focal lens with automatic iris
 - Internal sync. / Line-Lock
 - Dual power supply: AC 24 V / DC 12 V (lead wire)
 - Day/Night function*
- *The Day/Night function is a function that can adapt to a wide range of changing luminance levels by automatically switching to color during daytime, or to black-and-white at times of low luminance such as nighttime.

INFORMATION TO USER

Safety Guard

! THIS SYMBOL INDICATES THAT THERE ARE IMPORTANT OPERATING AND MAINTENANCE INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THIS UNIT.

WARNING:
TO PREVENT THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

For the customers in Canada
This Class B digital apparatus complies with Canadian ICES-003.

Pour la clientèle canadienne
Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

This installation should be made by a qualified service person and should conform to all local codes.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by Sanyo may void the user's authority to operate this camera.

PRECAUTIONS

In case of problem

Do not use the unit if smoke or a strange odor comes from the unit, or if it seems not to function correctly. Turn off the power immediately, and consult your dealer or a Sanyo Authorized Service Center.

Do not open or modify

Do not open the cabinet except during adjustment, as it may be dangerous and cause damage to the unit. For repairs, consult your dealer or a Sanyo Authorized Service Center.

Do not put objects inside the unit

Make sure that no metal objects or flammable substance get inside the camera. If used with a foreign object inside, it could cause a fire, short-circuits or damage.

Be careful when handling the unit

To prevent damages, do not drop the unit or subject it to strong shock or vibration.

Install away from electric or magnetic fields

If installed close to a TV, radio transmitter, magnet, electric motor, transformer, or audio speakers, the magnetic field they generate will distort the image.

Protect from humidity and dust

To prevent damages to the unit, do not install it where there is greasy smoke or steam, where the dampness may get too high, or where there is a lot of dust.

Protect from high temperatures

Do not install close to stoves, or other heat generating devices, such as spotlights, etc., or where it could be subject to direct sunlight.

Be careful when installing close to the ceiling, in a kitchen or boiler room, as the temperature may raise to high levels.

Cleaning

- Dirt can be removed from the cabinet by wiping it with a soft cloth. To remove stains, wipe with a soft cloth moistened with a soft detergent solution and wrung dry, then dry by wiping with a soft cloth.
- Do not use benzene, thinner or other chemical product on the cabinet, as that may cause deformation and paint peeling. Before using a chemical cloth, make sure to read all accompanying instructions. Make sure that no plastic or rubber material comes in contact with the cabinet for a long period of time, as that may cause damage or paint peeling.

Mounting Surface

The mounting surface material must be strong enough to secure the camera. Plaster-board without a backing plate is not recommended.

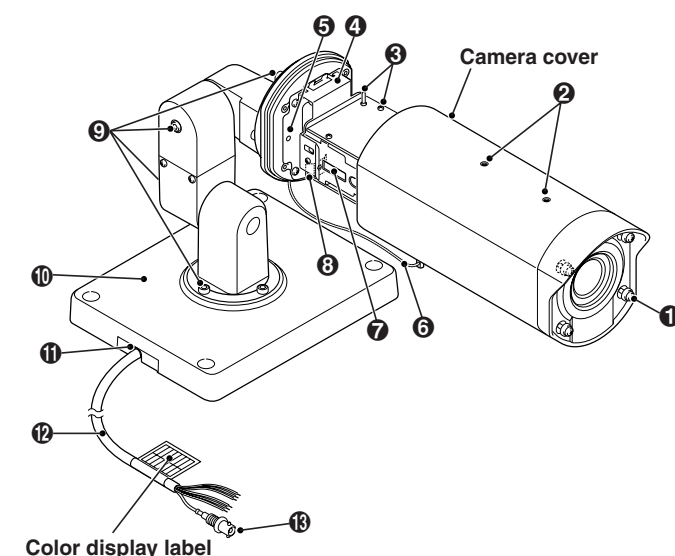
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L5AV4/US (0404KP-SY)



SANYO Electric Co., Ltd.
Printed in Japan

PARTS NAMES AND FUNCTIONS



Accessories

Hexagon wrench (large)(small)..... 1 pc



1 Camera cover fixing screws

There is no need to remove the camera cover except during adjustment. If you remove the camera cover, loosen these four screws.

When reinstalling it, provisionally tighten the four camera cover fixing screws and then they must be torqued to 0.5 – 1 N·m (5 – 10 kgf·cm/4.4 – 8.8 in·lbs) to ensure that the waterproof integrity is maintained.

CAUTION:

The camera cover will come off if the camera cover fixing screws are loosened by about 5 mm, so be careful not to loosen them too much. If a screw is loosened too much, the drop-prevention washer inside the cover may come off and the screw may fall out.

2 Sunshade mounting bracket screw holes

Use the sunshade mounting bracket screws to install the sunshade (Optional; VA-SS400). Please refer to "INSTALLING THE SUNSHADE" in this manual.

3 MONITOR pin and the screw for ground

You can use this pin for video output and the screw for ground to display an image on a monitor when setting up the camera.

4 L-shaped camera fixing bracket

5 Camera fixing base

6 Drop-prevention chain

Keep this attached at all times to prevent the camera cover from falling down during installation.

7 Camera adjustment/setting panel

The camera can be set using switches and dials.

8 Camera fixing screw

You can use the hexagon wrench (small, accessory) to loosen this screw and then remove the camera unit for replacing the desiccant.

9 Camera position adjustment screws

You can use the hexagon wrench (large, accessory) to loosen these screws and then adjust the direction of the camera. There are four screws on the camera mount, four on the camera itself and two on the arm section.

10 Camera mount

Used to install the camera to a wall or ceiling with mounting screws (M8x4, sold separately).

11 Connection cord hole

If routing the connection cord outside the wall, install the camera so that this hole is facing downward and pull the connection cord out from it.

12 Connection cord

Connect the cables in accordance with the information on the color display label.

13 Video output connector

Connection this connector to a device such as a digital video recorder (or time-lapse VCR) or monitor with a video input connector.

INSTALLATIONS

CAUTION: Check that the installation location is strong enough to bear the camera before proceeding.

Setup location

- Install in a location (such as underneath overhangs) that is not exposed to direct sunlight. If direct sunlight way shine onto the camera at times (depending on the angle of the sun), install the sunshade (Optional; VA-SS400).
- Install to a wall or ceiling with no unevenness in its surface. If installing to a curved surface, round pillar or similar, use a special bracket (sold separately).

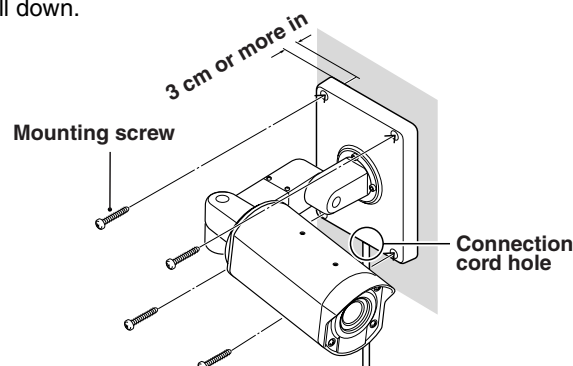
Setup

1 Use mounting screws (M8x4, sold separately) to install the camera to the wall or ceiling.

If routing the connection cord outside the wall, install so that the connection cord hole is facing downward, and pull the connection cord out from the hole.

CAUTION:

Be sure to embed the mounting screws at least 3 cm into the wall. If the screw holes are too shallow, the camera mount may fall down.

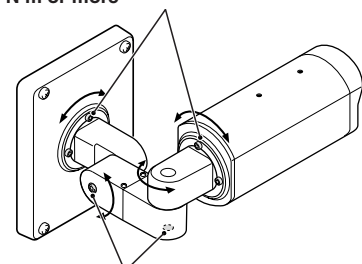


2 Adjust the position of the camera.

Use the hexagon wrench (large, accessory) to loosen the screws at the place that you want to move, and then adjust the direction of the camera.

After making the adjustment, securely re-tighten the screws.

Maximum 90 degrees
(to prevent cord from twisting)
Screw tightening torque after adjustment:
2 N·m or more

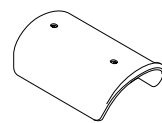


INSTALLING THE SUNSHADE (OPTIONAL; VA-SS400)

If direct sunlight may shine onto the camera at times (depending on the angle of the sun), install the sunshade.

Sunshade accessories

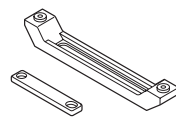
Sunshade..... 1 pc



Sunshade mounting screws (Self-tapping type) 2 pcs



Sunshade mounting bracket 1 set

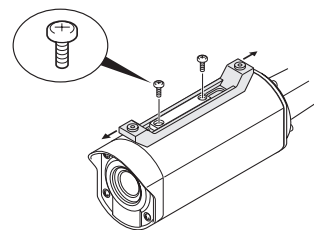


Sunshade mounting bracket screws 2 pcs



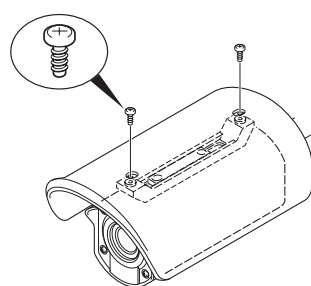
1 Use the two accessory screws to install the sunshade mounting bracket (accessory).

Determine the position of the sunshade so that it will protect from direct sunlight as much as possible, and adjust the position of the sunshade mounting bracket back and forth while the screws are still loose (adjustment range: 30 mm). After adjusting the bracket position, securely tighten the screws. (Tightening torque: 0.5 N·m or more)



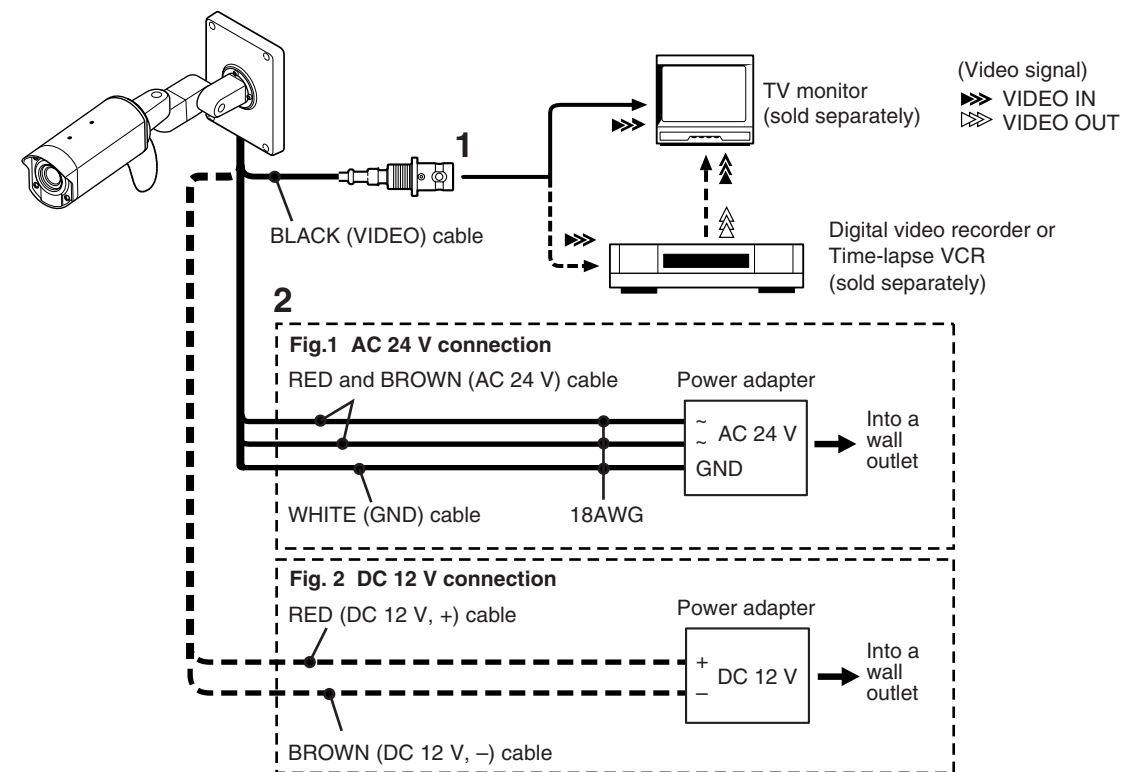
2 Use the two accessory screws (self-tapping type) to install the sunshade. (Tightening torque: 0.5 N·m or more)

Self-tapping screw for plastic

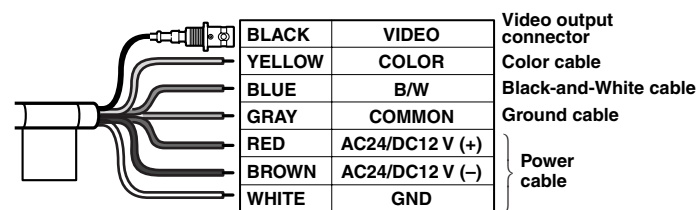


CONNECTIONS

CAUTION: Do not connect the power cable until all other connections have been completed.



Color lead wire and Color display label



CAUTION:

If part of the copper section of a wire is exposed after a cable has been connected, trim the end of the wire so that no copper section is exposed in order to prevent short-circuits.

Basic connection

What you need

- Peripheral equipment (such as monitor, digital video recorder or time-lapse VCR)
- Cables for connecting peripheral equipment and camera (coaxial cables, connecting plugs)
- Power adapter (AC 24 V or DC 12 V)

Supported coaxial cables

- You can use any of the following coaxial cables:
- RG-59U (3C-2V) Length: About 250 m max.
 - RG-6U (5C-2V) Length: About 500 m max.
 - RG-11U (7C-2V) Length: About 600 m max.

CAUTION:

- When using an RG-59U (3C-2V) cables, do not use it on piping or air wiring.
- Select the cable according to the distance between the devices you wish to connect.
- If you use a cable other than the types above, the image or sync signal will be attenuated and will not be transmitted correctly.

Making connections

- 1 Connect the video output connector (BNC type) of the BLACK (VIDEO) cable to the monitor or digital video recorder (or time-lapse VCR).
- 2 Connect the power cable to a power adapter or similar device.

- When connecting to an AC 24 V power adapter: Connect all three of the RED, BROWN and WHITE (GND) cables. There is no difference between + and - connections. (Fig. 1)

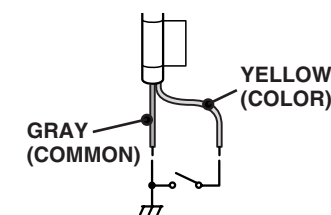
- When connecting to a DC 12 V power adapter: Be sure to connect the BROWN cable to the - side and the RED cable to the + side. (Fig. 2)

Connection for COLOR or B/W (black-and-white) setting

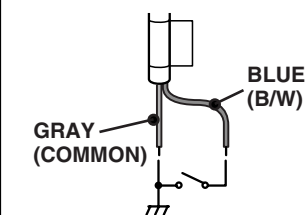
This camera has a built-in Day/Night function that automatically change the mode between color for high luminance situations such as during the day and black-and-white for low luminance situations such as at night. This allows the camera to be used in a wide range of luminance conditions.

To manually set the mode to color or black-and-white, connect each cable to the control terminal as indicated below. You can adjust the image by remote control. While the Day/Night function is performed automatically, you can not set to color or black-and-white manually.

COLOR setting



B/W (black-and-white) setting

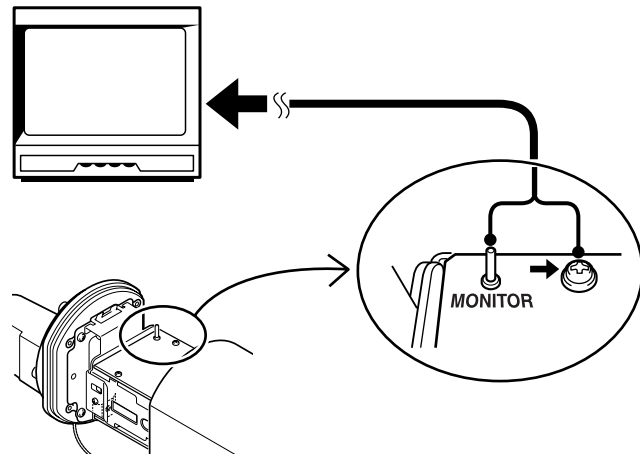


Note: The maximum length of cable is 600 m (AWG24).

LENS ADJUSTMENT

HINT:

- You can use the MONITOR pin and the ground screw to display an image on a monitor when setting up the camera; the surveillance angle and range, the lens focus, etc. Connect a monitor to the MONITOR pin and to the ground screw using alligator clip cables.



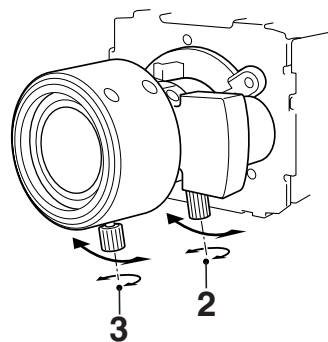
- When monitoring lighting or other extremely bright objects (which exceed the maximum required illumination), smearing may occur in the vertical or horizontal direction (either above and below the high-brightness object or as a perpendicular band). In such a case, adjust the angle of illumination and other factors while observing the monitor.
- If fluorescent lighting is used where the camera is installed, the object will flicker as a result. This type of phenomenon can be received by replacing the fluorescent lighting with incandescent lamps.

Zoom and focus adjustment

- Loosen the four screws at the front of the camera, and then remove the camera cover. Refer to ❶ in "PARTS NAMES AND FUNCTIONS".
 - Loosen the zoom ring knob, and turn the zoom ring to zoom in or out (increase or decrease the size of the object in the frame).
 - Loosen the focus ring knob, and turn the focus ring to focus the object.
- When you have finished adjusting the zoom and focus, tighten the zoom and focus ring knobs securely and reinstall the camera cover.

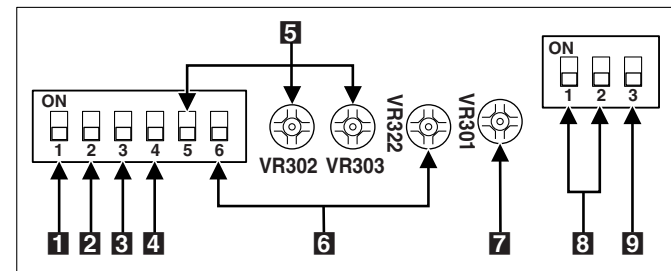
CAUTION:

Take care not to touch or scratch the lens surface (front lens) when making adjustments.



ADJUSTMENTS

The camera comes pre-adjusted and ready to install at time of factory shipment, but you may want to make adjustments or settings to adapt to the operating conditions or installation environment. Loosen the four camera cover fixed screws, and then remove the camera cover. When you have finished adjusting, reinstall the camera cover. Refer to ❶ in "PARTS NAMES AND FUNCTIONS". If you have trouble adjusting the camera, consult your dealer or a Sanyo Authorized Service Center.



(◆ = Factory default setting)

1 Outline compensation (Aperture)

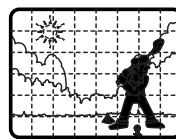
(Sharp) 1	Emphasizes object outlines.
(Soft) ◆	Normal setting

2 Gain control

For adjusting the sensitivity of the camera. Use this setting for shooting in dark environments.

(High) 2	Increased sensitivity allows shots to be taken in dark environments.
(Low) ◆	Normal setting

3 Backlight compensation (Multi-spot metering)



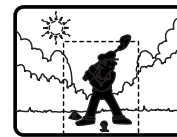
When applying backlight compensation to the entire screen.

(Multi) 3	The entire screen is divided in the metering area ([]), and each area is metered and backlight-compensated.
(Off) ◆	This function is off.

Note:

If the background of the object is extremely dark, the center of the object may be too bright. In this case, set the center-weighted metering mode (4).

4 Backlight compensation (Center-weighted metering)



When applying backlight compensation to only the center of the screen.

(Center) 4	Only the center of the screen is metered and backlight-compensated.
(Off) ◆	This function is off.

5 Color compensation (White balance)

(Manual) 5	Lets you fine-tune the white balance manually. VR302 Turn clockwise to augment screen red. VR303 Turn clockwise to augment screen blue.
(Auto) ◆	Compensation is performed automatically.

6 Sync setting

(Line-lock) 6	(Only when using a AC 24 V adapter) Synchronizes the unit with power frequency. When two or more cameras are connected, the image displayed on the monitor may roll vertically. Adjust the phase. <ul style="list-style-type: none"> If using this camera as the second or subsequent camera; VR322 Adjust the roll by turning this phase adjustment dial. If using this camera as the first camera; Adjust the roll by turning the phase adjustment dial on the second and subsequent cameras.
(Internal) ◆	Internal Sync

7 Lens iris dial

If the entire image is too dark or too bright, adjust the dial (VR301).

VR301	Counter-clockwise	Closes the lens iris, making the entire image darker.
	Clockwise	Opens the lens iris, making the entire image brighter.

8 Electronic Shutter speed setting

A combination of the 2 switches can be used to set up to 4 speed levels.

Shutter speed	1/60 ◆	1/100	1/1000	1/2000
Switches	1 2	1 2	1 2	1 2

Note:

Using the high speed electronic shutter indoors with low lighting, will give darker pictures. In such a case, add some lights to make sure the lighting is sufficient.

9 Color/Black-and-White switching level

This camera has a built-in Day/Night function that automatically change the mode between color for high luminance situations such as during the day and black-and-white for low luminance situations such as at night. This allows the camera to be used in a wide range of luminance conditions.

This switch is used to set the timing for automatic switching between the color screen and the black-and-white screen based on surrounding brightness.

(High) 3	Sets bright switching
(Low) ◆	Normal setting

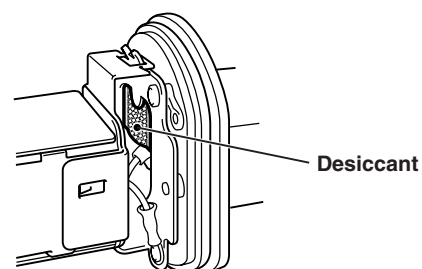
The color screen will be displayed first of all when the power is turned on.

Note:

- When switching between color and black-and-white screens automatically, it is normal for movement of the optical filter to be heard and for a vertical black band to move across the screen.
- Switching from black-and-white to color may occur if there is a significant degree of reflection from the object when using infrared illumination in black-and-white mode. Adjust the illumination to avoid switching to color mode.
- The focus setting position may differ between color and black-and-white screens. Carry out adjustment to ensure that the focus for both screens is in the optimum position.

REPLACING THE DESICCANT

There is a pouch of desiccant (blue) inside the camera to prevent moisture from building up inside the camera. If the desiccant appears reddish-purple after the camera cover is removed, remove the camera unit and replace it with the new pouch of desiccant (consult your dealer or a Sanyo Authorized Service Center).



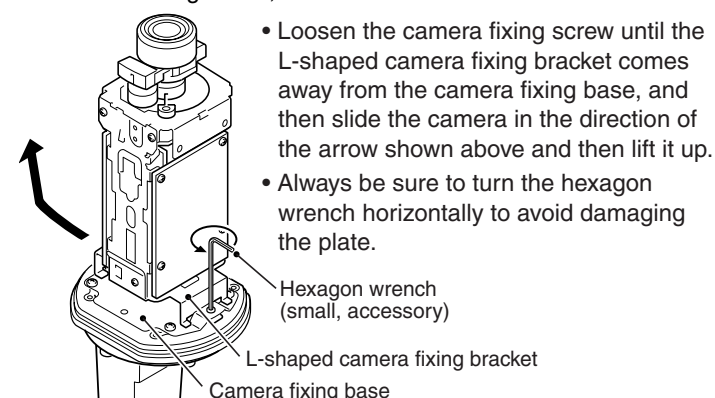
■ Removing the camera unit

CAUTION:

- To avoid damaging the camera and the power supply, always be sure to turn off the power.
- Be careful to avoid letting it get wet from rain or other liquids, otherwise it may become shorted.
- The camera cover will come off if the camera cover fixing screws are loosened by about 5 mm, so be careful not to loosen them too much. If a screw is loosened too much, the drop-prevention washer inside the cover may come off and the screw may fall out.

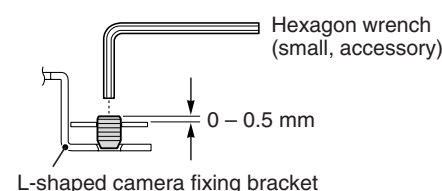
- Loosen the four camera cover fixing screws, and then remove the camera cover.

- Use the hexagon wrench (small, accessory) to loosen the camera fixing screw, and then remove the camera unit.



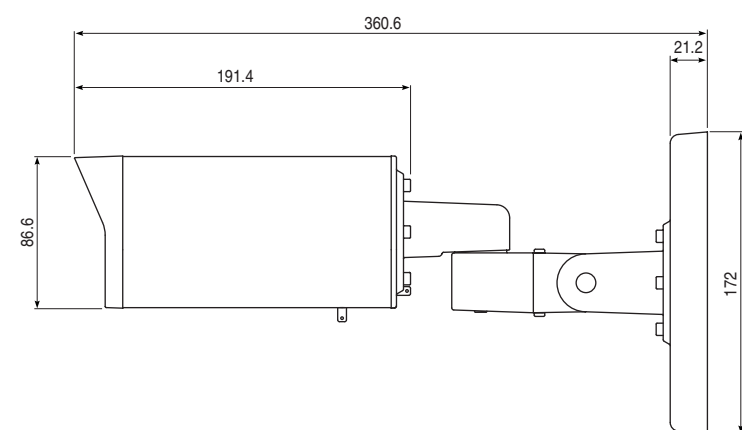
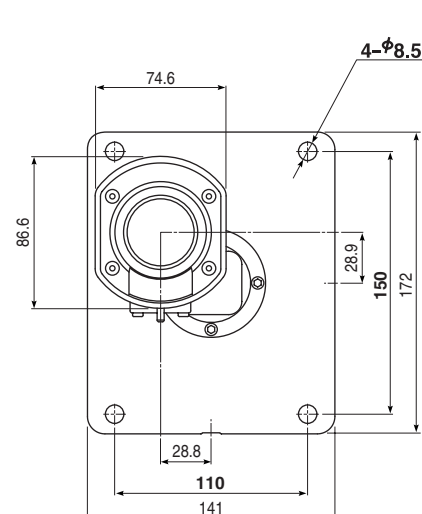
- Loosen the camera fixing screw until the L-shaped camera fixing bracket comes away from the camera fixing base, and then slide the camera in the direction of the arrow shown above and then lift it up.
- Always be sure to turn the hexagon wrench horizontally to avoid damaging the plate.

- Install the camera by using the hexagon wrench (small, accessory) to tighten the camera fixing screw. Tighten the screw so that the head protrudes by 0 – 0.5 mm.



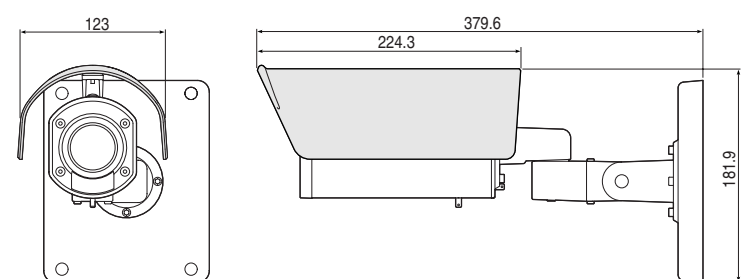
- To install the camera cover, provisionally tighten the four camera cover fixing screws, and then fully tighten them.
 - The four camera cover fixing screws must be torqued to 0.5 – 1 N·m (5 – 10 kgf·cm/4.4 – 8.8 in·lbs) to ensure that the waterproof integrity is maintained.

DIMENSIONS



■ With the sunshade (optional; VA-SS400)

To install the sunshade, refer to "INSTALLING THE SUNSHADE" in this manual.



TROUBLESHOOTING

Before sending the camera out for repair, check the items below. If the problem persists after checking these items, consult your dealer or a Sanyo Authorized Service Center.

■ If no image appears

- Is the coaxial cable attached securely?
- Are the power and voltage normal?
- Has the iris of the lens inside the camera been adjusted correctly (with the iris dial)?
- Is there adequate illumination?

■ If the image is unclear

- Is the lens in focus?
- Is the lens dirty?
Dirt or fingerprints on the lens can adversely affect the image. Gently wipe any dirt or fingerprints off the lens with a soft cloth or lens cleaning paper and cleaning fluid (commercially available).
- Is the monitor adjusted correctly?

SERVICE

The camera is a precision instrument. Handle it carefully and always follow the safety precautions. If the camera requires service, never try to repair it yourself or open the casing. For servicing, maintenance, or repairs, consult your dealer or a Sanyo Authorized Service Center.

SPECIFICATIONS

TV system	: NTSC standard
Scanning system	: 525 TV lines, 30 frames/s, PLL 2:1 interlace
Image device	: 1/4-inch solid state image device CCD
Number of pixels in image area	: 768 (H) × 494 (V)
Synchronizing system	: Internal sync / Line-Lock (only AC 24 V supply)
Resolution	: 520 TV lines horizontally, 350 TV lines vertically
Video output level	: 1.0 V(p-p) 75Ω, composite
Video S/N ratio	: More than 50 dB (at gain control off)
Minimum required illumination (incandescent lighting)	: Approx. 1.2 lx at F 1.4 lens (Gain normal and Color mode) Approx. 0.8 lx at F 1.4 lens (Gain high and Color mode) Approx. 0.04 lx at F 1.4 lens (Gain high and B/W mode)
Lens	: Built-in variable focal lens, f = 2.8 – 5.8 mm, F1.4 – 1.8
Gain control	: High / Normal
Aperture	: Sharp / Normal
Backlight compensation	: Multi-spot metering system / Center-weighted metering system
White balance	: Auto / Manual
Electronic shutter speed	: 1/60 – 1/2000 (4 speeds selectable by switches)
Operating environment (with power supply connected)	: Temperature: –20°C – +50°C Humidity: less than 90%RH (no condensation)
Power supply	: AC 24 V ±10%, 60 Hz / DC 12 – 15 V ±10%
Power consumption	: Approx. 3.0 W
Weight	: Approx. 1.6 kg
Accessories	: Hexagon wrench (large and small)

Appearance and specifications are subject to change without prior notice.

SANYO INDUSTRIAL VIDEO COLOR CCD CAMERA LIMITED WARRANTY

OBLIGATIONS

In order to obtain warranty service, the product must be delivered to and picked up from an Authorized Sanyo Service Center at the user's expense, unless specifically stated otherwise in this warranty. The names and addresses of Authorized Sanyo Service Centers may be obtained by calling the toll-free number listed below.

For product operation, authorized service center referral, service assistance or problem resolution, call

CUSTOMER INFORMATION 1-800-421-5013
Weekdays 8:30 AM – 5:00 PM Pacific Time

For accessories and/or parts, call

PARTS ORDER INFORMATION 1-800-726-9662
Weekdays 8:30 AM – 5:00 PM Pacific Time

THIS WARRANTY IS VALID ONLY ON SANYO PRODUCTS PURCHASED OR RENTED IN THE UNITED STATES OF AMERICA, EXCLUDING ALL U.S. TERRITORIES AND PROTECTORATES. THIS WARRANTY APPLIES ONLY TO THE ORIGINAL RETAIL PURCHASER OR END-USER. THE ORIGINAL DATED BILL OF SALE, SALES SLIP OR RENTAL AGREEMENT MUST BE SUBMITTED TO THE AUTHORIZED SANYO SERVICE CENTER AT THE TIME WARRANTY SERVICE IS REQUESTED.

Subject to the OBLIGATIONS above and EXCLUSIONS below, SANYO Fisher Company warrants this SANYO product against defects in materials and workmanship for the periods specified below. SFC will repair or replace (at its option) the product and any of its parts which fail to conform to this warranty. The warranty period commences on the date the product was first purchased or rented at retail.

LABOR	PARTS	IMAGE DEVIE
3 YEARS	3 YEARS	3 YEARS

EXCLUSIONS

This warranty does not cover (A) the adjustment of customer-operated controls as explained in the appropriate model's instruction manual, or (B) the repair of any product whose serial number has been altered, defaced or removed. This warranty shall not apply to the cabinet or cosmetic parts, batteries or routine maintenance.

This warranty does not apply to uncrating, setup, installation, removal of the product for repair or reinstallation of the product after repair. This warranty does not apply to repairs or replacements necessitated by any cause beyond the control of SFC including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, modification or repair by the user, abuse, misuse, neglect, accident, incorrect power line voltage, fire, flood or other Acts of God, or normal wear and tear.

The foregoing is in lieu of all other expressed warranties and SFC does not assume or authorize any party to assume for it any other obligation or liability. SFC DISCLAIMS ALL OTHER WARRANTIES EXPRESS OR IMPLIED, WITH REGARD TO THIS PRODUCT (INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS). IN NO EVENT SHALL SFC BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE OWNERSHIP OR USE OF THIS PRODUCT OR FOR ANY DELAY IN THE PERFORMANCE OF ITS OBLIGATIONS UNDER THIS WARRANTY DUE TO CAUSES BEYOND ITS CONTROL. SFC'S LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR OWNERSHIP OF THIS PRODUCT INCLUDING WARRANTOR'S NEGLIGENCE, ALLEGED DAMAGED OR DEFECTIVE GOODS, WHETHER SUCH DEFECTS ARE DISCOVERABLE OR LATENT, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PRODUCT.

ATTENTION

For your protection in the event of theft or loss of this product, please fill in the information below for your own personal records.

Model No. _____ Serial No. _____
(Located on back or bottom side of unit.)

Date of Purchase _____ Purchase Price _____

Where Purchased _____