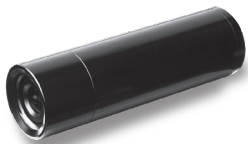# HD CCTV Digital Video Camera
OPERATION MANUAL

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

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.
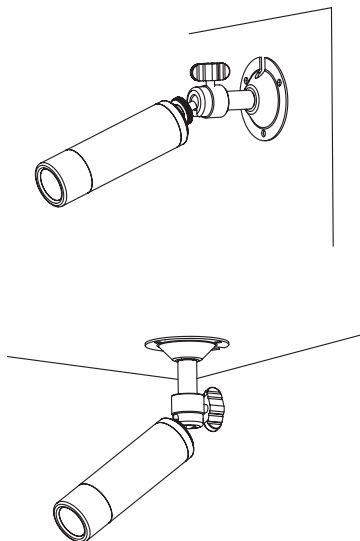
Caution -
Any changes or modifications in construction of this devies which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
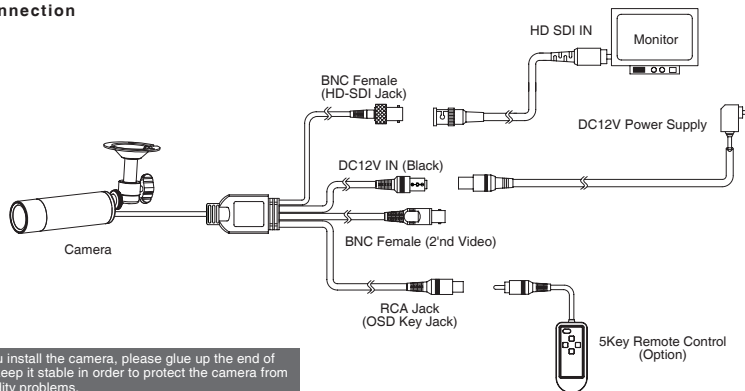
⚠ CAUTION ⚠
1. A regulated DC12V 300mA power supply is recommended for use with this camera for the best picture and the most stable operation.
**An unregulated power supply can cause damage to the camera.
When an unregulated power supply is applied, the product warranty will be roid.**
2. It is recommended 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 componets. Refer servicing to your dealer.
4. Never face the camera towards the sun or any bright or reflective light, which may cause smear 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.
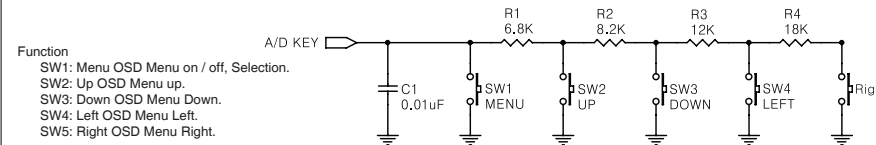7. The apparatus must be connected to a main socket-outlet with a protective earth connection.

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 SERVICING TO QUALIFED SERVICE PERSONNEL.
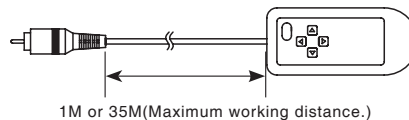
⚠ This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient mangnitude to constitute a risk of electric shock.

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

COMPONENTS

HD CCTV Camera	
Mounting Bracket	
Screw - 3ea	
Operation Manual	

Option - Remote Control (OSD Key)

1M or 35M(Maximum working distance.)

INSTALLATION

Mount Position

Monitor Connection

HD SDI IN — Monitor
BNC Female (HD-SDI Jack)
DC12V Power Supply
DC12V IN (Black)
Camera
BNC Female (2'nd Video)
RCA Jack (OSD Key Jack)
5Key Remote Control (Option)

⚠ When you install the camera, please glue up the end of cable to keep it stable in order to protect the camera from the humidity problems.

* Remote Control - Circuit Diagram (Option)

A/D KEY

	R1 6.8K	R2 8.2K	R3 12K	R4 18K

Function
SW1: Menu OSD Menu on / off, Selection.
SW2: Up OSD Menu up.
SW3: Down OSD Menu Down.
SW4: Left OSD Menu Left.
SW5: Right OSD Menu Right.

C1 0.01uF
SW1 MENU
SW2 UP
SW3 DOWN
SW4 LEFT
Right

DIMENSIONS Unit(mm)

Board Lens (Only IP67)
Φ23 16.8 77.5 4

Board Lens
Φ23 Φ17 68.6 4

Pinhole Lens
Φ23 61.5 4

1/4"-20UNC
50 28.6 3-Φ3.2 40 24.8

MAIN MENU	1st Sub MENU	2nd Sub MENU	3rd Sub MENU	4th Sub MENU
EXPOSURE	BRIGHTNESS	0 ~ 20		
	AE MODE	NORMAL / DEBLUR		
	SHUTTER	AUTO / MANUAL / FLICKER	LEVEL	1/30(25),1/60(50), 1/120(100),1/240,1/500, 1/1K,1/4K,1/8K,1/16K, 1/30K,1/60K
			RETURN	BACK / EXIT
	DSS	Off / X2 / X3 / X4 / X5 / X6 / X7 / X8		
	AGC	0 ~ 20		
	RESET DATA	BACK / DEF		
	RETURN	BACK / EXIT		
WHITE BALANCE	WB MODE	AUTO / AUTOext / PUSH / MANUAL	COLOR TEMP	LOW / MIDDLE / HIGH
			R-GAIN	0 ~ 20
			B-GAIN	0 ~ 20
			RETURN	BACK / EXIT
	SATURATION	0 ~ 20		
	RESET DATA	BACK / DEF		
	RETURN	BACK / EXIT		
D-WDR / BLC		OFF / BLC / D-WDR	H-POS	0 ~ 20
			V-POS	0 ~ 20
			H-SIZE	0 ~ 20
			V-SIZE	0 ~ 20
			RETURN	BACK / EXIT
DNR		OFF / LOW / MIDDLE / HIGH		
DAY & NIGHT		AUTO/ COLOR / B&W	AGC THRES	0 ~ 20
			AGC MARGIN	0 ~ 20
			DELAY	LOW / MIDDLE / HIGH
			RESET DATA	BACK / DEF
			RETURN	BACK / EXIT
IMAGE	SHARPNESS	0 ~ 20		
	GAMMA	0.45 / 0.5 / 0.55 / 0.6 / 0.65		
	MIRROR	OFF / ON		
	FLIP	OFF / ON		
	DZOOM	1.0X / 1.1X / 1.2X / 1.3X ...... 7.7X / 7.8X / 7.9X / 8.0X		
	DEFOG	OFF / ON	MODE	AUTO / MANUAL
			LEVEL	LOW / MIDDLE / HIGH
			RETURN	BACK / EXIT
	LENS SHADING	OFF / ON	WEIGHT	0% ~ 100%
			RETURN	BACK / EXIT
	RESET DATA	BACK / DEF		
	RETURN	BACK / EXIT		
SPECIAL	FOCUS ASSIST	OFF / ON		
	PRIVACY	OFF / ON	ZONE NUM	0 ~ 15
			ZONE OP	OFF / ON
			H-POS	0 ~ 60
			V-POS	0 ~ 40
			H-SIZE	0 ~ 40
			V-SIZE	0 ~ 40
			Y LEVEL	0 ~ 10
			CR LEVEL	0 ~ 10
			CB LEVEL	0 ~ 10
			RETURN	BACK / EXIT
	HLMASK	OFF / ON	LEVEL	23 dB
			COLOR	BLK / WHI / YEL / CYN / GRN / MAG / RED / BLU
			RETURN	BACK / EXIT
	PATTERN	OFF / ON		
	RESET DATA	BACK / DEF		
	RETURN	BACK / EXIT		
SYSTEM	SDI FORMAT	1080P / 720P		
	FRAME RATE	30(60) / 25(50)		
	CVBS FORMAT	NTSC / PAL		
	APPLY	OK / ON		
	LANGUAGE	ENG / CHN / CHN(S)		
	SYSTEM INFO		S/W VERSION	
			SET VERSION	
			RETURN	BACK / EXIT
	REBOOT			
	RETURN	BACK / EXIT		

• Function Description

0. SETUP
- EXPOSURE: Go sub menu for camera exposure control.
- WHITE BALANCE: 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.
- 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.

2. WHITE BALANCE
- WB MODE: Select white balance control mode.
  AUTO: Full auto control mode in color temperature rage 2300K~10000K
  AUTOext: Extened 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 maual mode.
  >B-GAIN: Adjust blue color gain for WB control at manual mode.
- SATURATION: Adjust image brightness value.

3. WDR/BLC
- MODE: Select WDR for BLC mode.
  BLC: Act in Backlight compensation mode.
  D-WDR: Digital wide dynamic range control.
- BLC H-POS: Select BLC control zone vertical position.
- BLC V-POS: Select BLC control zone horizontal position.
- BLC H-SIZE: Select BLC control zone vertical size.
- BLC V-SIZE: Select BLC control zone horizontal size.

4. DNR: Reduce image's noise

5. DAY & NIGHT
- MODE: Select DN(Digital Day & Night control) mode.
  AUTO: Camera controlled automatically to decide day or night environment using AGC calculation data.
  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.
  > AGC THRES: Threshold level for Change Day to Night or Night to Day mode.
  > AGC MARGIN: Hysteresis Level for Change Day to Night or Night to Day mode.
  > DELAY: Delay Time for change day or Night Mode at Auto mode.

6. IMAGE
- SHARPNESS: Adjust image sharpness level.
- GAMMA: Gamma Curve Select.
- MIRROR: Vertical Mirror Setting.
- FLIP: Horizontal flip setting.
- DZOOM: Select digital zoom magnification.
- DEFOG: Enable Defog compensation.
  LEVEL: Defog compensation Level change at Auto / Manual mode.
- LENS SHADING: Enable lens shading compensation.

7. SPECIAL
- FOCUS ASSIST: Enable Lens Focus Assist OSD. (1080P Mode Only).
- PRIVACY: Setting for protect private area in image using mask setting.

ZONE NUM. : Select private mask zone number.	V-SIZE : Select zone vertical size.
ZONE DISP. : Select zone mask display on/off.	Y LEVEL : Select mask color (Y Level).
H-POS : Select zone horizontal position.	CR LEVEL : Select mask color (CR Level).
V-POS : Select zone vertical position.	CB LEVEL : Select mask color (CB Level).
H-SIZE : Select zone horizontal size.	

- HLMASK: Mask image high light area.
  LEVEL : Select high light level.
  COLOR : Select mask color
- PATTERN: Color bar display Enable.

8. SYSTEM
- SDI FORMAT: 1080P / 720P
- SDI FPS: 30 or 25 fps in 1080p mode,
    720P Mode: 60 / 50 fps.
- CVBS FORMAT: NTSC / PAL
- APPLY: Apply all video setting changed at once. Use the Set button to apply.
- SYSTEM INFO
  S/W VERSION: Camera's basic software version.
  SET VERSION: Camera's feature control setting version.

SPECIFICATION

Image Device	2.1 Mega Pixel, 1/3" Exmor SONY CMOS
Video output mode	HD-SDI: 1080p@30, 1080p@25, 720p@60, 720p@50 TV Out: NTSC / PAL selectable
Effective Pixels	1984 (H) x 1105 (V)
Unit cell size	2.8um (H) x 2.8um (V)
S/N Ratio	More than 50dB
Minimum Illumination	0.1 Lux
Video Output	HD-SDI / 1.0 Vp-p Composite (75Ω).
Lens	Board Lens, Pinhole Lens
Shutter speed	Auto / Manual selectable
D-WDR / BLC	OFF / BLC / D-WDR
3DNR	OFF / LOW / MIDDLE / HIGH
Controllable Max Gain	23 dB
White Balance	AUTO / AUTOext / PUSH / MANUAL
Digital Zoom Ratio	1X ~ 20X
Digital Slow Shutter	OFF, X2 ~ X8
Privacy Masking	Zone 16 ea , On / Off
Day & Night	Digital Day & Night
OSD	Remote Control
Operating Temperature	14°F~112°F (-10°C~+50°C)
Storage Temperature	-4°F~158°F (-20°C~+70°C)
Power Consumption	DC12V (±10%), Max. 110 mA
Dimensions (mm)	23.0(Ø) x 77.5(WaterProof Cap Housing only)
Weight	Approx. 90g
IP Rating	IP67 (WaterProof Cap Housing only)

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