

HD CCTV Digital Video Camera

OPERATION MANUAL



Thank you for choosing our high quality camera. Before attempting to connect operate this unit, please read and follow these instructions.

CAUTION

These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Use Class 2 Power Supply Only

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1. CAUTIONS

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note

This equipment has been tested and found to comply with the 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

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Caution

Any changes or modifications in construction of this devices which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CAUTION

1. A regulated DC12V 500mA power supply is recommended for use with this camera for the best picture and the most stable operation. **An unregulated power supply can cause damage to the camera. When an unregulated power supply is applied, the product warranty will be void.**
2. It is recommended that the camera be used with a monitor that has a CCTV quality 75Ω video impedance level. If your monitor is switched to high impedance then please adjust accordingly.
3. Do not attempt to disassemble the camera to gain access to the internal components. Refer servicing to your dealer.
4. Never face the camera towards the sun or any bright or reflective light, which may cause smears on the picture and possible damage to the Image Sensor.
5. **Do not remove the serial sticker for the warranty service.**
6. Do not expose the camera to rain or other types of liquid.
7. The apparatus must be connected to a main socket-outlet with a protective earth connection.

1. CAUTIONS



WEEE (Waste Electrical & Electronic Equipment)

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life.

To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract.

This product should not be mixed with other commercial wastes for disposal.



CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN



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



This symbol 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.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

2. IMPORTANT SAFETY INSTRUCTIONS

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



3. FEATURES

- **High Resolution**

SONY 1/3" 2.1M/P Progressive Color CMOS Image Sensor,
1920x1080 30fps

- **Support various digital video output**

720p60, 720p50, 1080p30, 1080p25

- **Video Outputs**

Primary HD-SDI (BNC)

Test/Setup TV Out (Test Point-adaptor to BNC included), NTSC/PAL selectable

- **OSD menu for setup and configuration**

- **Lens Control**

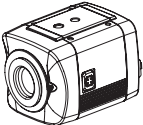



DC Iris

- **Power Source**

DC 12V / AC 24V (Dual Power Type)

DC 12V (DC Power Type)

4. EQUIPMENT AND ACCESSORIES

HD CCTV Digital Video Camera	
Auto Iris Lens Connection Plug	
C-mount Adaptor Ring	
Operation Manual	

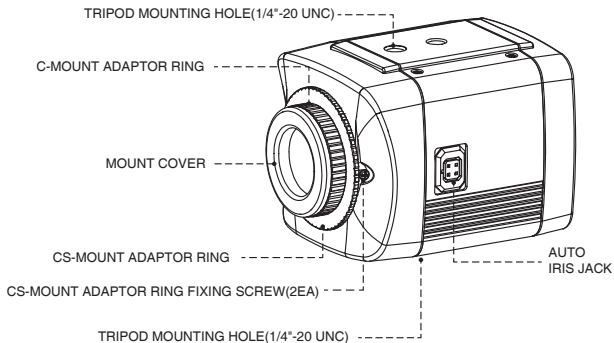
*** NOTE**

PLEASE REMOVE PROTECTION FILM



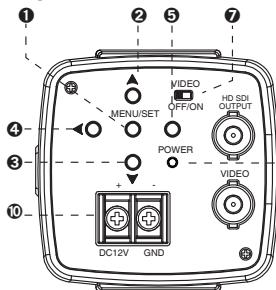
5. CAMERA COMPONENT DESCRIPTIONS

• FRONT

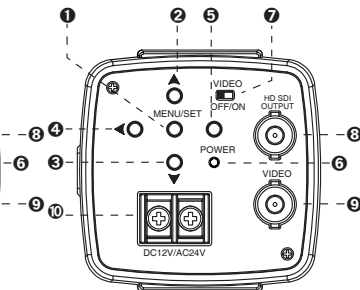


5. CAMERA COMPONENT DESCRIPTIONS

• BACK



DC12V



AC24V / DC12V

- ①. MENU BUTTON
- ②. UP BUTTON
- ③. DOWN BUTTON
- ④. LEFT BUTTON
- ⑤. RIGHT BUTTON
- ⑥. POWER LED
(The LED turns on when power is supplied)
- ⑦. VIDEO OFF/ON SWITCH
- ⑧. HD SDI OUTPUT JACK
- ⑨. VIDEO OUT JACK
(Used to connect an external video monitor in jack)
- ⑩. POWER TERMINAL
(Used to connect an DC12V power source)
(Options : AC24V / DC12V)

6. INSTALLATION

• LENS CONNECTION

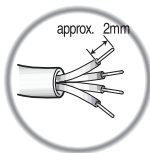
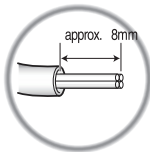
Mega Pixel Lenses are sold separately. Lenses such as an auto iris lens, CS-Mount lens and C-Mount lens can be used (adapter included for C-Mount Lens).

NOTE

- Please keep the lens clean.
- Any foreign objects and Finger marks on the lens can cause inferior image quality in low light level conditions.

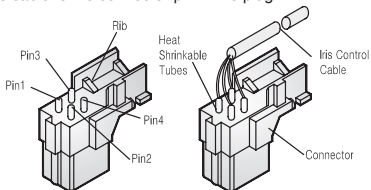
When using an auto iris lens

1. Please peel off about 8mm of the outer skin of the auto iris lens cable.
2. Please peel off about 2mm of the outer skin of the insulated conductor inside the lens cable.



6. INSTALLATION

3. Please remove the cover of the auto iris lens connection plug and solder the lens cable to the connector pin in the plug.



* PIN ASSIGNMENT OF THE LENS CONNECTOR

1) Video auto iris lens

Pin 1: Power source(DC 12V)

Pin 3: Video signal

Pin 4: Shield, GND(Ground)

2) DC auto iris lens

Pin 1: DAMP-(CTL-)

Pin 2: DAMP+(CLT+)

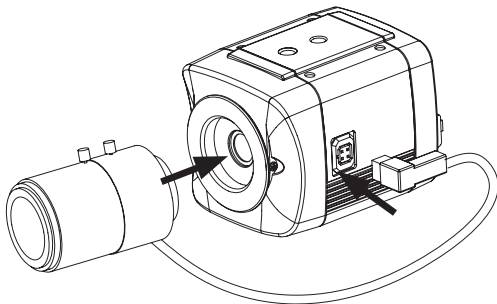
Pin 3: DRV+

Pin 4: DRV-(GND)

4. Please replace the auto iris lens connection plug cover and take off the sensor protection cap and then attach the auto iris lens to the camera by screwing it in clockwise.

6. INSTALLATION

5. Please insert the connection plug from the auto iris lens cable into the auto lens connector, which is located on the side of the camera.



* NOTE

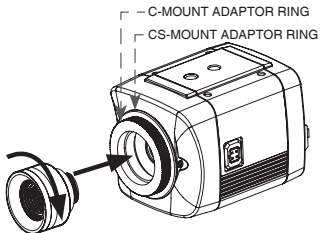
Use the lens under the specification as shown.
Otherwise the lens can damage the camera or
abnormal fixing may result.



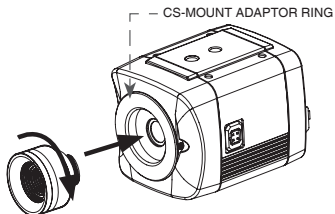
C-mount lens : 10 mm or less
CS-mount lens : 5 mm or less

6. INSTALLATION

Installation of C-Mount Lens



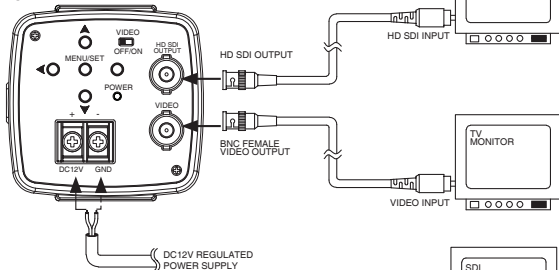
Installation of CS-Mount Lens



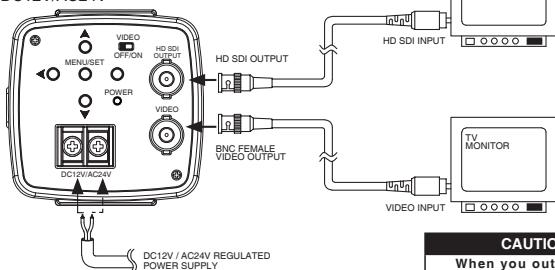
6. INSTALLATION

• MONITOR CONNECTION

- DC12V



- DC12V/AC24V

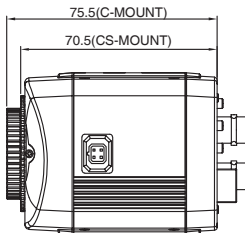
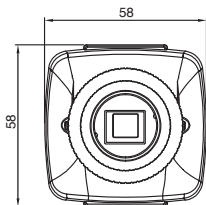
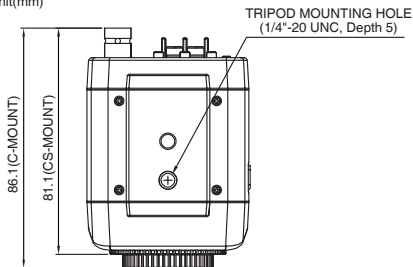


CAUTIONS

**When you output Video
WDR function does not work**

7. DIMENSIONS

Unit(mm)



8. SPECIFICATION

Image Device		SONY 1/3" 2.1M/P Progressive Color CMOS Image Sensor
Effective Pixels		1984 (H) x 1105 (V) 30fps
Unit cell size		2.8um (H) x 2.8um (V)
Video Output Mode		HD-SDI: 720p60, 720p50, 1080p30, 1080p25 TV Out: NTSC / PAL selectable
Minimum Illumination		0.1 Lux
S/N Ratio		More than 50dB
Shutter Speed		Auto / Manual selectable
Manual Shutter Speed		1/30(25), 1/60(50), 1/120(100), 1/240, 1/500, 1/1K, 1/2K, 1/4K, 1/8K, 1/16K, 1/30K, 1/60K
Controllable Max Gain		29 dB
White Balance		AUTO / AUTOext / PUSH / MANUAL
Lens Control		DC Iris
OSD Menu		Yes
Power Consumption	DC	DC12V($\pm 10\%$), Max. 200mA
	DUAL	DC12V($\pm 10\%$), Max. 270mA AC24V($\pm 10\%$), Max. 3.6W
Weight		DC12V: 175g, DUAL: 200g
Dimension		58(W) x 58(H) x 70.5(D)
Conformity		CE, FCC, KC
Temperature / Humidity (no condensing)		Operation: 14°F~122°F(-10°C~+50°C / 20~80%) Storage: -4°F~158°F(-20°C~+60°C / 20~95%)

Specifications and designs are subject to change for improving the functionality of this product without notice.

9. OSD MANUAL

• Menu structure

Main	Sub Menu	Sub Menu		
EXPOSURE	BRIGHTNESS	0 ~ 20		
	AE MODE	NORMAL AE / INDOOR		
	LENS(IRIS)	MANUAL / AUTO		
	SHUTTER	MANUAL / AUTO	LEVEL	1/30(25), 1/60(50), 1/120(100), 1/240, 1/500, 1/1K, 1/2K, 1/4K, 1/8K, 1/16K, 1/30K, 1/60K.
			RETURN	BACK / EXIT
	DSS	OFF, X2, X3, X4, X5, X6, X7, X8		
	AGC	0 ~ 10		
	BASE FREQ	60Hz / 50Hz		
	RESET DATA	BACK / DEF.		
WHITE BALANCE	RETURN	BACK / EXIT.		
	WB MODE	AUTO	COLORTEMP.	LOW / MIDDLE / HIGH
		/AUTOext	R-GAIN	0 ~ 20
		/PUSH	B-GAIN	0 ~ 20
		/MANUAL	RETURN	BACK / EXIT
	SATURATION	0 ~ 20		
	RESET DATE	BACK / DEF.		
	RETURN	BACK / EXIT.		
WDR / BLC	MODE	OFF, WDR, BLC, D-WDR		
	WDR WGT	0 ~ 4		
	BLC OSD	OFF ~ ON		
	BLC POS-X	0 ~ 20		
	BLC POS-Y	0 ~ 20		
	BLC SIZE-X	0 ~ 20		
	BLC SIZE-Y	0 ~ 20		
	RESET DATA	BACK / DEF.		
	RETURN	BACK / EXIT.		
DNR		OFF, LOW, MIDDLE, HIGH		
DAY & NIGHT	COLOR/ B&W/ AUTO	D&N DETECT	AGC	
		DELAY	1sec, 3, 5, 10, 15, 20, 25, 30, 40, 50, 60sec	
		D->N LEVEL	3 ~ 20	
		N->D LEVEL	0 ~ 16	
		RESET DATA	BACK / DEF.	
		RETURN	BACK / EXIT.	

9. OSD MANUAL

Main	Sub Menu	Sub Menu		
IMAGE	SHARPNESS	0 ~ 20		
	GAMMA	0 ~ 4		
	FLIP	OFF, H FLIP, V FLIP, HV FLIP		
	LENS SHADING	OFF, ON		
	DZOOM	1x, 2x, 4x, 6x, 8x, 10x, 12x, 14x, 16x, 18x, 20x		
	RESET DATA	BACK / DEF.		
	RETURN	BACK / EXIT.		
SPECIAL	PRIVACY	OFF / ON	ZONE NO	0 ~ 23
			ZONE OP	OFF / ON
			X-POS	0 ~ 60
			Y-POS	0 ~ 40
			X-SIZ	0 ~ 40
			Y-SIZ	0 ~ 40
			COLOR	BLK, WHT, YEL, CYN, GRN, MAG, RED, BLU
			TRANS.	0 ~ 4
	HLMASK	OFF / ON	RESET DATA	BACK / DEF.
			RETURN	BACK / EXIT.
			LEVEL	0 ~ 20
			COLOR	BLK, WHT, YEL, CYN, GRN, MAG, RED, BLU
			RESET DATA	BACK / DEF.
			RETURN	BACK / EXIT.
	PATTERN	OFF / 0 / 1		
	RESET DATA	BACK / DEF.		
	RETURN	BACK / EXIT.		
SYSTEM	SDI FORMAT	1080P / 720P		
	SDI FPS	30(60) / 25(50)		
	CVBS FORMAT	NTSC / PAL	CVBS OUT	AUTO / OFF / ON(WDR OFF)
			CVBS VIEW	CROP / FULL
			RETURN	BACK / EXIT.
	APPLY	OK / ON		
	SYSTEM INFO.		S/W VERSION	
			SET VERSION	
			RETURN	BACK / EXIT.
	REBOOT			
	RETURN	BACK / EXIT.		

9. OSD MANUAL

• Function Description

0. SETUP

- EXPOSURE : Go sub menu for camera exposure control.
- WHITE ALANCE : Go sub menu for camera white balance control.
- WDR/BLC : Go sub menu for camera WDR or BLC action.
- DNR : Control noise reduction setting.
- DAY & NIGHT : Go sub menu for camera day & night control.
- IMAGE : Go sub menu for adjust image functions.
- SPECIAL : Go sub menu for special feature control.
- SYSTEM : Go sub menu for system control & information.
- RESET DATA ALL : Reset camera's all feature data to default value.

1. EXPOSURE

- BRIGHTNESS : Adjust image brightness value.
- AE MODE : Adjust AE control mode.
- LENS(IRIS) : Select lens iris control type.
- SHUTTER : Select shutter speed control type.
 - LEVEL : Adjust shutter speed at manual shutter mode.
- DSS : Adjust digital slow shutter control level.
- AGC : Adjust max gain level for brightness control.
- BASE FREQ : Select basic control frequency for control camera feature.

2. WHITE BALANCE

- WB MODE : Select white balance control mode.
 - AUTO : Full auto control mode in color temperature range 2300K~10000K.
 - AUTOext : Extended auto mode for special illumination.
 - PUSH : Enable fix the control setting for specific environment.
Push & release, for fix WB control setting.
- MANUAL : Enable WB control setting by user's intention.
 - COLOR TEMP. : Select color temperature range for WB control at manual mode.
 - R-GAIN : Adjust red color gain for WB control at manual mode.
 - B-GAIN : Adjust blue color gain for WB control at manual mode.
- SATURATION : Adjust color saturation level.

9. OSD MANUAL

3. WDR/BLC

- MODE : Select WDR / BLC mode.
 - WDR : Act in wide dynamic range mode. Controlled video frame rate in 1/2.
 - BLC : Act in Backlight compensation mode.
 - D-WDR : Digital wide dynamic range control.
- WDR WGT : WDR weight control level setting at WDR mode.
- BLC OSD : Display BLC control zone in screen.
- BLC POS-X : Select BLC control zone vertical position.
- BLC POS-Y : Select BLC control zone horizontal position.
- BLC SIZ-X : Select BLC control zone vertical size.
- BLC SIZ-Y : Select BLC control zone horizontal size.

4. DNR: Reduce image's noise

5. DAY & NIGHT

- MODE : Select TDN(True Day & Night control) mode.
 - AUTO : Camera controlled automatically to decide day or night environment using AGC calculation data or input level data from CDS sense.
 - COLOR : Fix to mode at day environment setting.
Make video image act in color.
 - B&W : Fix to mode at night environment setting.
Make video image act in B/W.
- D/N DETECT : Fixed selection to AGC for TDN auto control.
- DELAY : Delay time for change day or night mode at auto mode.
- D->N LEVEL : Threshold level for change Day to Night mode.
- N->D LEVEL : Threshold level for change Night to Day mode.

6. IMAGE

- SHARPNESS : Adjust image sharpness level.
- GAMMA : Gamma curve select.
- FLIP : Vertical & Horizontal flip setting.
- LENS SHADING : Enable lens shading compensation.
- DZOOM : Select digital zoom magnification.

9. OSD MANUAL

7. SPECIAL

- PRIVACY : Setting for protect private area in image using mask setting.
 - ZONE NO. : Select private mask zone number.
 - ZONE OP. : Select zone mask display on/off.
 - X-POS : Select zone horizontal position.
 - Y-POS : Select zone vertical position.
 - X-SIZ : Select zone horizontal size.
 - Y-SIZ : Select zone vertical size.
 - COLOR : Select mask color
 - TRANS. : Select mask transparency level.
- HLMASK : Mask image high light area.
 - LEVEL : Select high light level.
 - COLOR : Select mask color.
- PATTERN : Color bar display select.

8. SYSTEM

- SDI FORMAT : 1080P / 720P
- SDI FPS : 30 or 25 fps in 1080p mode.
60 or 50 fps in 720p mode.
- CVBS FORMAT : NTSC / PAL
 - CVBS OUT : Select mode for CVBS out action.
 - ON, OFF : Enable or Disable CVBS out data.
 - AUTO : Check automatically CVBS video cable connection.
If connected, CVBS out data is enable and WDR mode is setted off automatically.
 - CVBS VIEW : CVBS out video angle setting.
 - CROP : Cut the scene outside area for keep image aspect ratio.
 - FULL : Fill the full angle scene into image with
H-V size & ratio change.
- APPLY : Apply all video angle setting. Use the set button to apply.
- SYSTEM INFO.
 - S/W VERSION : Camera's basic software version.
 - SET VERSION : Camera's feature control setting version.