EM900F eZ.HD Series

1080p Full High Definition
Micro Mini Metal Camera

User's Manual

EverFocus

Precautions

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 operation only. Use the camera at temperatures within -10°C~50°C (14°F~112°F) and humidity less than 80%; 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.

CE	**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.
RoHS	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!

Contents

1.   Introduction

The EverFocus eZ.HD Series EM900F provides incredible performance in bright light or low light environments and the resolution listed in the specification from the actual camera you install. To take full advantage of the amazing resolution available from this advanced imaging technology, the EM900F uses a fixed focal lens together with 1/2.8" SONY 2.43M pixels CMOS to deliver 1080p high resolution.This camera truly provides HD images without compromising its 1080p video quality, Digital Wide Dynamic Range for clear color images in the most challenging of bright or unbalanced scene lighting conditions. The EM900F supports both NTSC and PAL scanning systems, which can be switched via OSD.

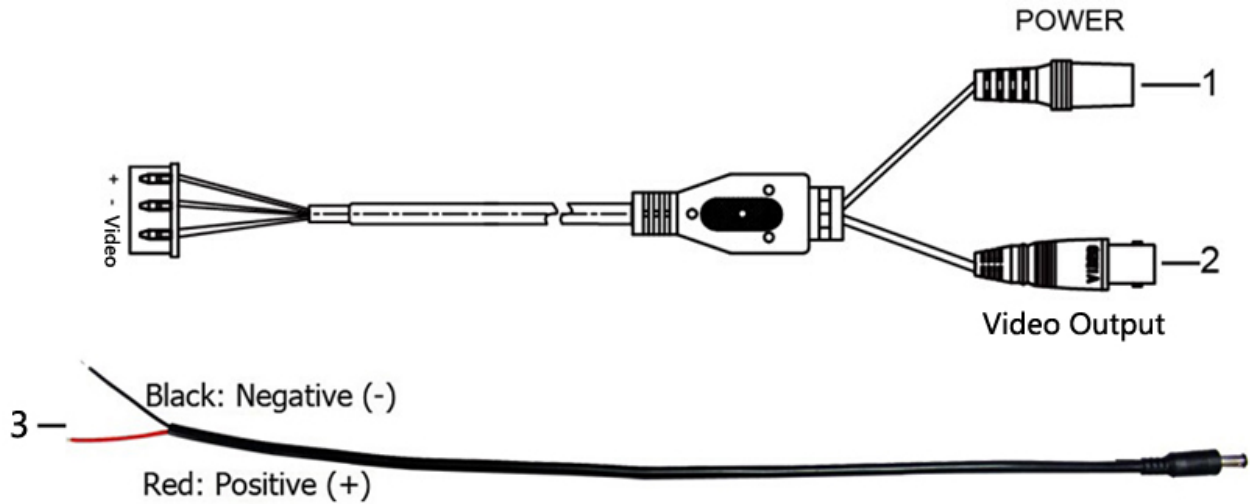| Model	Image Sensor and Lens	Resolution	Housing	Lens Type	Lens size	Environment
EM900FP1	1/2.8" SNOY 2.43M pixels CMOS	1080p	Mini Metal Case	Conical type	3.7mm	Indoor
EM900FP3				Flat face type	3.7mm	
EM900FP4				Supercone type	3.7mm	

1.1 Packing List

- Camera Body x 1
- User Manual x 1
- Warning Paper x 1

- Power Pigtail Cable x 1
- Power / Video Cable x 1

1.2 Features

- 1080p full HD with high flexibility and performance for astounding image
- 1/2.8" Sony 2.43M pixels CMOS sensor, delivering amazing high sensitivity
- Astounding image quality from the 3.7mm conical/3.7mm flat/3.7mm cone lens
- D-WDR to improve the visibility under high contrast scene
- 3D-Noise Reduction ensures less blurry moving subjects, vivid and high SN ratio images even under low light environments
- Supports 1080p, 720p & 960H analog signal output, which can be easily switched using OSD Joystick
- Compact metal case design is suitable for convert place, such as ATM
- eZ.Controller function: Control camera OSD settings and PTZ operation directly from DVR end
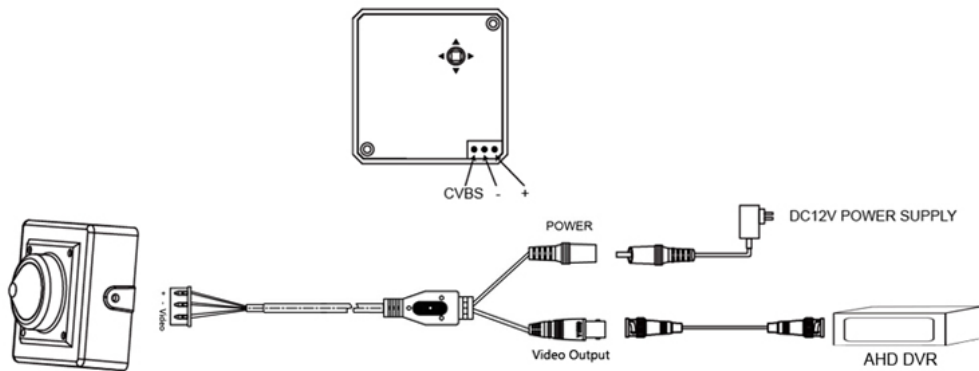
2. Overview

Cable Description:

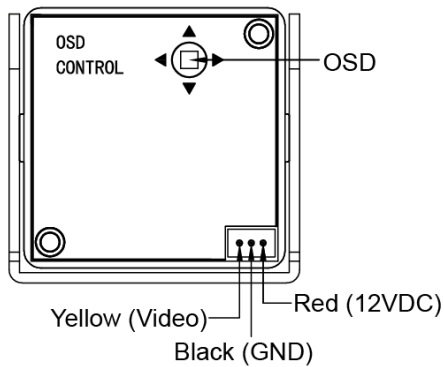| No.	Name	Descriptions
1	**Power Input**	Connect to a 12 VDC
2	**Video Output**	1080p, 720p and 960H output, using a 75 Ohm BNC-type coaxial cable.
3	**DC Power Pigtail Cable**	Optional power pigtail cable. The red wire is positive (+); while the black wire is negative (-).

3.   Installation and Adjustment

1. Connect the camera to a 12 VDC power source by using the supplied **Power / Video Cable**, you can optionally use the supplied **Power Pigtail Cable** or a power adapter. (Refer to the connection diagram as below)

DIY CABLE CONNECTION

2. Take the camera and turn it around, then configure the OSD menu by using the Joystick.

    OSD indication as shown in the figure:

- 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.

Note: The function button is using to control direction, and also to switch video format and video output. Please follow the detailed instruction as below to switch the camera to:

- ✧ Switch between 1080p and 720p (Default, 1080p): Press Upward for 5 Seconds
- ✧ Switch from HD (1080p / 720p) to 960H: Press Left for 5 Seconds
- ✧ Switch from 960H to HD (1080p / 720p): Press Right for 5 Seconds
- ✧ Switch between NTSC and PAL: Press Downward for 5 Seconds

3. Drill three holes on the position where you want to attach the camera. Unscrew the bracket which located at the back of the camera, then screw the bracket to these holes.

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 as below:

No.	Main	Sub Menu	Sub Menu / Function			
1	Lens	DC	Mode	Indoor		
				Outdoor	Min Shu.	NTSC: 1/30
						PAL: 1/25
					Max. Shu.	NTSC: 1/60,FLK,1/240, 1/480,1/1000, 1/2000,1/5000, 1/10000, 1/50000
						PAL: 1/50,FLK,1/200, 1/400,1/1000, 1/2000*,1/5000, 1/10000, 1/50000
			Iris Speed	0 – 15		
		Manual				
2	Exposure	Shutter	NTSC: 1/30, 1/60, FLK, 1/240, 1/480, 1/1000, 1/2000, 1/5000, 1/10000, 1/50000, X2, X4, X6, X8, X10, X15, X20, X25, X30, Auto			
			PAL: 1/25, 1/50, FLK, 1/200, 1/400, 1/1000, 1/2000, 1/5000, 1/10000, 1/50000, X2, X4, X6, X8, X10, X15, X20, X25, X30, Auto			
		AGC	0 – 15			
		Sens-up	Off			
			Auto	Sens-up	X2, X4, X6, X8, X10, X15, X20, X25, X30	
		Brightness	1-100			
		D-WDR	Off			
			On	Level	0-8	
			Auto			
		Defog	Off			
			Auto	Pos/Size	Position, Size, ↑ , ↓ , → , ←	
				Gradation	0-2	
				Default		
3	Backlight	Off				

		BLC	Level	Middle, High, Low			
			Area	Position, Size, ↑ , ↓ , → , ←			
			Default				
		HSBLC	Select	Area1, Area2, Area3, Area4			
			Display	Off			
				On	Position, Size, ↑ , ↓ , → , ←		
			Black Mask	On/Off			
			Level	0-100			
			Model	All Day			
				Night	AGC Level	0-255	
			Default				
4	White Balance	ATW					
		AWC→SET					
		Indoor					
		Outdoor					
		Manual	Blue	1-500			
			Red	0-100			
		AWB					
5	Day & Night	Ext	D→N(Delay)	0-60			
			N→D(Delay)	0-60			
		Auto	D→N(AGC)	1-255			
			D→N(Delay)	0-60			
			N→D(AGC)	1-255			
			N→D(Delay)	0-60			
		Color					
		B/W	Burst	Off/On			
			IR Smart	Off			
				On	Level	0-15	
					Area	Position, Size, ↑ , ↓ , → , ←	
			IR PWM	Off			
				0-100			
6	NR	2DNR	Middle/Low/Off/High				
		3DNR	Middle/Low/Off/High				
7	Special	Cam Title	Off				
			On	0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ▶→ ← ↑ ↓ ()⁻ -_■ /=&:~,.			

		D-effect	Freeze	Off/On		
			Mirror	Off, Mirror, V-flip, Rotate		
			Neg. Image	Off/On		
		Motion	Off			
			On	Select	Area1,Area2,Area3,Area4	
				Display	On	Position, Size, ↑ , ↓ , →, ←
					Off	
				Sensitivity	0-100	
				Color	Green, Blue, White, Red	
				Trans	1.00,0.75,0.50, 0.25	
				Alarm	View Type	Off, Block, Outline, All
					OSD View	On/Off
					Alarm Out	On/Off
					Time	1-15
				Default		
		Privacy	Off			
			On	Select	Area1,Area2,Area3,Area4	
				Display	Off	
					Color	Position, Size, ↑ , ↓ , →, ←
					Mosaic	Position, Size, ↑ , ↓ , →, ←
					Inv	Position, Size, ↑ , ↓ , →, ←
				Color	White, Black, Red, Blue, CYAN, Yellow, Green	
				Trans	1.00,0.75,0.50, 0.25	
				Default		
		Language	ENG/CHN1/CHN2/GER/FRA/ITA/SPA/POL/RUS/POR/NED/TUR			
		Defect	Live DPC	Off		
				On	AGC level	0-255
					Level	0-100
			White DPC	Off		
				On	Pos/Size	Position, Size, ↑ , ↓ , →, ←
					Start	Close the iris then press
					DPC View	Off/On
					Level	0-60

				AGC	0-14
				Sens-up	x2, x4, x6, x8,x10, x15, x20, x25, x30
			Off		
		Black DPC	On	Pos/Siz	Position, Size, ↑ , ↓ , → , ←
				Start	Press Enter
				DPC View	Off/On
				Level	0-255
	RS485	CAM ID	0-255		
		ID Display	Off/On		
		Baud Rate	2400,4800,9600,19200 ,38400		
8	Adjust	Sharpness	Off		
			Auto	Level	0-10
				Start AGC	0-255
				End AGC	0-255
		Monitor	CRT	Blue Gain	0-100
				Red Gain	0-255
			LCD	Gamma	User,0.45,0.50,0.55,0.60,0.65,0.70,0.75,0.80,0.85,0.90,0.95,1.00
				Blue Gain	0-100
				Red Gain	0-100
		LSC	Off/On		
		Video. Out	PAL/NTSC		
9	AF	AF Mode	Semi.		
			Auto		
			Manual		
		One Shot AF			
		TDN AF	On		
			Off		
		Lens Init.			
10	Exit	Save& END /Reset/Not Saved			

5.   Specifications

Part Number	EM900FP1	EM900FP3	EM900FP4
Lens Type	3.7mm Conical	3.7mm Flat	3.7mm cone
Pickup Device	1/2.8″ Sony 2.43M pixels CMOS		
Video Format	NTSC/PAL(can be switched via OSD)		
Effective Pixels	1920(H) x 1080(V)		
Scanning System	Progressive Scan		
Sensitivity	0.2 Lux		
Electronic Shutter	Auto/Manual(x30~1/50,000)/FLK		
Gamma Correction	0.45		
BLC	OFF/BLC/HSBLC Selectable		
AGC	0~15 Levels		
White Balance	ATW/AWC-SET/Indoor/Outdoor/ Manual/AWB		
Sync. Mode	Internal		
Day/Night	Ext, Auto, Color, B/W		
UTC Function	Supported		
OSD Languages	English/Simplified Chinese/Traditional Chinese/German/French/Italian/ Spanish/Polish/Russian/Portuguese/Netherlands/Turkish		
DNR	2DNR/3DNR,Off		
Defog	Off/Auto		
D-WDR	On/Off/Auto		
Sens-up	Off/Auto(x2~x30)		
Mirror	Off/Mirror/V-Flip/Rotate		
Motion Detection	Off/On for 4 selectable zones		
Privacy Mask	Off/On for 4 selectable zones		
Power Source	12VDC		
Power Consumption	1.08W max.		
Operating Temperature	-10℃ ~50℃ / 14℉~122℉		
Humidity	Less than 80%		
Dimensions	30x18mm/1.18″x0.71″		30x19mm/1.18″x0.74″
Weight	60g/0.132lbs		
Certifications	CE/FCC/RoHS		

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

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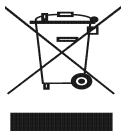www.everfocus.com.tw
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