

HDCCTV

EZH5102

1080p Mini IR Bullet Camera

User's Manual



EverFocus

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Release Date: October, 2012

Precautions

Please read this manual first to ensure correct installation and operation. This manual should be retained for future reference. The information in this manual was current when published. The manufacturer reserves the right to revise and improve its products. All specifications are therefore subject to change without notice.

1. **Do not install the camera near electric or magnetic fields.** Install the camera away from TV/radio transmitters, magnets, electric motors, transformers and audio speakers since the electromagnetic fields generated from these devices may distort the video image or otherwise interfere with camera operation.
2. **Never disassemble the camera beyond the recommendations in this manual nor introduce materials other than those recommended herein.** Improper disassembly or introduction of corrosive materials may result in equipment failure or other damage.
3. **Try to avoid facing the camera toward the sun.** In some circumstances, direct sunlight may cause permanent damage to the sensor and/or internal circuits, as well as creating unbalanced illumination beyond the capability of the camera to compensate.
4. **Keep the power cable away from water and other liquids and never touch the power cord with wet hands.** Touching a wet power cord with your hands or touching the power cord with wet hands may result in electric shock.
5. **Never install the camera in areas exposed to oil, gas or solvents.** Oil, gas or solvents may result in equipment failure, electric shock or, in extreme cases, fire.
6. **Cleaning.** For cameras with interchangeable lenses, do not touch the surface of the sensor directly with the hands. Use lens tissue or a cotton tipped applicator and ethanol to clean the sensor and the camera lens. Use a damp soft cloth to remove any dirt from the camera body. Please do not use complex solvents, corrosive or abrasive agents for cleaning of any part of the camera.
7. **Do not operate the camera beyond the specified temperature, humidity or power source ratings.** This camera is suitable for indoor and outdoor operation. Use the camera at temperatures within $-10^{\circ}\text{C}\sim 45^{\circ}\text{C}$ ($14^{\circ}\text{F}\sim 113^{\circ}\text{F}$) and in an IP66 compliant environment; this device is not rated as submersible. The input power source is 12VDC. Be sure to connect the proper + / - polarity and voltage, as incorrect polarity or too high a voltage will likely cause the camera to fail, and such damage is not covered by the warranty.
8. **Mounting.** Use care in selecting a solid mounting surface which will support the weight of the camera plus any wind, snow, ice or other loading, and securely attach the camera to the mounting surface using screws and anchors which will properly support the camera. If necessary (e.g. when mounting to drop ceilings) use a safety wire to provide additional support for the camera.

Safety Notice

Federal Communication Commission Interference Statement

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 in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.



ATTENTION! This is a class A product which may cause radio interference in a domestic environment; in this case, the user may be urged to take adequate measures.



This Product is RoHS compliant.



WEEE

Your EverFocus product is designed and manufactured with high quality materials and components which can be recycled and reused. This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste. Please, dispose of this equipment at your local community waste collection/recycling centre. In the European Union there are separate collection systems for used electrical and electronic product.

Please, help us to conserve the environment we live in!

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1. Introduction

The EZH5102 is an HDcctv outdoor mini IR bullet camera. Based on a progressive scan CMOS sensor, the camera provides 1080p high resolution images and superior video quality compared to traditional CCTV images. This superior resolution not only captures more critical evidentiary information, but the inherent ability for megapixel video also extends the area of coverage, expedites completion of investigations, resolves complaints and reduces both capital and operational costs.

With 3.6mm lens for wide area coverage, local SD test monitor output from the detachable setup tool included, full OSD menu features lens shading compensation, Contrast Boost, DSS low light enhancement and 3D DNR, this Day/ Night camera provides economical HDcctv megapixel coverage in a wide variety of indoor applications.

No major upgrade to the IT network is required to deploy this powerful technology; HDcctv cameras communicate at digital speeds up to 1.5 Gb/s over existing or new coaxial cable (RG59 or other types for longer distances), using industry standard BNC connectors. The EZH5102 supports both NTSC and PAL scanning systems.

1.1 Packing List

- Camera body x 1
- Service Adapter (with OSD Menu Joystick) x 1
- Accessory kit x 1 (Screw x 2 , Anchor x 2 and Hexagon Wrench x1)
- User Manual x 1
- Template x 1
- Power Adapter Pigtail x 1

1.2 Features

- Real time HDcctv 1080p HD video over coax for superlative image detail
- 1/3" 2.1 megapixel Color Progressive CMOS sensor
- Provides 3D DNR / DSS to improve image clarity, particularly in low light scenes
- Electronic Lens Shading Compensation to offset diminished light transmission through lens periphery for uniform image illumination
- CTB [Contrast Boost] to deliver properly exposed images despite bright light sources, deep shadows and/or unbalanced lighting in the same scene
- Supports Digital Zoom / BLC [Back Light Compensation] / HLMASK [Highlight Suppression Mask] / Privacy Zones (up to 32)
- DPC [Defect Pixel Correction] Dead pixel compensation for increased clarity and extended

- service life
- SD TV Out for aim and focus using a standard hand held test monitor

2. Cable Description

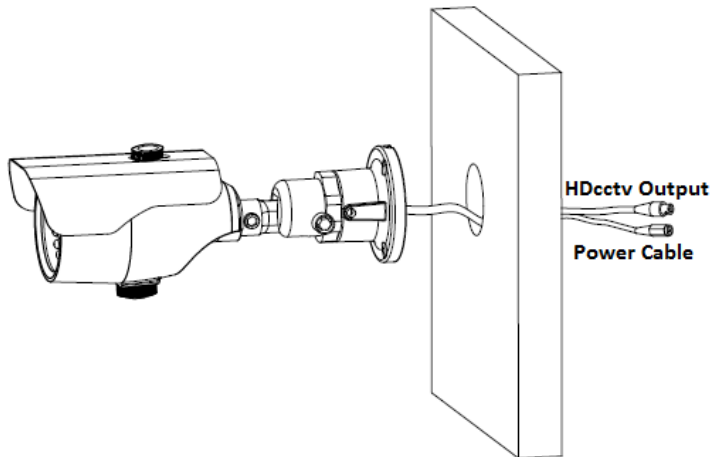


No.	Name	Descriptions
1	Power Cable	Connects to a DC 12V power source.
2	HDcctv Output	Connects to an HDcctv device, such as a DVR or HD monitor, using a 75 Ohm BNC-type coaxial cable.
3	RS485+ (Green)	Connects to an RS-485 device, such as EverFocus' EKB500 keyboard.
4	RS485- (Blue)	Connects to an RS-485 device, such as EverFocus' EKB500 keyboard.
5	Test-Out	Connects to a SD CVBS monitor for setting image aim.

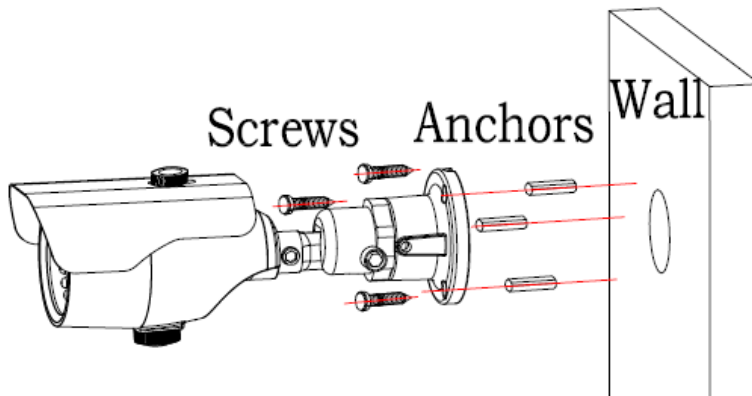
3. Installation

3.1 Installation and Adjustment

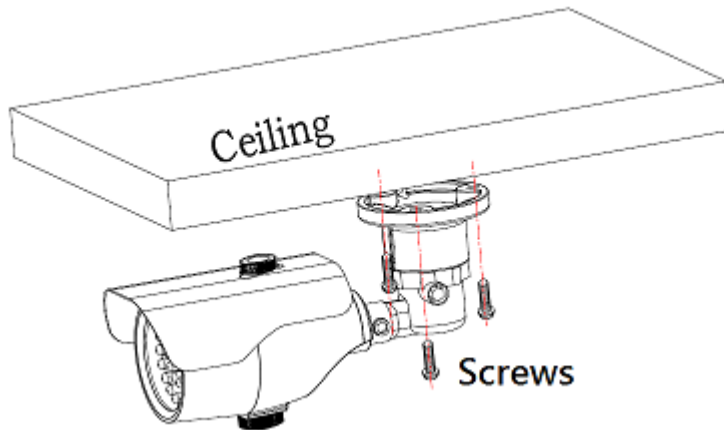
1. Paste the supplied mounting template onto a desired location on the wall and then drill the three cross marks. For ceiling-mount installation, you can ignore this step.
2. Drill a hole on the wall / ceiling if you want to wire the cables through the wall.



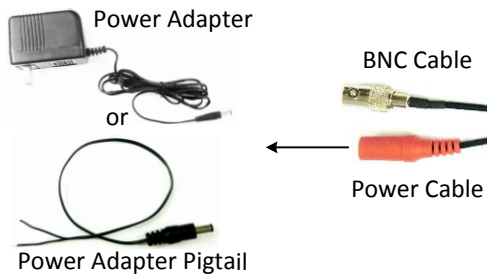
3. Screw the camera to the wall / ceiling.
 Wall-Mount: Plug the supplied anchors into the three holes, attach the camera to the wall and then screw the camera to the wall using the three supplied screws.



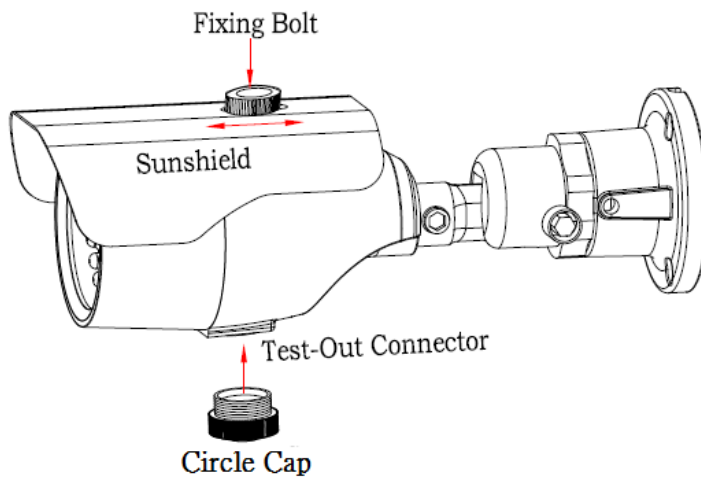
Ceiling-Mount: Attach the camera to the ceiling and then screw the camera to the ceiling using the supplied three screws.

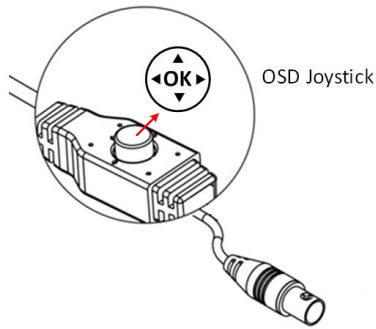


4. Connect the camera to the 12V DC power source using the supplied power adapter pigtail or a power adapter.



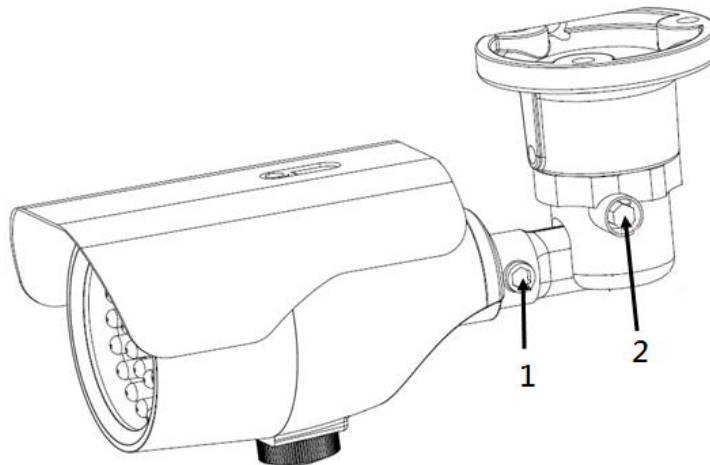
5. Optionally connect the camera to a portable monitor using the supplied Test-Out Cable for configuring the OSD menu. Connect one end of the Test-Out Cable to the Test-Out Connector on the camera and the other end to the portable monitor. The Test-Out Connector is located on the bottom of the Camera Body. Unscrew and remove the Circle Cap, and you can see the Test-Out Connector.





- Push the Joystick up / down to select among menu items.
- Push the Joystick left / right to adjust the level of the selected item.
- Press the Joystick to enter the submenu or exit the OSD Setup Menu.

6. Access the camera live view to adjust the camera angles.
 - a. Loosen the screw (1 arrow) to rotate the Camera body, and then tighten the screw.
 - b. Loosen the screw (2 arrow) to adjust the tilt angle, and then tighten the screw



7. Connect the camera to a DVR or HD monitor using the BNC Cable.

4. Configuration in the OSD Menu

You can use the Joystick on the rear panel of the camera to configure camera settings in the OSD menu. For details on the OSD menu structure, see *OSD Menu Structure in Appendix*.

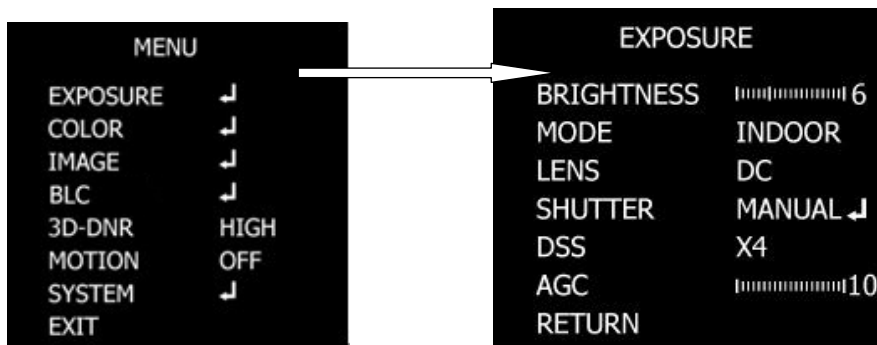
4.1 OSD Menu

Press the **Enter / Confirm** button on the Joystick. The Setup Menu in the OSD appears.



4.1.1 Exposure

Press the **Enter / Confirm** button to enter the submenu.



BRIGHTNESS

Use the ◀ and ▶ buttons to increase or decrease the screen brightness from 0 to 20.

MODE

Indoor

Select this mode when the color temperature of the video image is similar to that found in indoor environments (around 5100 to 5300°K).

Outdoor

Select this mode when the color temperature of the video image is similar to that found in outdoor environments (around 3,000°K to 3,200°K)

LENS

You can select the type of the lens. Two types are available: Manual and DC. By default, the DC type lens is selected.

Shutter

Use the ◀ and ▶ buttons to adjust the shutter speed. The options include: 1/25 ~ 1/60000, FLK, and AUTO. Any selection other than AUTO and 1/25 will disable the DSS function.

DSS (Digital Slow Shutter)

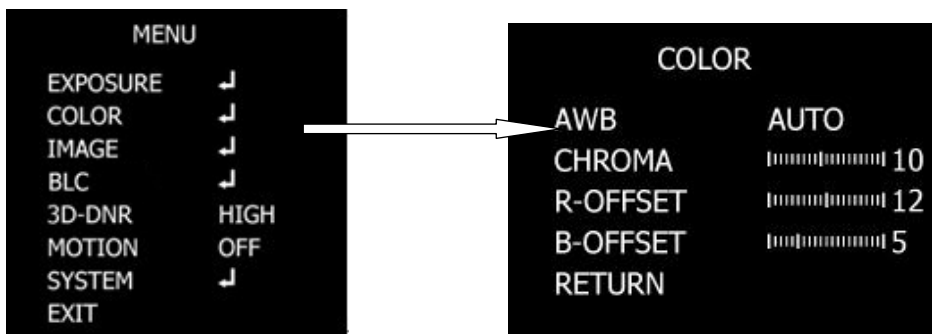
DSS is used to maintain a vivid screen image by automatically boosting low light levels. The value is between x2 ~ x4 and OFF.

AGC (Auto Gain Control)

The higher the AGC value, the brighter the screen, but the level of noise will also be increased. The options include: 0~10.

4.1.2 Color

Press the **Enter / Confirm** button to enter the submenu.



AWB (Auto White Balance)

This mode can be used to view areas with a color temperature range. Use the ◀ and ▶ buttons to select the AWB options. The options include: AUTO, AUTO EXTN, PRESET, MANUAL COLOR TEMP, R-GAIN and B-GAIN.

- AUTO – Around 2500 to 9500°K

- AUTO EXTN (Extension) – Around 2300 to 10800°K
- PRESET – Use a pure white background to preset the white balance value.
- MANUAL COLOR TEMP – Use the ◀ and ▶ buttons to adjust the speed. The options include: LOW, MIDDLE and HIGH
- R-GAIN and B-GAIN –The options include: 0~20.

CHROMA

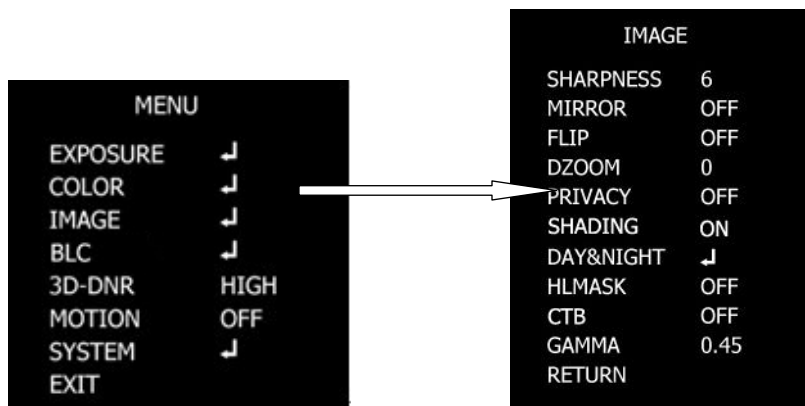
Use the ◀ and ▶ buttons to increase or decrease the CHROMA from 0 to 20.

R-OFFSET/B-OFFSET

Use the ◀ and ▶ buttons to increase or decrease the Red and Blue offset from 0 to 20.

4.1.3 Image

Press the **Enter / Confirm** button to enter the submenu.



SHARPNESS

Use the ◀ and ▶ buttons to increase or decrease the SHARPNESS from 0 to 10.

MIRROR / FLIP

Turn it on to reverse / flip the image.

DZOOM

Turn it on to set up the zoom level

PRIVACY

Enter the submenu to set up the privacy masks; up to 31 zones can be created:

ON ZONE NO: Use the ◀ and ▶ buttons to select the zone from 0 to 31.

X, Y-POS, SIZ: Enter the submenu to set up the position or size of the privacy mask zone.

COLOR: Press to select a color for the selected privacy mask zone.

TRANS: Press to select the transparency of mask zone.

SHADING

Turn it on to offset diminished light transmission through lens periphery for uniform image illumination.

DAY&NIGHT

The options include MODE, AGC THRS, DELAY. A submenu can be entered if you select MODE.

- **MODE** – Use the ◀ and ▶ buttons to select AUTO, COLOR, EXT and B&W. Select EXT (Exterior) to switch the camera to the Color / B&W mode controlled by the Light Sensor. Switches to a B&W feed in low light conditions and then switches back to a Color feed in the daytime.
- **AGC THRS** – Use the ◀ and ▶ buttons to select the AGC Threshold from 0 to 20.
- **DELAY** – Set up the delay time in 0,5,10 and 30 seconds for the camera to switch between Day and Night.

HLMASK

Turn it on to select the level and color of the masking effect. You can adjust the level to control the mask range. The higher the level, the brighter the camera will detect to apply the mask.

CTB (Contrast Boost)

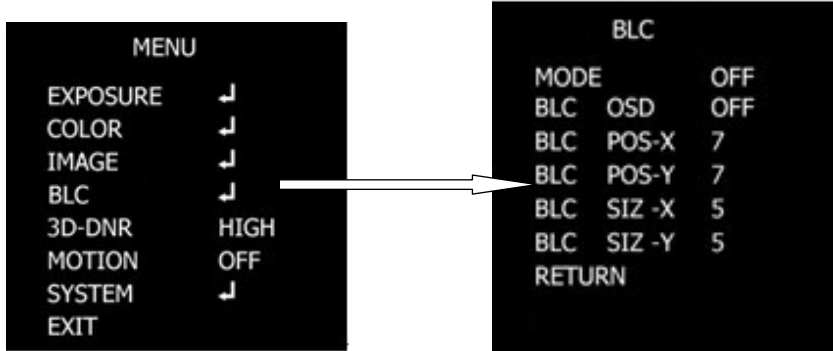
Turn it on to deliver properly exposed images despite bright light sources, deep shadows and / or unbalanced lighting in the same scene.

GAMMA

Use the ◀ and ▶ buttons to increase or decrease the GAMMA from 0.45 to 0.75.

4.1.4 BLC

Press the **Enter / Confirm** button to enter the submenu.



MODE

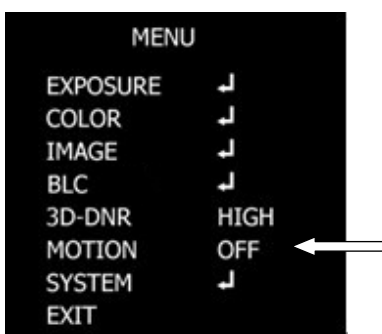
Use the ◀ and ▶ buttons to select OFF and BLC. Please notice the WDR is only working on round 7.5FPS.

BLC OSD, POS and SIZ

Select OFF to disable the BLC function, or select ON to enable the BLC function and for further setup. After selecting an area block, enter the BLC POS / SIZ and X / Y setup page, a “POSITION” sign displayed on the screen. Use the direction buttons to move the area to the desired position. Press the **Enter / Confirm** button to confirm the position, a “SIZE” sign displayed on the screen. Use the direction buttons to adjust the size for the area.

4.1.5 3D-DNR

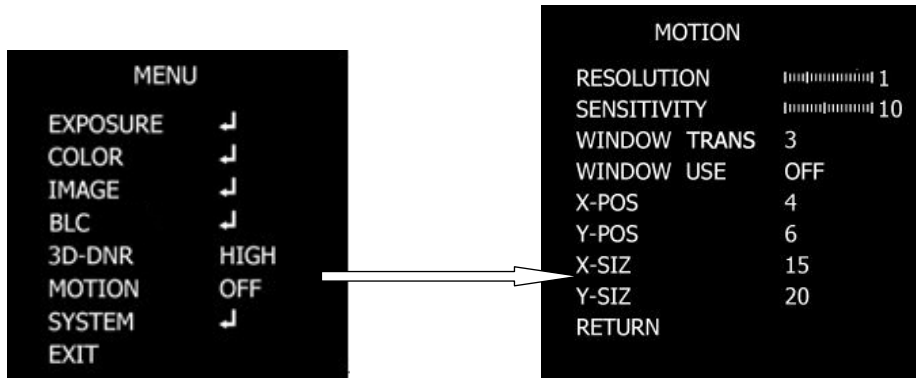
Press the **Enter / Confirm** button to enter the submenu.



Switch to HIGH, MIDDLE, LOW and OFF to enable or disable noise reduction on dynamic recordings.

4.1.6 Motion

Press the **Enter / Confirm** button to enter the submenu.



RESOLUTION

Use the ◀ and ▶ buttons to increase or decrease the RESOLUTION level from 0 to 4.

SENSITIVITY

Press to set up the sensitivity for the motion detection function.

WINDOW TRANS

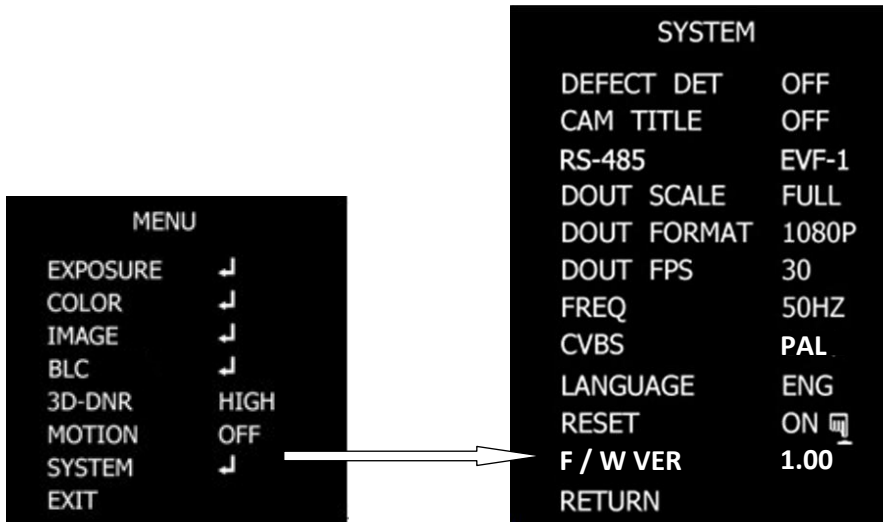
Press to select the transparency of motion detect zone.

WINDOW USE, POS and SIZ

Select OFF to disable this function, or select ON to enable and for further setup. After selecting an area block, enter the BLC POS / SIZ and X / Y setup page, a "POSITION" sign displayed on the screen. Use the direction buttons to move the area to the desired position. Press the **Enter / Confirm** button to confirm the position, a "SIZE" sign displayed on the screen. Use the direction buttons to adjust the size for the area.

4.1.7 System

Press the **Enter / Confirm** button to enter the submenu.



DEFECT DET

Press to select the DPC (Defective Pixel Correction) level of defect detector. Please notice; do not use this function without cover the lens. The camera will automatically correct pixel defects. Misoperation will cause the abnormal image.

CAM TITLE

Switch to On and then enter the submenu to set up a camera name displayed on the screen.

RS-485

Use the ◀ and ▶ buttons to select ID, BAUDRATE, PROTOCOL and ID DISPLAY. The default of protocol is EVF-1 (EverFocus).

DOUT SCALE: Digital Output Scale

Use the ◀ and ▶ buttons to select FULL or COMP. This function is used to select the value range of auto brightness control. The value range of FULL and COMP is as below:

FULL: 0-255

COMP: 16-255

DOUT FORMAT : Digital Output Format

DOUT FPS: Frames per Second

FREQ: Frequency

CVBS

There are 4 options including 1080p 30FPS NTSC, 1080p 25FPS PAL, 720p 60FPS NTSC and 720p 50FPS PAL. If you want to change the format and FPS, you should change the FREQ first. Select

50HZ frequency, the CVBS will automatically change to PAL; select 60HZ frequency, the CVBS will turn to NTSC. Then, you can select the 720P or 1080P in the format options, and the FPS will also change accordingly.

LANGUAGE

Select a language for the OSD text. Options include English, French, German, Simplified Chinese, Korean and Japanese.

RESET

Turn it on to reset the settings.

F / W VERSION: Firmware Version

Press to display the firmware version of the camera.

5. Specifications

Pickup Device	1/3" Panasonic 2.1 megapixel Color Progressive CMOS sensor
Image Pixels	1920(H) x 1080(V)
Resolution	Digital: 1080p (30 / 25), 720p (60 / 50)
Scanning System	NTSC / PAL
Sensitivity	Color: 0.4 lux, BW: 0.1 lux, Color DSS: 0.1 lux, BW DSS: 0.025 lux
Video Output	Digital (HDcctv Output): BT.1120, HDcctv / HD-SDI: BNC connector
	Analog (Test Out): NTSC / PAL : BNC connector
S/N Ratio	More than 50 dB (AGC OFF)
Lens	3.6mm/F1.8 fixed focal type
AGC	0-20 steps
Shutter Speed	AUTO / MANUAL(1/25(30)~1/60,000sec)
Digital Slow Shutter(DSS)	On / Off(x4)
Brightness	0-20
BLC	On / Off
Contrast Boost(CTB)	On / Off
Day&Night	Auto / Color / B&W
Auto White Balance	Auto / Auto extn / Preset / Manual
Digital Noise Reduction(DNR)	Off / Low / Middle / High
Mirror	On / Off
Flip	On / Off
Sharpness	0 - 10 steps
Lens Shading Compensation	On / Off
Digital Zoom	0 - 96 steps
Privacy Mask	32 Zones, Programmable
Motion Detection	On / Off
RS - 485	2400~115200> baud, ID 1~255, Protocols: Pelco-D/P, EverFocus EVF-1;
Language	English /French /German /Chinese /Korean /Japanese /Russian
Power Source	12VDC
Power Consumption	12VDC: 600mA max. (IR ON)
Operating Environment	-10°C~45°C / 14°F~113°F (20%~80% Humidity)
Dimensions(Φ x H)	223 x 80 x 85.6mm / 8.78" x 3.15" x 3.37"
Weight	0.410kg / 0.900lbs
Certifications	FCC / CE

6. Appendix

6.1 OSD Menu Structure

The default value is marked with a star “*”.

No.	Main	Sub Menu	Sub Menu / Function	
1	EXPOSURE	BRIGHTNESS	1~20 (default=6)	
		MODE	INDOOR*, OUTDOOR	
		LENS	MANUAL*, DC	
		SHUTTER	AUTO*	
			MANUAL	1/25~1/60000
			FLK	
		DSS	OFF, X2, X3, X4*	
AGC	0~10 (default=10)			
2	COLOR	AWB	AUTO*	
			AUTO extn	
			PRESET	
			MANUAL COLOR TEMP	LOW, MIDDLE, HIGH
			R-GAIN	0~20
			B-GAIN	0~20
		CHROMA	0~20 (default=7)	
		R-OFFSET	0~20 (default=12)	
		B-OFFSET	0~20 (default=5)	
3	IMAGE	SHARPNESS	0~10 (default=6)	
		MIRROR	ON, OFF*	
		FLIP	ON, OFF*	
		D-ZOOM	0~96 (default=0)	
		PRIVACY	OFF*	
			ON ZONE NO	0~31
			ZONE UP	ON, OFF
			X-POS	0~60
			Y-POS	0~40
			X-SIZ	0~60
			Y-SIZ	0~40
			COLOR	
		TRANS	0~4	

		SHADING	ON*, OFF			
		DAY&NIGHT	MODE	AUTO		
				COLOR		
				B&W		
				EXT*		
			AGC THRS	0~20 (default=10)		
			MARGIN	0~20 (default=)		
		DELAY	0, 5*, 10, 30 SEC			
		HLMASK	OFF*			
			ON	LEVEL	0~20 (default=10)	
				COLOR	BLK*/WHT/YEL/CYN/GRN/MAG/RED/BLU	
CTB	ON, OFF*					
GAMMA	0.45*, 0.5, 0.55, 0.65, 0.75					
4	BLC	MODE	OFF*, BLC, WDR			
		BLC OSD	ON, OFF*			
		BLC POS-X	0~20 (default=7)			
		BLC POS-Y	0~20 (default=7)			
		BLC SIZ-X	0~20 (default=5)			
		BLC SIZ-Y	0~20 (default=5)			
5	3D-DNR	HIGH, MIDDLE*, LOW, OFF				
6	MOTION	OFF*				
		ON	RESOLUTION	0~4 (default=1)		
			SENSITIVITY	0~20 (default=10)		
			WINDOW TRANS	0~6 (default=3)		
			WINDOW USE	ON, OFF*		
			X-POS	0~60 (default=4)		
			Y-POS	0~40 (default=6)		
			X-SIZ	0~60 (default=15)		
			Y-SIZ	0~40 (default=20)		
7	SYSTEM	DEFECT DET	DPC LEVEL	000~255 (default=26)		
		CAM TITLE	OFF*			
			ON	STRING SET		
				POSITION		
		RS-485	ID	1~255 (default=1)		
			BAUDRATE	2400, 4800, 9600*, 19200, 38400, 57600, 115200		
			PROTOCOL	PELCO-D, PELCO-P, EVF-1*		
			ID DISPLAY	ON, OFF		

	DOUT SCALE	FULL*, COMP
	DOUT FORMAT	720P, 1080P*
	DOUT FPS	50, 60 ,25*, 30
	FREQ	50*, 60 HZ
	CVBS	PAL*, NTSC
	LANGUAGE	English*, Chinese, Japanese, Korean, French, German, Russian
	RESET	PUSH, PUSHING

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Your EverFocus product is designed and manufactured with high quality materials and components which can be recycled and reused. This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste. Please, dispose of this equipment at your local community waste collection/recycling centre. In the European Union there are separate collection systems for used electrical and electronic product. Please, help us to conserve the environment we live in!

Ihr EverFocus Produkt wurde entwickelt und hergestellt mit qualitativ hochwertigen Materialien und Komponenten, die recycelt und wieder verwendet werden können. Dieses Symbol bedeutet, dass elektrische und elektronische Geräte am Ende ihrer Nutzungsdauer vom Hausmüll getrennt entsorgt werden sollen. Bitte entsorgen Sie dieses Gerät bei Ihrer örtlichen kommunalen Sammelstelle oder im Recycling Centre. Helfen Sie uns bitte, die Umwelt zu erhalten, in der wir leben!



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