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Color Video Camera Series

- Design and specifications are subject to change without notice.

DIGITAL CAMERA SERIES
COLOR VIDEO CAMERA

OWNER'S MANUAL



 . User Information



CAUTION! TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Explanation of two Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "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.

THE GRAPHIC SYMBOLS WITH SUPPLEMENTAL MARKING ARE ON THE BOTTOM OF THE SYSTEM.

"WARNING-TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE"

INFORMATION

This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

WARNING

The manufacturer could void the user's authority to operate the equipment.

CAUTION - To prevent electric shock and risk of fire hazards:

- Do NOT use power sources except for that specified.
- Do NOT expose this appliance to rain or moisture.

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



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1. Model Description

- Thank you for purchasing this COLOR VIDEO CAMERA.

Before operating the camera, confirm that you have the right camera model and proper power voltage.

In order to help you understand this manual, we'll introduce our model's description.

Resolution	Signal System	Power Input
High	NTSC	DC 12V
High	PAL	DC 12V
High	NTSC	AC 24V / DC 12V
High	PAL	AC 24V / DC 12V
High	NTSC	AC 100V~AC 240V
High	PAL	AC 100V~AC 240V
Normal	NTSC	DC 12V
Normal	PAL	DC 12V
Normal	NTSC	AC 24V / DC 12V
Normal	PAL	AC 24V / DC 12V
Normal	NTSC	AC 100V~AC 240V
Normal	PAL	AC 100V~AC 240V



2. Precautions

- **Do not install the camera in extreme temperature conditions.**
Do use the camera under conditions where temperatures are within -10°C to 50°C. Especially be careful for ventilation under high temperature.
- **Do not install or use the camera in an environment where the humidity is high.**
It can cause the image quality to be poor.
- **Do not install the camera under unstable lighting conditions.**
Severe lighting change or flicker can cause the camera to work improperly.
- **Never use the camera close to a gas or oil leak.**
It can cause malfunctions to occur.
- **Do not disassemble the camera.**
There are no user-serviceable parts inside it.
- **Do not drop the camera or subject them to physical shocks.**
It can cause malfunctions to occur.
- **Never keep the camera face to strong light directly.**
It can damage CCD.
- **Do not expose the camera to rain or spill beverage on it.**
If it gets wet, wipe it dry immediately. Liquids can contain minerals that corrode the electronic components.
- **Note**
When this camera is installed near wireless communication devices that emits strong electromagnetic field, irregularity such as noise on the monitor may appear.

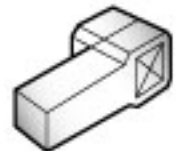


3. Composition

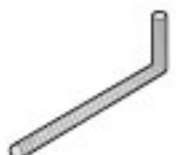
- 1. Color Video Camera



- 2. Auto Iris Lens Plug



- 3. L-Wrench



- 4. C-Mount Adapter



- 5. Owner's Manual





4. Features

1. High Resolution

The horizontal resolution of 550, 480/ 380 TV lines can be achieved by using a high density CCD having effective 410K/270K pixels, which provides clean, noiseless and reliable pictures.

2. High Sensitivity

SONY DSP technology provides best picture with min illumination of 0.1Lux(Normal) / 0.3Lux(High).

3. Backlight Compensation

The backlight compensation technology allows the camera to find the best picture conditions in any environment and automatically gives a necessary light level compensation.

4. Auto White Balance

AWB function allows the camera to adjust the white balance automatically in response to light conditions.

5. VIDEO/ DC/ MANUAL Lens Selectable

The camera accepts 3 types of lenses (VIDEO/DC/MANUAL) and is set with the VIDEO/ELC/DC selection switch.

6. Electronic Iris

Electronic iris shutter is automatically controlled at the speed of 1/60~1/100,000sec (NTSC models), 1/50~100,000sec (PAL models).



5. Name and Function

CS-Mount Holding Screw

Used to readjust back focus of the camera. There are two back focus lock screws. These must be loosened before the camera may be back focused.

Loosen the lock screws using the L-wrench to turn the CS-mount lens adaptor, and tighten the lock screws after adjustment.

C-Mount Lens Adapter

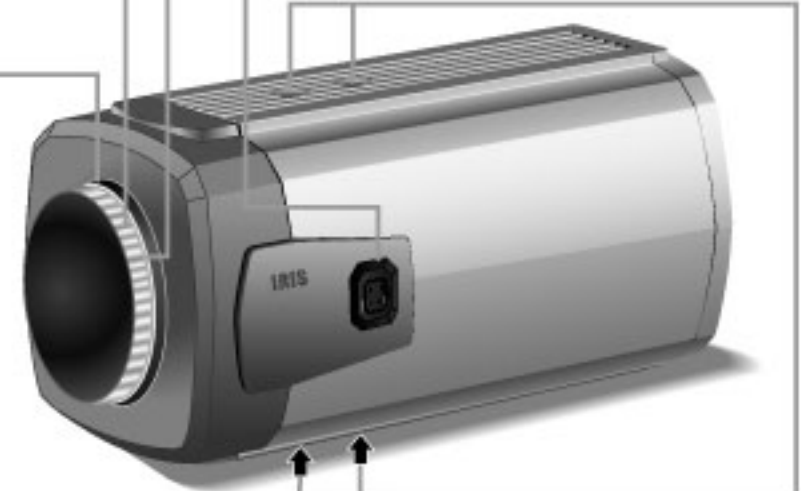
Used to attach C-mount lens.

CS-Mount Lens Adapter

Used to attach CS-mount lens.

Auto Iris Lens Connector

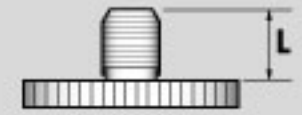
Used to connect Auto Iris Lens plug.



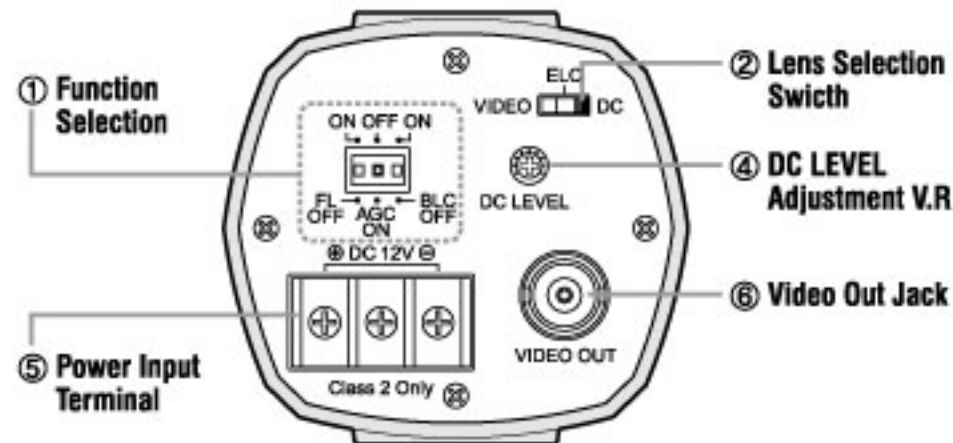
Tripod Mounting Hole

Used to install the camera on an optional tripod. The tripod must be equipped with the screw specified as shown below.

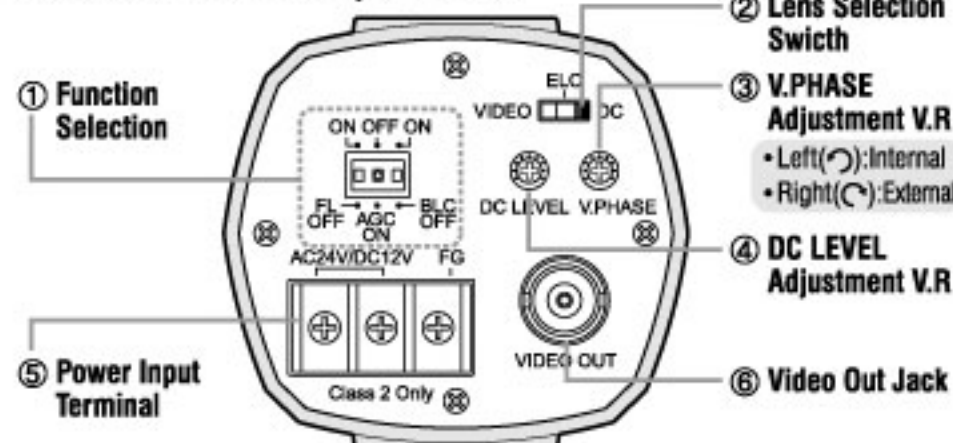
1/4"- 20 UNC (20 THREAD)
L : 4.5mm ± 0.2mm (ISO standard),
or 0.197" (ASA standard)



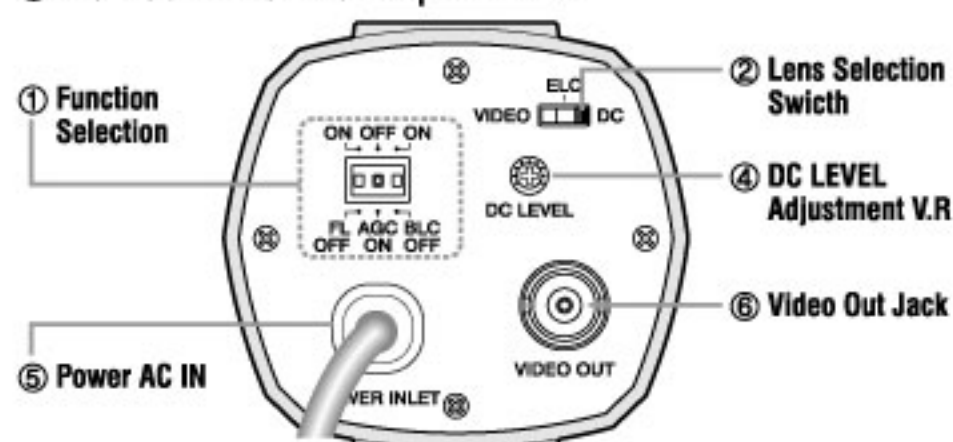
DC 12V Input Model



AC 24V/DC 12V Input Model



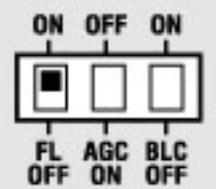
AC 100V~AC 240V Input Model



① Function Selection Switch

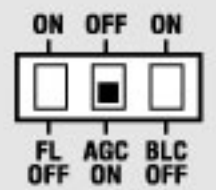
■ FL (Flickerless)

If the camera is used with 50Hz fluorescent lighting, there may be flicker on the screen. In this case, FL switch should be set to ON position. But, FL switch should be set to OFF position if 60Hz power source is used.



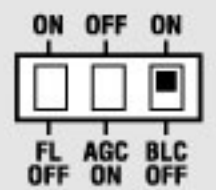
■ AGC (Automatic Gain Control)

With AGC ON, the setting, camera's sensitivity is automatically increased when the level of ambient light drops. AGC function automatically controls signal gain in the range of maximum 28dB.



■ BLC (Back Light Compensation)

This feature would be useful when camera is facing an object that has excessive light behind it. BLC prevents the center of object from too much darkness. E.g.: Video camera in the store facing the entrance doors.



② Lens Selection Switch

Used to choose DC or VIDEO or ELC according to the type of your Lens.

③ V.PHASE Adjustment V.R (AC 24V / DC 12V Input Model)

If the camera is to be used in LineLock mode, the vertical phase may require adjustment to synchronize the vertical phase of the camera with other camera in the system. Make this adjustment when the vertical phase of the camera does not match with other cameras or systems. For correct adjustment, use a multi-channel oscilloscope. The V.PHASE adjustment can be readjusted.

④ DC LEVEL Adjustment V.R

Used to adjust video output level of DC driven auto iris lens. When the brightness control of the monitor does not operate correctly.

⑤ POWER Input Terminal

Used to connect an AC 24V or DC 12V power source.
Used to connect a DC 12V power source.
Used to connect an AC 100V~AC 240V power source.

⑥ VIDEO OUT Jack: Use for installation and service.



6. Connection

■ LENS

The lens is not supplied with this camera. Purchase a lens suitable for your environment. This camera accepts the auto iris lens and both C-and CS-mount lens.

Notes

- . If the lens is marked with fingerprints or other marks, the image quality might be poor.
- . It is recommended to use a high quality lens to improve the image quality under low illumination.
- . Use auto iris lens with DC type only.

■ Installing Auto Iris Lens

1. Peel approximately 8mm from the end of the lens cable outer cover.

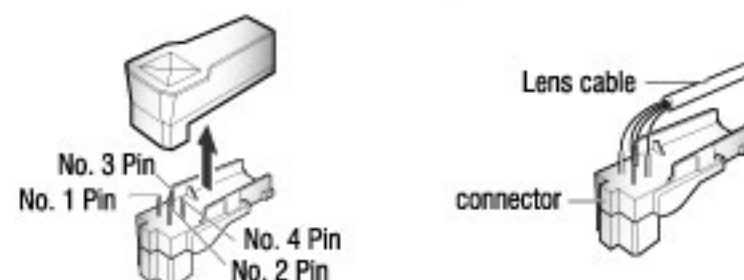


2. Peel approximately 2mm from the end of the cable inner cover.



3. Remove the cover from the iris lens plug supplied, and solder the lens cable to the plug as shown below.

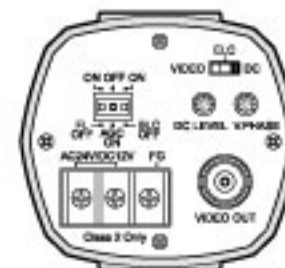
Pin.No.	VIDEO TYPE	DC TYPE
1	RED (Power Source)	--- Damping -
2	N.C	--- Damping +
3	WHITE (Video signal)	--- Drive +
4	BLACK (GND)	--- Drive -



4. Remove the protective cap, and attach the lens to the camera by turning clockwise.
5. Connect the lens plug to the auto iris connector on the right side of the camera.



6. Set the DC/ VIDEO/ ELC selection switch to DC or VIDEO or ELC according to the type of the lens.



■ Installing C/CS-Mount Lens

Before mounting a lens, please check whether it is a C-mount or CS-mount lens.

The back focus is set for the CS-mount lens at the factory.

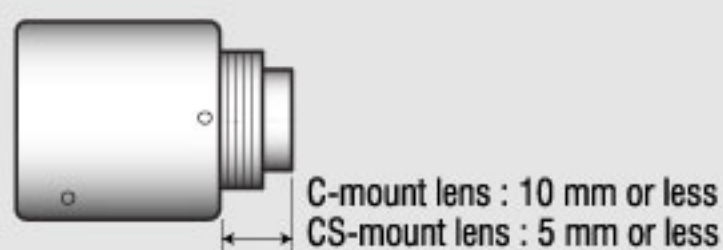
● Mounting a CS-Mount Lens

After removing the protecting cap, attach the lens into the camera by turning clockwise.



Notes

- . Use the lens under the specification as shown. Otherwise the lens can damage the camera or abnormal fixing may result.



- . A heavy lens may disturb the balance with the camera and possibly result in damage. Don't use a lens heavier than 450g.
- . It is recommended to set the lens ALC mode to Av mode(Average). Pk mode can be occurred hunting.

● Mounting a C-Mount Lens

1. Attach the C-Mount lens adapter by turning clockwise.



2. Attach the lens to the camera by turning clockwise.

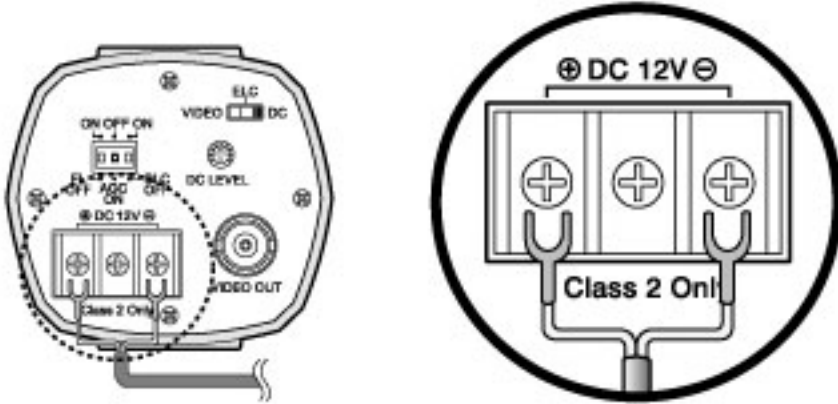


■ Connecting to Power

Each model has different power specification, please check the name of the model and power specification before connecting to power source. Please refer to the sticker identifying the model, which is attached on the product, for power specification.

For DC12V Power Type Only [High & Normal]

- The wire is polarized. Be careful of polarity.
- Use DC 12V \ominus power source.



Resistance of copper wire [at 20°C (68°F)]

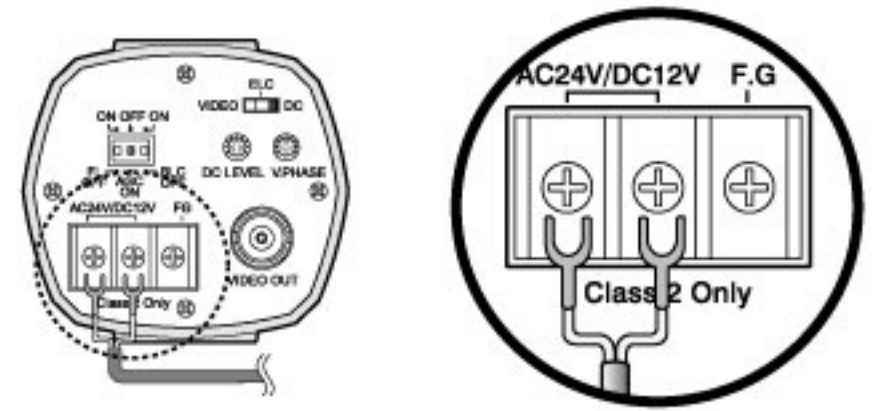
Copper wire size (AWG)	#24 (0.22mm ²)	#22 (0.33mm ²)	#20 (0.52mm ²)	#18 (0.83mm ²)
Resistance(Ω/m)	0.078	0.050	0.030	0.018
Voltage Drop(V/m)	0.028	0.018	0.011	0.006

• Voltage drop may be experienced by the camera as per length of the power cable according to the table above. The camera may malfunction if the length of the output line between the camera and the adaptor is too long.

- * Voltage for camera operation: DC 12V \pm 10%
- * Voltage drops on above table are variable according to types of electric cord and makers.

For AC24V / DC12V Power Type [High & Normal]

- The wire is non-polarized.
- Use AC 24V \sim power source or DC 12V \ominus power source.



Notes

- Be sure to connect power after all the installation is done.
- Note that AC adaptor is not supplied with camera.
- Use only AC 24V/DC12V UL listed class 2 power supply.
- Do not use power sources other than that specified.

For AC100V~AC240V Power Type [High & Normal]



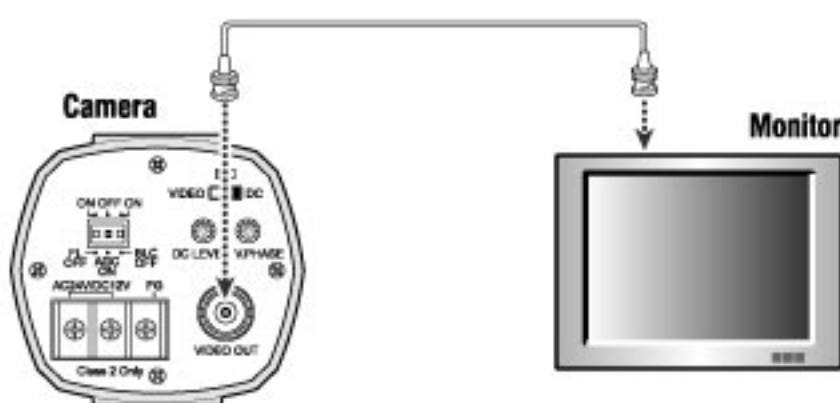
• Cabel

- Brown \leftarrow AC Power Input
- Blue \leftarrow AC Power Input
- Green \rightarrow Frame Ground

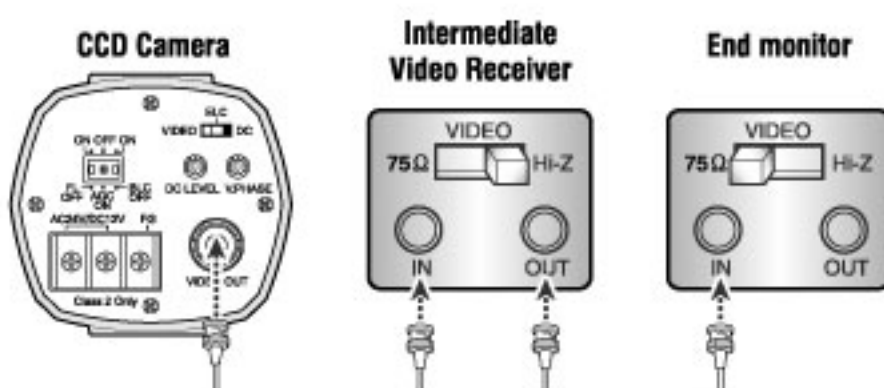
■ Connecting to Monitor

For BNC Video Output Model

Connect the VIDEO out jack to the monitor video in jack.



- As the connecting method varies with the instruments, refer to the manual supplied with the instrument.
- Connect the cable after power is turned off.
- Set the 75Ω/ Hi-Z selection switch as shown below if you have an intermediate device.



7. Specifications -DC 12V Input Model

Model	High Resolution		Normal Resolution	
	NTSC	PAL	NTSC	PAL
Signal System	NTSC	PAL	NTSC	PAL
CCD Pick-up Element	2:1 Interlace Transfer 1/3 Inch SUPER HAD CCD			
Effective Pixels	768(H)x494(V)	752(H)x582(V)	510(H)x492(V)	500(H)x582(V)
Video Output	Composite: 1.0V p-p, 75Ω, Unbalanced			
Sync. System	Internal Sync			
Luminance S/N Ratio	More than 48dB (AGC OFF)			
Resolution	550 / 480 TV lines		380 TV lines	
Sensitivity	0.3Lux (F1.4, 30IRE, AGC ON)		0.1Lux (F1.4, 30IRE, AGC ON)	
Lens Mount	C / CS Mount			
Electronic Shutter	1/60 ~ 1/100,000 (NTSC), 1/50 ~ 1/100,000 (PAL)			
White Balance	AWB			
Auto Gain Control	On / Off Selectable (20dB)		On / Off Selectable (28dB)	
Back Light Compensation	On / Off Selectable			
Flickerless	On / Off Selectable			
Applicable Lens	DC Iris / Video Iris / Manual Lens			
Supply Voltage	DC 12V (10V~15V)			
Power Consumption	150mA 2W (Max)		140mA 1.7W (Max)	
Operating Temperature	-10°C ~ +50°C (Recommendation : -5°C ~ +40°C)			
Storage Temperature	-20°C ~ +60°C			
Dimensions (WxHxD)	124 x 62 x 57mm			
Weight	Approx. 430g			



7. Specifications -AC 24V/DC 12V Input Model

Model	High Resolution		Normal Resolution	
	NTSC	PAL	NTSC	PAL
Signal System	NTSC	PAL	NTSC	PAL
CCD Pick-up Element	2:1 Interlace Transfer 1/3 Inch SUPER HAD CCD			
Effective Pixels	768(H)x494(V)	752(H)x582(V)	510(H)x492(V)	500(H)x582(V)
Video Output	Composite: 1.0V p-p, 75Ω, Unbalanced			
Sync. System	Internal / External		Internal	
Luminance S/N Ratio	More than 48dB (AGC OFF)			
Resolution	550 / 480 TV lines		380 TV lines	
Sensitivity	0.3Lux (F1.4, 30IRE, AGC ON)		0.1Lux (F1.4, 30IRE, AGC ON)	
Lens Mount	C / CS Mount			
Electronic Shutter	1/60 ~ 1/100,000 (NTSC), 1/50 ~ 1/100,000 (PAL)			
White Balance	AWB			
Auto Gain Control	On / Off Selectable (20dB)		On / Off Selectable (28dB)	
Back Light Compensation	On / Off Selectable			
Flickerless	On / Off Selectable			
Applicable Lens	DC Iris / Video Iris / Manual Lens			
Supply Voltage	AC 24V (20V~28V) or DC 12V (10V~15V)			
Power Consumption	2.8W (Max)			
Operating Temperature	-10℃ ~ +50℃ (Recommendation : -5℃ ~ +40℃)			
Storage Temperature	-20℃ ~ +60℃			
Dimensions (WxHxD)	124 x 62 x 57mm			
Weight	Approx. 430g			



7. Specifications -AC 100V~AC 240V Input Model

Model	High Resolution		Normal Resolution	
	NTSC	PAL	NTSC	PAL
Signal System	NTSC	PAL	NTSC	PAL
CCD Pick-up Element	2:1 Interlace Transfer 1/3 Inch SUPER HAD CCD			
Effective Pixels	768(H)x494(V)	752(H)x582(V)	510(H)x492(V)	500(H)x582(V)
Video Output	Composite: 1.0V p-p, 75Ω, Unbalanced			
Sync. System	Internal Sync			
Luminance S/N Ratio	More than 48dB (AGC OFF)			
Resolution	550 / 480 TV lines		380 TV lines	
Sensitivity	0.3Lux (F1.4, 30IRE, AGC ON)		0.1Lux (F1.4, 30IRE, AGC ON)	
Lens Mount	C / CS Mount			
Electronic Shutter	1/60 ~ 1/100,000 (NTSC), 1/50 ~ 1/100,000 (PAL)			
White Balance	AWB			
Auto Gain Control	On / Off Selectable (20dB)		On / Off Selectable (28dB)	
Back Light Compensation	On / Off Selectable			
Flickerless	On / Off Selectable			
Applicable Lens	DC Iris / Video Iris / Manual Lens			
Supply Voltage	AC 100V~AC 240V			
Power Consumption	3W (Max)			
Operating Temperature	-10℃ ~ +50℃ (Recommendation : -5℃ ~ +40℃)			
Storage Temperature	-20℃ ~ +60℃			
Dimensions (WxHxD)	124 x 62 x 57mm			
Weight	Approx. 430g			



8. Troubleshooting

If you have trouble operating your camera, refer to the following table. If the guidelines do not enable you to solve the problem, contact an authorized technician.

Problem	Solutions
Nothing appears on the screen.	<ul style="list-style-type: none"> • Check that the power cord and line connection between the camera and monitor are fixed properly. • Check that you have properly connected VIDEO cable to the camera VIDEO output jack.
The image on the screen is dim.	<ul style="list-style-type: none"> • Is lens stained with dirt? Clean your lens with soft, clean cloth. • Set the monitor to proper condition. • If the camera is exposed to too strong light, change the camera position. • Adjust the lens' focus properly.
The image on the screen is dark.	<ul style="list-style-type: none"> • Adjust the contrast feature of the monitor. • If you have an intermediate device, set the 75Ω/ Hi-z properly. (refer to page 18) • Adjust DC Level, VR Level properly. (refer to page 10, 11)
The camera is not working properly, and the surface of the camera is hot.	<ul style="list-style-type: none"> • Check that you have properly connected the camera to an appropriate power source. (refer to page 16-17)
The image on the screen flickers.	<ul style="list-style-type: none"> • Is the camera facing to direct sunlight or fluorescent lighting? Change the camera position.



. Memo

