

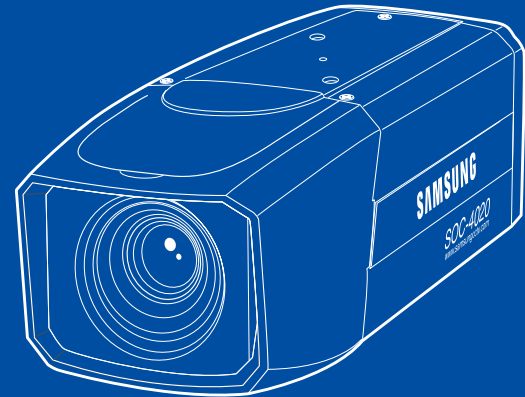


LENS BUILT INCOLOR CCD CAMERA INSTRUCTION MANUAL

SOC-4020 SERIES

About this manual

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



SALES NETWORK

· SAMSUNG TECHWIN CO., LTD.

Optics & Digital Imaging Division 145-3, Sangdaewon 1-Dong,
Jungwon-Gu, Sungnam, Kyungki-Do, Korea 462-703

TEL: 82-31-740-8137-41 FAX: 82-31-740-8145

· SAMSUNG OPTO-ELECTRONICS UK LTD (SOUK)

Samsung House, 1000 Hillswood Drive Hillswood Business
Park Chertsey Surrey KT16 OPS

TEL: 44-(0)1932-45-5308 FAX: 44-(0)1932-45-5325

www.samsungtechwin.com
www.samsungcctv.com

· SAMSUNG OPTO-ELECTRONICS AMERICA, INC. (SOA)

Closed Circuit Division 40 Seaview Drive, Secaucus NJ 07094,
U.S.A

TEL: (201) 902-0347 FAX: (201) 902-0429

· TIANJIN SAMSUNG OPTO-ELECTRONICS CO., LTD (TSOE)

7 Pingchang Rd, Nankai Dist, Tianjin, P.R.China
Post Code : 300190

TEL: 86-22-2761-9698 FAX: 86-22-2761-6514

P/No. : 6806-0438-01B
VAN 04. 9

SAMSUNG CCD CAMERA

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.

■SOC-4020 Series (410,000 pixels)

- NTSC models
SOC- 4020ND
SOC- 4020NA
SOC- 4020NDW
SOC- 4020NAW
- PAL models
SOC- 4020PD
SOC- 4020PA
SOC- 4020PDW
SOC- 4020PAW

■Model Description



- Signal System
N → NTSC Model
P → PAL Model
- Power Source
D → DC 12V ---
A → AC 24V ~
- Lens Type
Blank → 3.8~9.5mm
W → 2.5~6.0mm

WARNING- TO PREVENT ELECTRIC SHOCK AND RISK OF FIRE HAZARDS, DO NOT EXPOSE THIS APPLIANCE 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 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 power sources other than that specified.
- ◆ 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.



Auto Iris Vari-focal Lens Built-in

The focal length of lens is 3.8 to 9.5mm, equivalent to 2.5x zoom.(2.5 to 6.0mm, equivalent to 2.4x zoom) The built-in lens allows the camera to have a Wider Dynamic Range, therefore you can use in various applications.



Fashionable and Stylish Design

Fashionable design is best suited to many modern places moreover silver color adds luster to that.



High Resolution

The horizontal resolution of 480 TV lines can be achieved by using a high density CCD having effective 410,000 pixels, which provides clean, noiseless and reliable pictures.



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 Sensitivity

DSP LSI technology provides best picture with min illumination of 0.5Lux / F1.2 (30IRE).



White Balance (ATW)

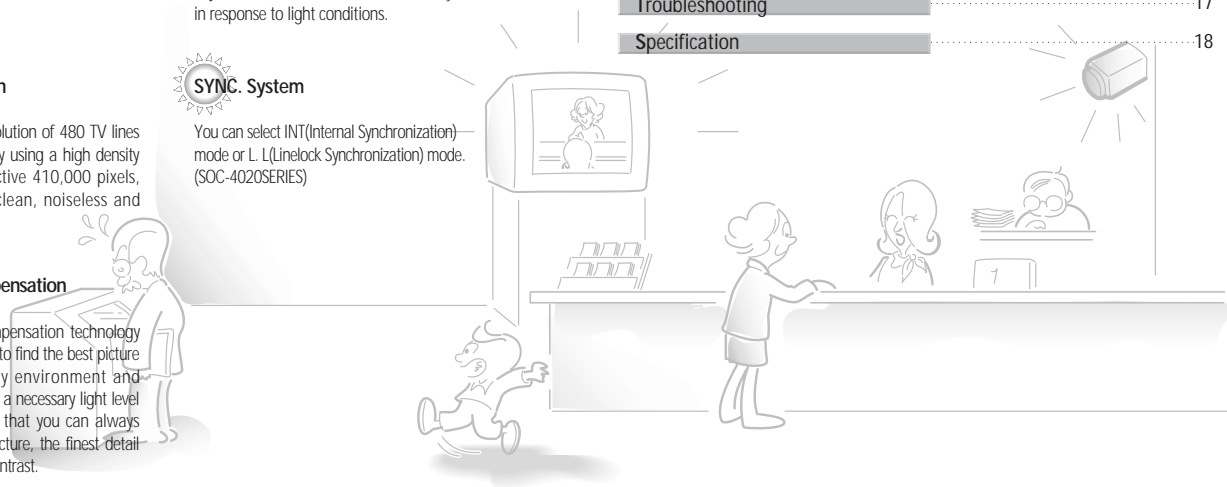
ATW function allow the camera to adjust the white balance automatically in response to light conditions.



SYNC. System

You can select INT(Internal Synchronization) mode or L. L(Linelock Synchronization) mode. (SOC-4020SERIES)

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Precautions

Do not install the camera in extreme temperature conditions.



Only use the camera under conditions where temperatures are between -10°C and $+50^{\circ}\text{C}$. Be especially careful to provide ventilation when operating under high temperatures.

Do not install or use the camera in an environment where the humidity is high.



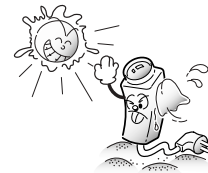
It can cause the image quality to be poor.

Do not drop the camera or subject them to physical shocks.



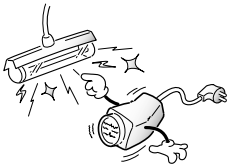
It can cause malfunctions to occur.

Never keep the camera face to strong light directly.



It can damage the CCD.

Do not install the camera under unstable lighting conditions.



Severe lighting change or flicker can cause the camera to work improperly.

Do not touch the front lens of the camera.



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

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.

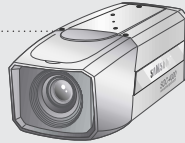


Notes

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

Composition

1. Color CCD Camera SOC-4020

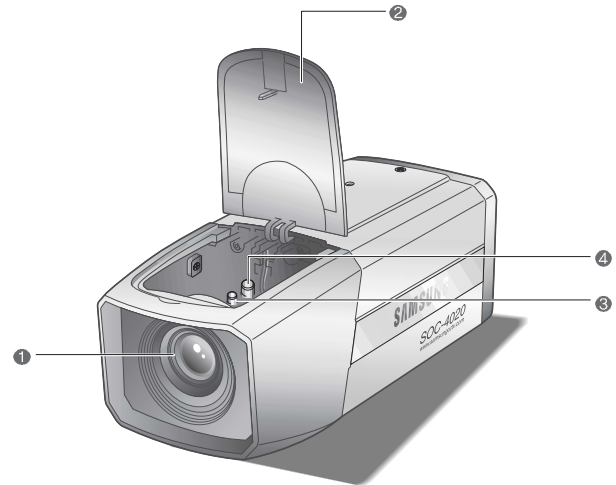


2. Instruction Manual



Name and Function of Each Part

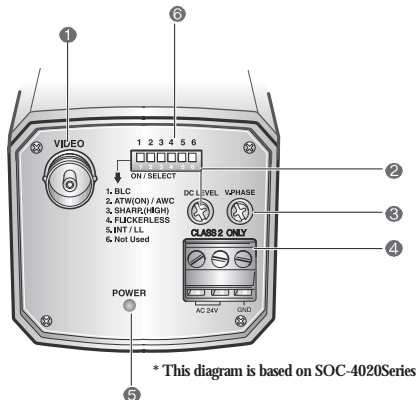
Front



- ① **Lens Built-in**
Vari-focal Lens built-in camera.
- ② **Control Cover**
Used to access focus or zoom handle. After access, be sure to close it.
- ③ **Focus Handle**
Used to provide for accurate focusing of an object within the lens field of view.
- ④ **Zoom Handle**
Used to adjust zoom magnification by turning.

Name and Function of Each Part

Back



1 Video Out Jack

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

2 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	Monitor Picture	Adjustment direction
To make it brighter	Turn clockwise ↻	To make it darker	Turn counterclockwise ↻

3 V. PHASE Adjustment V.R: AC 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 can be readjusted.



Notes

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

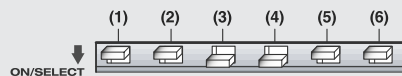
4 Power Input Terminal

Used to connect AC/DC power source.

5 Power Lamp

The power lamp turns on when power is properly supplied.

6 Function Selection Switch



* Use the select switches on the rear of camera.

(1) 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.

Name and Function of Each Part

(2) White Balance Control Mode

- ATW(Auto Tracing White balance): The camera automatically controls the white balance in any environment.
- AWC(Auto White balance Control): The white balance is automatically adjusted in a specific environment.

(3) Sharpness

The switch emphasizes the sharpness. To soften the edge turn this switch off.

(4) Flickerless

Flickerless function. In this function, electronic shutter is fixed in 1/100sec (1/120sec: PAL model). FL function can compensate the flicker caused by power frequency, but set OFF in the area not using a 60Hz (50Hz: PAL model) AC Power.

(5) INT/LL Switch: SOC-4020Series

Used to choose INT or LL 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.

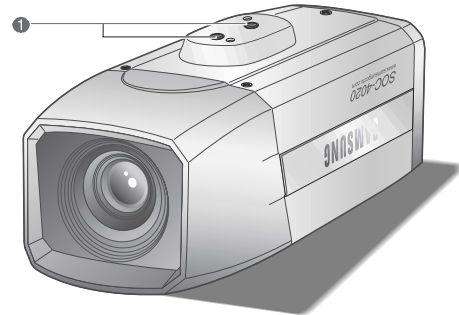
(6) Not Used



Notes

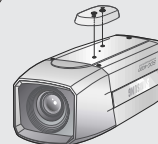
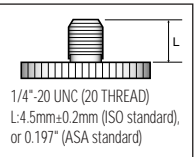
- The LL mode can be used in the areas of 60Hz(NTSC models), 50Hz(PAL models).

Bottom



1 Tripod Mounting Hole

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



You can remove and install this bracket on the top of the camera. You must use the supplied screw or the equivalent (within 6mm). If not, the bracket may not be fixed properly.

Connection

■ LENS

The DC lens is supplied with this camera.

Notes

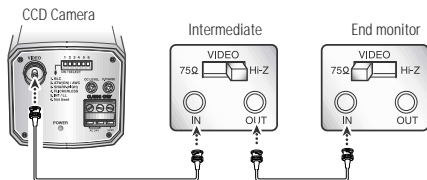
- If the lens is marked with fingerprints or other marks, the image quality might be poor.
- It is recommended to use the built-in iris lens to improve the image quality under low illumination.

■ Connecting to Monitor

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.

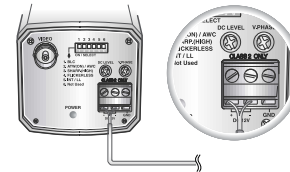


■ Connecting to Power

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 DC Power Type

- The wire is polarized. Be careful of polarity.
- Use DC 12V power source for SOC-4020SERIES



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

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

- As voltage may drop according to the length of electric cord as above table, a camera may malfunction if too long output line of adaptor is connected to the camera.

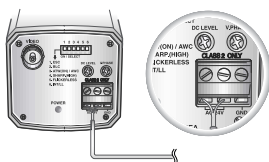
* Voltage for camera operation: DC 12V ± 10%

* Voltage drops on above table are variable according to types of electric cord and makers.

Connection

For AC Power Type

- The wire is non-polarized.
- Use AC24V ~ 60Hz power source for SOC-4020NA/W
- Use AC24V ~ 50Hz power source for SOC-4020PA/W



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 UL listed class 2 power supply.
- Since the wire of DC power type is polarized, be careful when connecting it.
- Do not use power sources other than that specified.
- To prevent fire or electric shock hazard, use a UL listed cable (VW-1, Style 1007).

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	Solution
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 14)• Adjust DC Level, VR Level properly (refer to page 10)
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 15)
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.
L/L mode isn't able to be selected.	<ul style="list-style-type: none">• Have you connected your camera to DC power source? Connect it to AC power source. (SOC-4020Series)

Specifications


Item	SOC-4020NA/W	SOC-4020ND/W	SOC-4020PA/W	SOC-4020PD/W
Power Source	AC 24V, 60Hz	DC 12V	AC 24V, 50Hz	DC 12V
Power Consumption	3.5W (Max)	2.5W (Max)	3.5W (Max)	2.5W (Max)
Synchronization	INT/LL Selectable (0-270° Adjustable)	INT	INT/LL Selectable (0-270° Adjustable)	INT
Image Pick-up Device	1/3" Color Interline-Transfer CCD			
Total Pixels	816(H) x 494(V)		798(H) x 584(V)	
Effective Pixels	771(H) x 492(V)		753(H) x 582(V)	
Scanning	2:1 Interlace			
Min. Illumination	0.5Lux / F1.2 (30IRE)			
Resolution	480 TV Line			
Video Output	VBS ; 1Vp-p, 75Ωunbalanced			
Scanning Frequency	15.734KHz(H) / 60Hz(V)		15.625KHz(H) / 50Hz(V)	
AGC	Built in			
White Balance	ATW / AWC Selectable			
BLC Function	ON / OFF Selectable			
Sharpness	High / Normal Selectable			
Flickerless	ON / OFF Selectable (ON: 1/100sec)		ON / OFF Selectable (ON: 1/120sec)	
Lens Type	Blank : X2.5 vari-focal, f=3.8~9.5, F=1:1.3~2.0 W Series : X2.4 vari-focal, f=2.5~6.0, F=1:1.3~2.0 (DC Iris Lens adjustable)			
S/N Ratio	more than 48dB (weight ON)			
Operating Temperature	-10°C ~ +50°C [14F~122F] / 30% ~ 90%RH			
Dimension	62(W) x 58(H) x 165(D)mm			
Weight (Without Lens)	300g	290g	300g	290g

* 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	SOC-4020Series
Beginning Serial NO.	S3900001
Year of Manufacture	2003. 9. 1
Conformance to	EN 50081-1 : 1992 EMC-Directive 89/336 EEC and 92/31/EEC EN 50130-4 : 1996

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		Signature
Full Name	YOUNG TAEK SON	Full Name
Position	QUALITY CONTROL MANAGER	Position
Place	CHANGWON, KOREA	Place
Date	2003. 9. 1	Date