SAMSUNG TECHWIN

COLOR CCD CAMERA

INSTRUCTION MANUAL

SDC-310 SERIES
SDC-240 SERIES

SAMSUNG CCD CAMERA

[SALES NETWORK]

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Thank you for purchasing a SAMSUNG CCD CAMERA. Before operating the camera, confirm the camera model and proper input power voltage. In order that you can understand this manual thoroughly, we'll introduce our model description.

■ SDC-310 Series (NTSC : 380,000 PAL : 440,000)

• NTSC models	• PAL models
SDC-310ND	SDC-310PD
SDC-310NA	SDC-310PA
	SDC-310PH

■ SDC-240 Series (NTSC : 250,000 PAL : 290,000)

• NTSC models	• PAL models
SDC-240ND	SDC-240PD
SDC-240NA	SDC-240PA
	SDC-240PH

■ Model Description

SDC-310 x x
SDC-240 x x
power source
signal system

• Signal System
N → NTSC Model
P → PAL Model

• Power Source
D → DC 12V ⎓
A → AC 24V ~
H → High Voltage (PAL Model : AC 230V ~)

WARNING – TO PREVENT RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS CAMERA 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 required to correct the interference at his own expense.

WARNING - Changes or modifications not expressly approved by 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 other than specified power source.
◆ Do NOT expose this appliance to rain or moisture.

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

Features

Automatic 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, so that you can always obtain the clear picture, the finest detail and perfect light contrast.

High Resolution

The horizontal resolution of 480 TV lines can be achieved by using a high density CCD having effective 440,000 pixels (NTSC : 380,000 pixels), which provides clean, noiseless and reliable pictures. SDC-240 series have 290,000 pixels (NTSC : 250,000 pixels) and can achieve 330 TV lines)

High Sensitivity

We utilize a high sensitivity Sony color CCD imager. This allows for clear and vivid images under dark situation as low as a minimum of 0.4 lux. (SDC-240 models : 0.3 Lux)

Electronic Iris

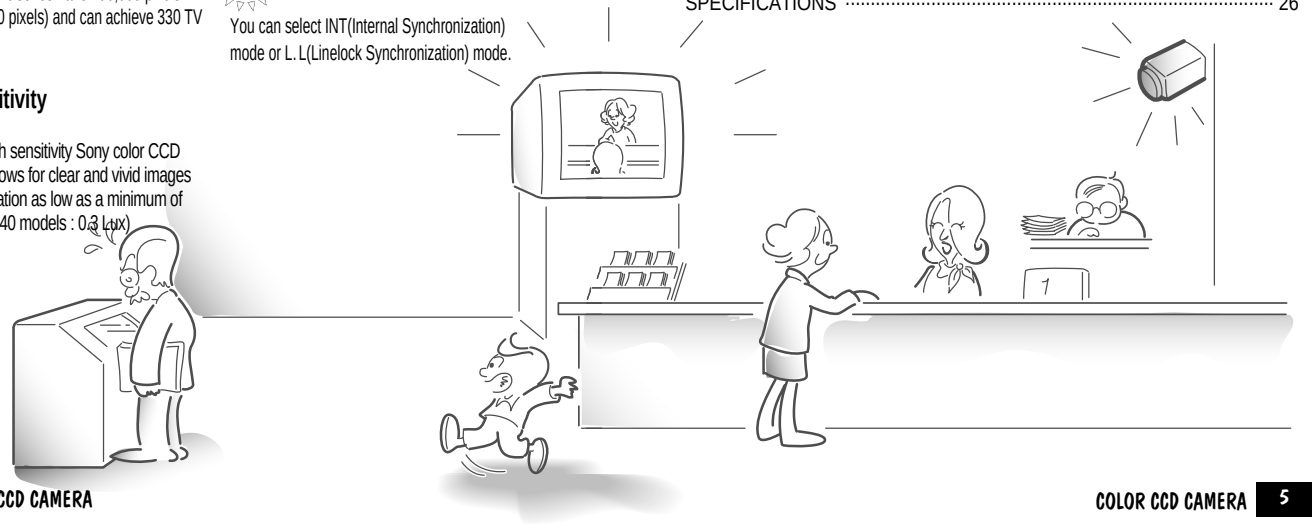
Electronic iris shutter is automatically controlled at the speed of 1/60~1/100,000sec (NTSC models), 1/50~1/100,000sec (PAL models).

Video/DC Selection Switch

The camera accepts 2 types of auto Iris lenses (DC type/Video type) and is set with Video/DC selection switch.

SYNC. System

You can select INT(Internal Synchronization) mode or L.L(Linelock Synchronization) mode.



Contents

Precautions

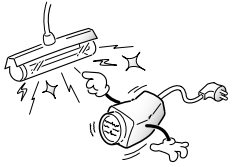
Do not install the camera in extreme temperature conditions.

Do use the camera under conditions where temperatures are within -10℃ to 50℃. 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.

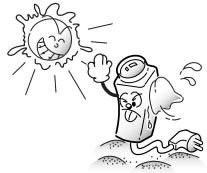
Do not disassemble the camera.

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 the CCD.

Do not expose the camera to rain or spill beverage on it.

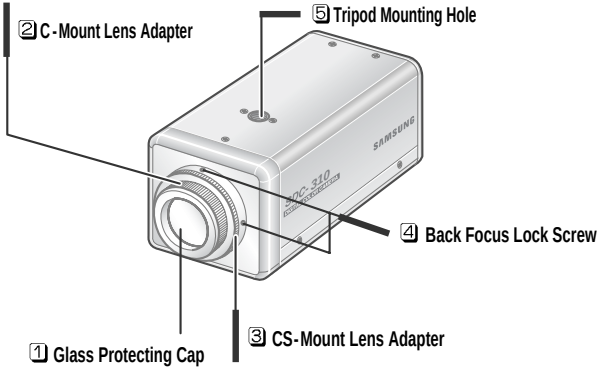
If it gets wet, wipe it dry immediately. Liquids can contain minerals that corrode the electronic components.

Do not touch the front glass of the camera.

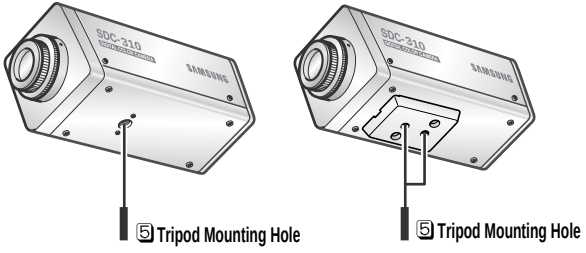
It is one of the most important parts of camera. Be careful not to be stained by fingerprint.

- If the camera is exposed to spotlight or object reflecting the strong light, smear or blooming may occur.
- Please check the power whether it satisfies the normal specification before connecting the camera.

Front

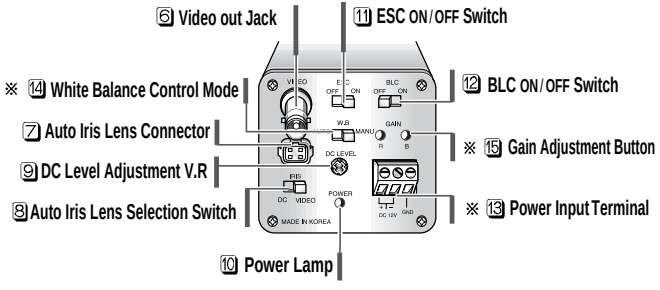


Bottom

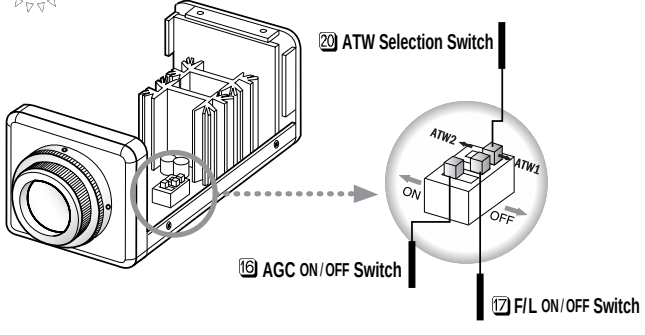


Back

※ This diagram is based on SDC-310(240)ND/PD



Interior

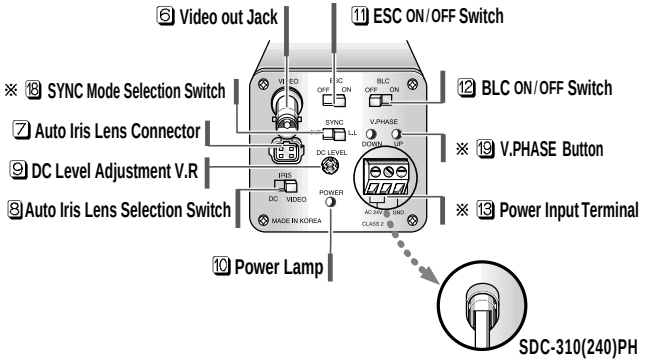


Notes

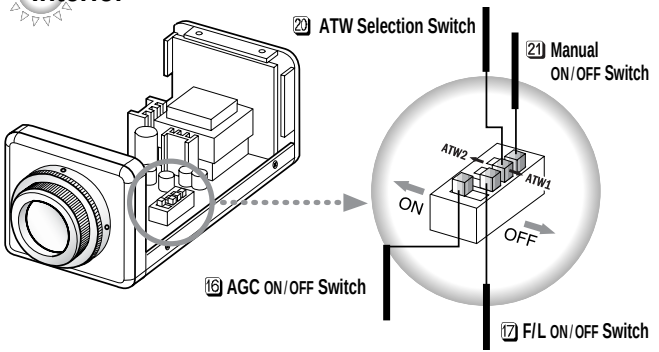
Before using items with '※' mark, be sure to read the instruction manual because functions and operation methods are different for each model.

Back

※ This diagram is based on SDC-310(240)NA/PA



Interior



Notes

· The image has been set for optimum performance at the factory.
Do not remove the cover unless it is absolutely necessary.
It could cause damage to components and problemes.
· Be sure to check the power is off when removing the cover.

Accessories


Iris Lens Plug


Instruction Manual


L-Wrench


Foot


Screw(2EA)

(SDC-310(240)PH only)

Controls and Adjustments

1 Glass Protecting Cap

Be sure to cap the lens mount when the lens is not mounted.
Pull out the cap to remove.

2 C-Mount Lens Adapter

Used to attach a C-mount lens.

3 CS-Mount Lens Adapter

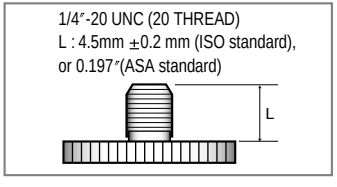
Used to attach a CS-mount lens. C-mount lens can be used when the C-mount adapter is attached, and CS-mount lens can be used when it is removed.

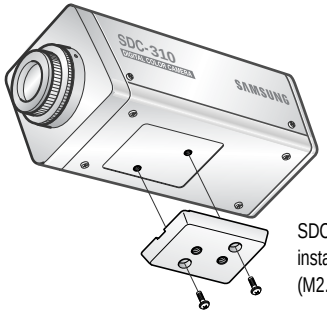
4 Back Focus Lock Screw

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 adapter, and tighten the lock screws after adjustment.

5 Tripod Mounting Hole

This screw hole is used to install the camera on a mount.
The camera can be installed on a tripod or other camera mounting devices either from the top or the bottom by using the 1/4″-20UNC threaded holes in the camera.





SDC-310(240)PH models should be installed the Foot using supplied screw. (M2.6 X L4.0)

6 Video Out Jack

Connect to the video input connector of monitor. This jack outputs a composite video signal. Use a coaxial cable for connection.

7 Auto Iris Lens Connector

Used to connect auto iris lens plug.
For details, see page 19~20.

8 IRIS Mode Selection Switch

Used to choose DC or VIDEO mode according to the type of your lens.

■ Using auto iris lens

You can choose DC or VIDEO mode according to the type of the lens.
In this case, electronic shutter is fixed in '1/60'sec (NTSC models), '1/50'sec (PAL models).

Notes

- Using auto iris lens, you must select 'OFF' of the ESC selection switch.

■ **Using manual lens**

Using manual lens, you can choose any switch selection.
When the switch is set to 'OFF' in ESC mode, the electronic shutter is fixed in '1/60'sec(NTSC models), '1/50'sec(PAL models).
When the switch is set to 'ON' in ESC mode mode, the electronic shutter automatically controls the shutter speed from '1/60' to '1/100,000'sec (NTSC models), '1/50' to '1/100,000'sec(PAL models).

⑨ 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, you can get the optimum picture by controlling the DC level of camera.

Monitor picture	Adjustment direction
To make it brighter	Turn clockwise ↻
To make it darker	Turn counterclockwise ↺

Notes
- You must select 'OFF' of the ESC selection switch if you want to adjust DC level adjustment V. R.

⑩ Power Lamp

The power lamp turns on when power is properly supplied.

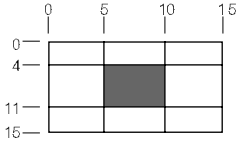
⑪ ESC ON/OFF Switch

You can activate the ESC(Electronic Shutter Control) function.
For details, refer to '⑧ IRIS mode selection switch.'

Notes
- Using auto iris lens, you must select 'OFF' of the ESC ON/OFF switch.

⑫ BLC(Backlight Compensation) ON/OFF Switch

This switch improves an image that is darkened because of backlighting.When the lighting source is in the rear of an object, the object might be seen somewhat dark.
If you want to see the object clearly, turn this switch ON.
The effective area where backlight compensation is activate is fixed in the center of the screen.



⑬ Power Input Terminal

Used to connect AC/DC power source. For details, see page 23.

Notes
- Each model has different power source, you must confirm appropriate power source of your camera.

⑭ White Balance Control Mode ※ DC power type only

When you select the switch the 'AUTO', you can activate the ATW function and control the white balance in any environment.
By selecting the switch to 'MENU', you can adjust the white balance manually according to the internal selected ⑳ 'ATW SELECTION SWITCH' as below.

⑳ ATW SELECTION SWITCH	⑭ WHITE BALANCE CONTROL SWITCH	EXPLANATION
ATW1	AUTO	ATW1 mode (Color temperature 2,400K~11,000K) ※ factory setting
	MANU	MANUAL(adjusting the white balance manually by ⑮ Gain Adjustment button)
ATW2	AUTO	ATW2 mode (Color temperature 2,000K~18,000K)
	MANU	AWC mode

⑮ GAIN Adjustment Button ※ DC power type only

When you select the switch to 'MANU' in 'White balance control mode' and ⑳ the ATW Selection switch is set to 'ATW1' , you can adjust the white balance manually.
To increase red color on the monitor, press 'R' button.
To increase blue color on the monitor, press 'B' button.

Notes
- White balance selection switch is inside the camera for AC power models.

⑯ AGC ON/OFF Switch

When you turn 'AGC' on, the camera can readjust the brightness and the gain level automatically. In this case, camera has a gain of 32dB.

Notes
- Factory setting is 'AGC' on.
- If you want to set the 'AGC' off, remove the outer cover carefully.
  And set 'AGC' ON/OFF switch to 'OFF'. Make sure that the camera is not damaged by electric shock and other components are not cracked.

⑰ F/L ON/OFF Switch

Flickerless function. In this function, the electronic shutter is fixed in 1/100sec.
F/L function can compensate the flicker caused by frequency, Set 'ON' in the area not using 60Hz AC power(NTSC models), 50Hz AC power(PAL models).

Notes
- Factory setting is 'F/L' off.
- If you want to set the 'F/L' on, remove the outer cover carefully.
  And set 'F/L' ON/OFF switch to 'ON'.
  Make sure that the camera is not damaged by electric shock and other components are not cracked.

⑱ SYNC Mode Selection Switch ※ AC and High voltage type

Used to choose INT or LL mode.
■ SYNC(Synchronization) Mode
- INT(Internal) mode : The camera may be operated independently with its internal crystal control.
- LL(Linelock) mode : It synchronizes the video signal between cameras using the frequency of the AC power supply without external synchronous generator.

Notes
- This adjustment is necessary only when linelock is performed.
- There is no V. PHASE adjustment Button on the rear of DC power type.

⑲ V. PHASE Adjustment Button ※ AC and High voltage type

If the camera is to be used in the LL 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 has been set at 220 degrees and can be readjusted in the range of 0 to 360 degrees.

Notes
- The LL mode can be used in the areas of 60Hz (NTSC models), 50Hz(PAL models).
- There is no SYNC mode selection switch on the rear of DC power type.

20 ATW Control Switch

You can control the range of White Balance. The camera automatically controls the White Balance when you choose ATW1 or ATW2 mode. The camera can operate the range of color temperature from 2,400K to 11,000K at ATW1 mode and from 2,000K to 18,000K at ATW2 mode.

Notes
- Factory setting is ATW1 mode.
- ATW Control Switch is located inside the camera.

21 Manual ON/OFF Switch ※ AC and High voltage type

When you select the switch for 'MANU' on, you can adjust the white balance manually. For adjusting the white balance manually, you select the 20 ATW SELECTION SWITCH to 'ATW1' and 18 the SYNC mode selection switch is set to 'INT' on the rear side previously.
To increase red color on the monitor, press the 'DOWN' button on the rear of camera.
To increase blue color on the monitor, press the 'UP' button on the rear of camera.

Notes
- Factory setting is 'MANU' off.
- When the Manual ON/OFF switch is set to 'OFF' and the SYNC mode selection switch is set to 'LL', vertical phase can be controlled with the V. PHASE adjustment V. R.
- When the Manual ON/OFF switch is set to 'ON' and the SYNC mode selection switch is set to 'LL', controlling with the V. PHASE adjustment V. R changes vertical phase and color simultaneously.

Connection

Lens

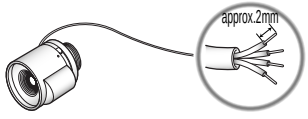
Lens is not supplied with this camera. Purchase a lens suitable for your environment. This camera accepts auto iris lens, both C-and CS-mount lens.

Notes
- If the lens is staind with fingerprint or something, the image quality might be poor.
- It is recommended to use a high quality lens to improve the image quality under low illumination.

Installing Auto Iris Lens

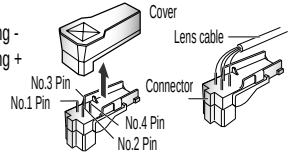
1. Peel the end of lens cable outer cover approximately 8mm.

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



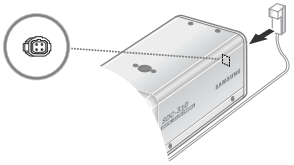
3. Remove the cover from the connector pin supplied, and solder the lens cable to the connector pin as shown below.

- Video type :
  - No.1 Pin ··· Red (Power source)
  - No.2 Pin ··· N. C
  - No.3 Pin ··· White (Video signal)
  - No.4 Pin ··· Black (GND)
- DC type :
  - No.1 Pin ··· Damping -
  - No.2 Pin ··· Damping +
  - No.3 Pin ··· Drive +
  - No.4 Pin ··· Drive -

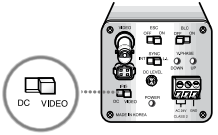


4. Remove the protecting cap, and attach the lens into the camera by turning clockwise.

5. Connect the lens plug to the auto iris connector on the rear of the camera.

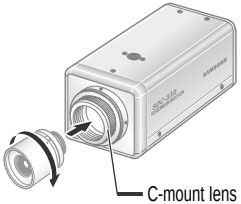


5. Set the DC/VIDEO selection switch to DC or VIDEO according to the type of the lens.



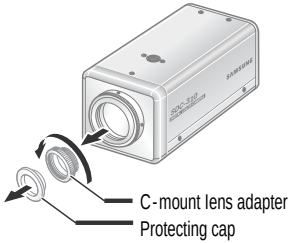
Installing C-Mount Lens

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



Installing CS-Mount Lens

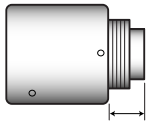
1. Remove the protecting cap and C-mount adapter.



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

Notes

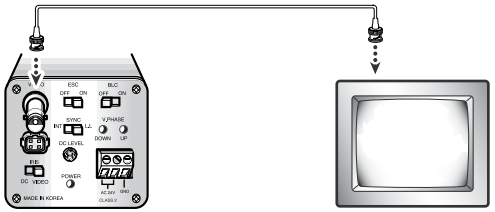
- Use the lens under the specification below.
- Otherwise the lens can damage the camera or abnormal fixing may be resulted in.
- A heavy lens may disturb the balance with the camera and possibly results in damage.
  Don't use more than 450g lens.
- It is recommended to set the lens ALC mode to Av mode (Average). Pk mode can be occurred hunting.



C-mount lens : 11mm or less
CS-mount lens : 6mm or less

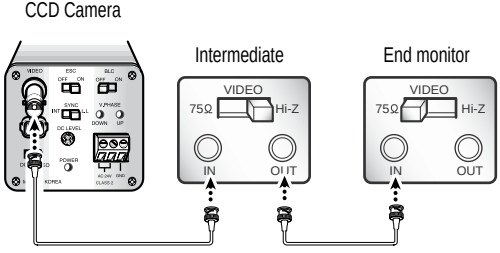
Connecting to Monitor

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



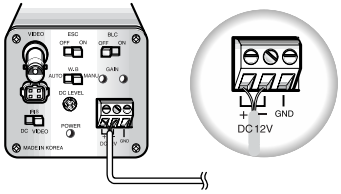
CCD Camera Monitor

- As a connecting method varies according to 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 intermediate device.



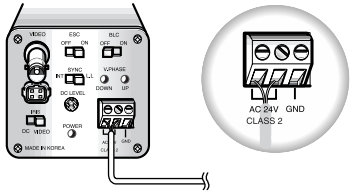
Connecting to Power

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.



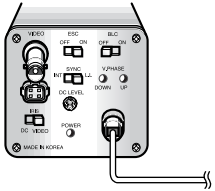
Connecting method for DC power type.

- The wire is polarized. Be sure to connect the wire with white line on its covering to '–' terminal and connect the other one to '+' terminal.
- Use DC 12V ⎓ power source for SDC-310(240) ND/PD



Connecting method for AC power type.

- The wire is non-polarized.
- Use AC 24V 50/60Hz power source for SDC-310(240) NA.
- Use AC 24V ~ 50Hz power source for SDC-310(240) PA.



Connecting method for High Voltage type.

- Use AC 230V ~ 50Hz power source for SDC-310(240) PH.

Notes

- Be sure to connect power after all the installation is done.
- Note that AC adaptor is not supplied with camera.
- Since the wire of DC power type is polarized, be careful when connecting it.

Troubleshooting

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

Problem	Solution
Nothing appears on the screen.	• Check that the power cord and line connection between the camera and monitor are made properly. • Check that the DC/VIDEO selection switch on the rear of the camera set to a proper position according to the type of your auto iris lens.
The image on the screen is dark.	• Check that you have set ESC feature.
The image on the screen is dim.	• Check if the lens are stained. If dirty, clean the lens with soft, clean cloth.
The camera is not work properly, and the surface of the camera case is hot.	• Check that you have connected the camera to a proper power.

Problem	Solution
The color of the picture is not matched.	•Check that you have properly set White Balance Control Mode.
The contrast on the screen is too weak.	• Adjust the contrast feature of the monitor. If the camera is exposed under too strong light, change the camera position.
The image on the screen flickers.	• Does the camera face to directly to the sun or fluorescent lighting? Change the camera position. • Check that the DC/VIDEO selection switch on the rear of the camera set to a proper position according to the type of your auto iris lens.
The image on the screen is distorted.	• Check that you have used 50Hz (PAL models), 60Hz(NTSC models) in linelock(L. L) mode. If the power fequency is out of 50Hz (PAL models), 60Hz(NTSC models) the linelock synchronization mode cannot be used. Use the Synchronization Mode to INT mode.

Specifications

Item	SDC-310ND	SDC-310NA	SDC-310PD	SDC-310PA	SDC-310PH
Power Source	DC 12V	AC 24V 50/60Hz	DC 12V ⎓	AC 24V ~ 50Hz	AC 230V~ 50Hz
Power Consumption	3.6W	6W	3.6W	6W	4.5W
Input Current	500mA	300mA	500mA	300mA	–
SYNC. System	INT Only	INT/Linelock seclectable	INT Only	INT/Linelock seclectable	
Pick-up Device	1/3″ CCD, 768(H) ×494(V)		1/3″ CCD, 752(H) ×582(V)		
Scanning System	2:1 Interlace (NTSC Standard) 525 Lines/60 Fields/30 Frames		2:1 Interlace (PAL Standard) 625 Lines/50 Fields/25 Frames		
Video Output	1.0 V_{p-p} NTSC Comp		1.0 V_{p-p} PAL Comp		
Electronic Iris	1/60~1/100,000sec		1/50~1/100,000sec		
Minimum Illumination	0.4 Lux at F1.2				
Resolution	≥480(H) TV lines				
Backlight Compensation	ON/OFF Selectable				
Iris Mode	VIDEO/DC/ESC Selectable				
Lens	C/CS Mount Changeable				
AGC	ON/OFF Selectable				
Flickerless	ON/OFF Selectable				
White Balance	ATW1(2,400K~11,000K) / ATW2(2,000K~18,000K)/AWC/MANUAL				
Gamma	γ = 0.45				
S/N Ratio	≥48dB (AGC OFF)				
Ambient Temp.	–10℃~+50℃				
Dimension	55(W)x50(H)x136(L)mm (Without Lens)				
Weight	350g	480g	350g	480g	650g
Accessory	Iris jack, Instruction Manual, L-wrench (FOOT, SCREW 2EA → 310PH)				

※ Design and specifications are subject to change without notice.

Item	SDC-240ND	SDC-240NA	SDC-240PD	SDC-240PA	SDC-240PH
Power Source	DC 12V	AC 24V 50/60Hz	DC 12V ⎓	AC 24V ~ 50Hz	AC 230V ~ 50Hz
Power Consumption	3.3W	4.5W	3.3W	5.0W	4.0W
Input Current	500mA	300mA	500mA	300mA	–
SYNC. System	INT Only	INT/Linelock seclectable	INT Only	INT/Linelock seclectable	
Pick-up Device	1/3″ CCD, 510(H) ×492(V)		1/3″ CCD, 500(H) ×582(V)		
Scanning System	2:1 Interlace (NTSC Standard) 525 Lines/60 Fields/30 Frames		2:1 Interlace (PAL Standard) 625 Lines/50 Fields/25 Frames		
Video Output	1.0 V_{p-p} NTSC Comp		1.0 V_{p-p} PAL Comp		
Electronic Iris	1/60~1/100,000sec		1/50~1/100,000sec		
Minimum Illumination	0.3 Lux at F1.2				
Resolution	≥330(H) TV lines				
Backlight Compensation	ON/OFF Selectable				
Iris Mode	VIDEO/DC/ESC Selectable				
Lens	C/CS Mount Changeable				
AGC	ON/OFF Selectable				
Flickerless	ON/OFF Selectable				
White Balance	ATW1(2,400K~11,000K) / ATW2(2,000K~18,000K)/AWC/MANUAL				
Gamma	γ = 0.45				
S/N Ratio	≥48dB (AGC OFF)				
Ambient Temp.	–10℃~+50℃				
Dimension	55(W)x50(H)x136(L)mm (Without Lens)				
Weight	350g	480g	350g	480g	650g
Accessory	Iris jack, Instruction Manual, L-wrench (FOOT, SCREW 2EA → 240PH)				

※ Design and specifications are subject to change without notice.

DECLARATION OF CONFORMITY

Application of Council Directive(s)	89/336/EEC
Manufacturer's Name	SAMSUNG TECHWIN CO., LTD
Manufacturer's Address	SAMSUNG TECHWIN CO., LTD
	42, SUNGJU-DONG CHANGWON-CITY,
	KYUNGNAM, KOREA, 641-120
European Representative Name	
European Representative Address	
Equipment Type/Environment	CCTV Camera
Model Name	SDC-310P/240P
Beginning Serial NO.	S2010001
Year of Manufacture	2002. 1. 1
Conformance to	EN 60065 : 1993
	EN 50081-1 : 1992
	EN 50130-4 : 1998

We, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s).

Manufacturer	SAMSUNG TECHWIN CO., LTD	Legal Representative in Europe
Signature	Young Taek, SON	Signature
Full Name	YOUNG TAEK SON	Full Name
Position	QUALITY CONTROL MANAGER	Position
Place	CHANGWON, KOREA	Place
Date	2002. 1. 1	Date

MEMO

MEMO

MEMO