

# EBD935F eZ.HD Series

## 1080p Full High Definition

### True Day/Night Outdoor IR Ball Camera

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*User's Manual*



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## 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  $-10^{\circ}\text{C}\sim 50^{\circ}\text{C}$  ( $14^{\circ}\text{F}\sim 122^{\circ}\text{F}$ ) 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.



**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 EverFocus eZ.HD Series EBD935F ball camera is equipped with a 1/2.9" SONY 2.24M pixels CMOS sensor and providing resolution of 1080p. Featured with the Digital Wide Dynamic Range (D-WDR) function, the camera can provide clear images even under back light circumstances where intensity of illumination can vary excessively.

The EBD935F comes with 36 IR LEDs, supporting up to 30m (~100ft.) IR distance in night vision. The camera can work in both indoor and outdoor environments. The IP66-rating and vandal proof housing make it suitable for outdoor use. The EBD935F supports both NTSC and PAL scanning systems, which can be switched via OSD.

### 1.1 Packing List

- Camera Body x 1
- User Manual x 1
- DC Power Pigtail Cable x 1
- Zoom / Focus Screw x 1
- Rubber Plug x 2
- Warning Paper x 1
- Mounting Screw x 4
- Plastic Anchor x 4
- Hexagon Wrench x 1
- Set Screw x 3
- Template Plate x 1

### 1.2 Features

- 1080p full HD with high flexibility and performance for astounding image
- 1/2.9" Sony 2.24M pixels CMOS sensor, delivering amazing high sensitivity
- Vari-focal 2.8~12mm DC Iris lens to captures the desired field of view
- Extended IR range of up to 30M/100ft. with 36 LEDs (depending on scene IR reflectivity)
- 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
- The flexible angle viewing with its 3 Axis rotation design allows wall or ceiling mounting
- Special design, easy installation and operation
- eZ.Controller function: Control camera OSD settings and PTZ operation directly from DVR end

## 2. Cable Description

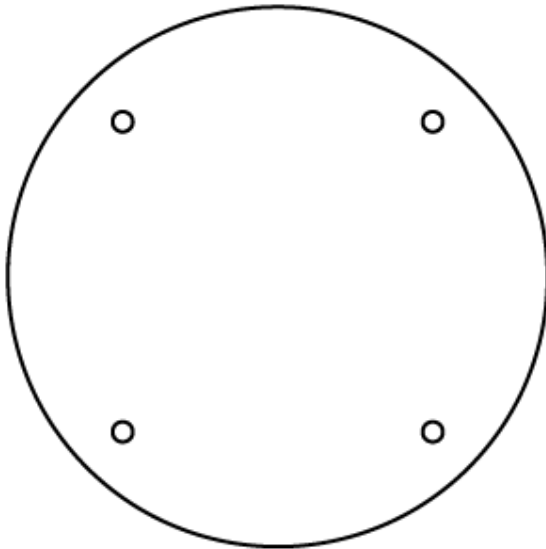


No.	Name	Descriptions
1	<b>Power Cable</b>	Connects to a 12VDC power source.
2	<b>Video Output</b>	1080p, 720p and 960H output, using a 75 Ohm BNC-type coaxial cable.
3	<b>DC Power Pigtail Cable</b>	Optional power pigtail cable. The red wire is positive (+); while the black wire is negative (-).

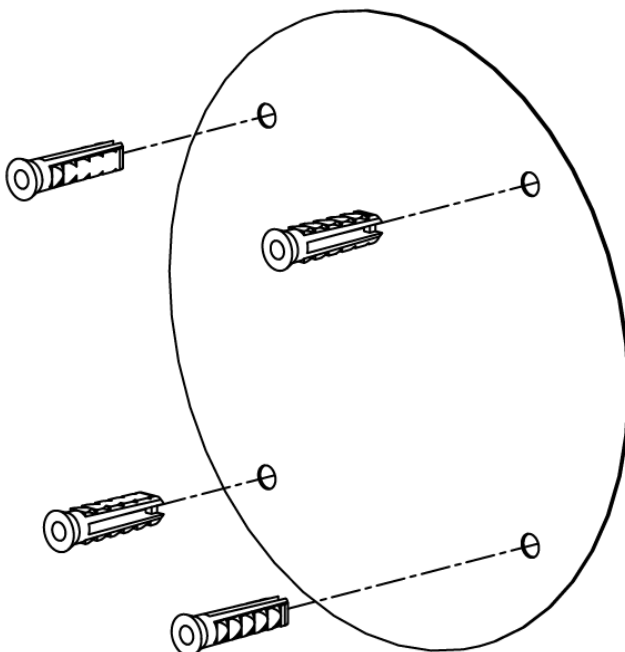
### 3. Installation

#### 3.1 Installation and Adjustment

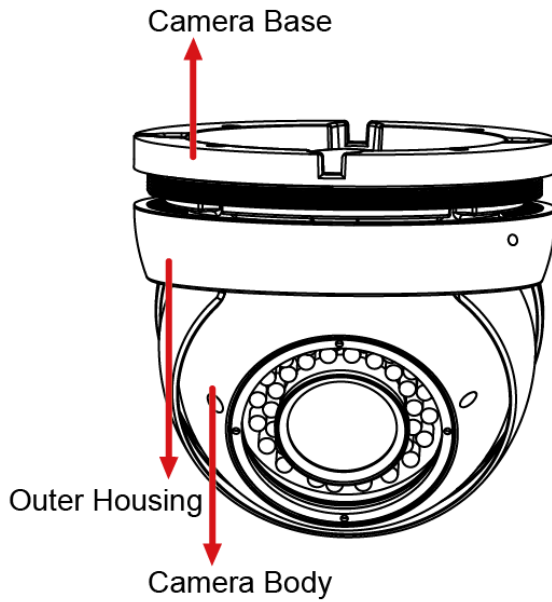
1. For Ceiling Mount / Wall Mount users: Stick the **Template Plate** on the position where you want to attach the camera.



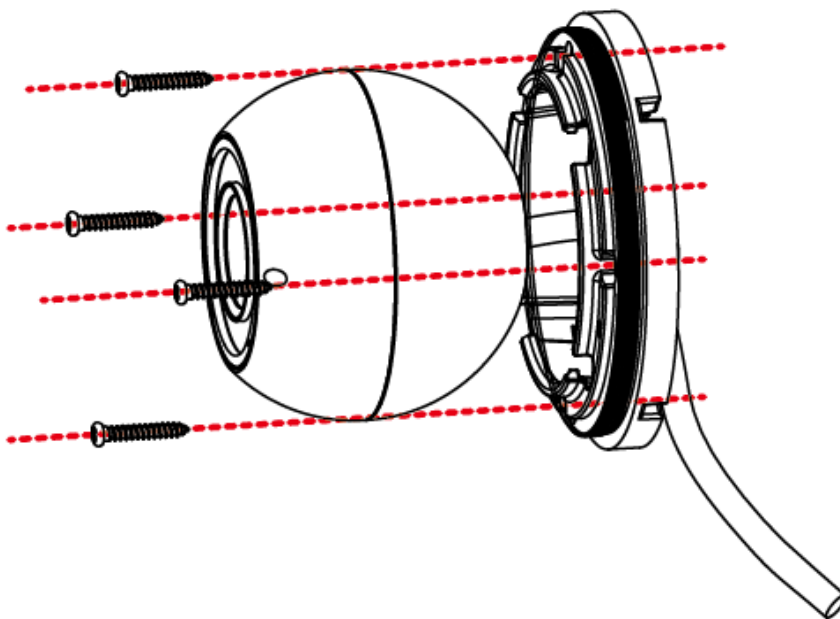
2. Drill four holes according to the supplied **Template Plate**, and insert the supplied **Plastic Anchors** into the holes.  
If you wish to run the wires through the wall / ceiling, drill an additional hole in the middle of **Template Plate**.



3. Unscrew the outer housing by twisting it counterclockwise and then remove the outer housing from the camera base.

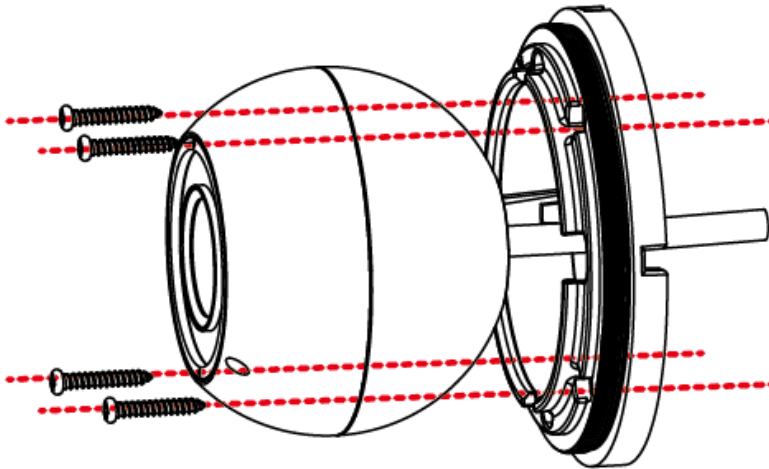


4. Screw the base plate to the wall or ceiling with supplied four **Screws** and **Hexagon Wrench**.
  - a. If you want to wire the cables from the side cut of the camera base, attach the camera body to the base plate and run the cables through the camera base first, then screw the camera base to the ceiling / wall.

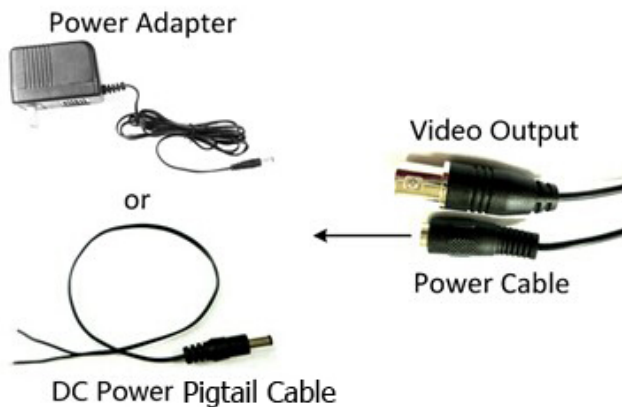




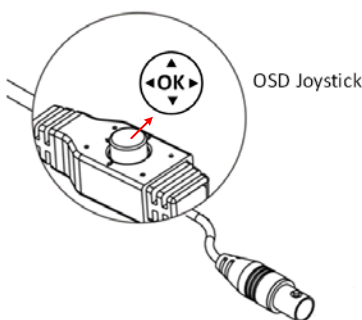
- b. If you want to wire the cables through the wall, attach and screw the camera base to the ceiling / wall. Then attach the camera body to the base plate.



5. Connect the camera to the 12V DC power source using the supplied **DC Power Pigtail Cable** or power adapter.



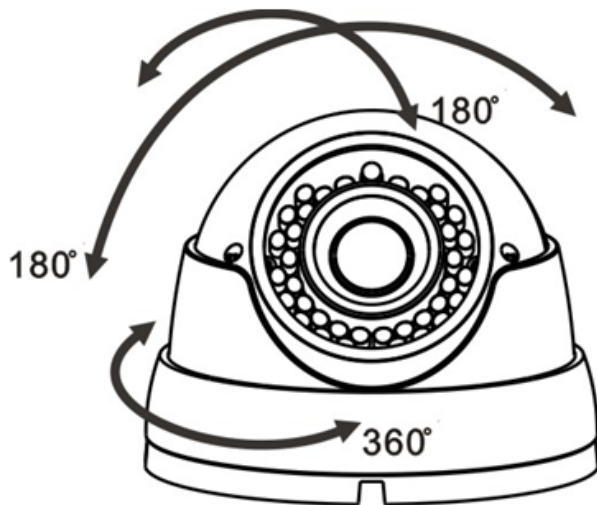
6. Connect the camera to an AHD DVR using the video output cable for viewing the video image while adjusting camera angles. To configure camera settings using the OSD Menu Joystick.



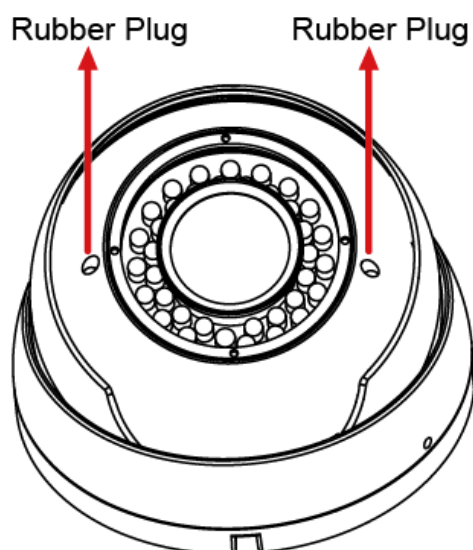
- Push the Joystick up / down to select among menu items.
- Push the Joystick left / right to adjust the level of the selected item.
- Press the Joystick to enter the submenu or exit the OSD Setup Menu.

**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:**

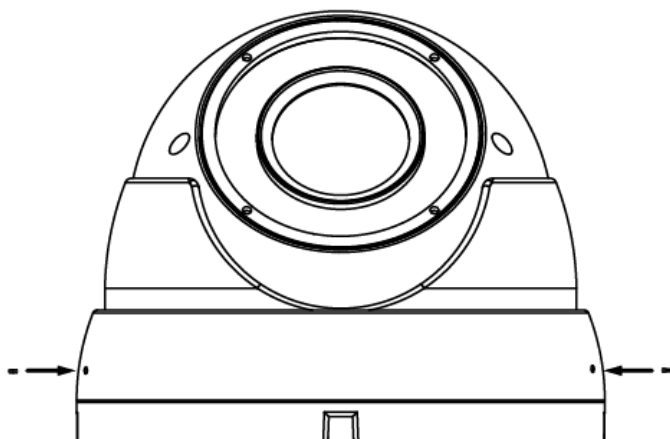
- ✧ Switch between 1080p and 720p (Default, 1080p): Press Upward for 5 Seconds
  - ✧ Switch from HD (1080p / 720p) to 960H: Press Left for 5 Seconds
  - ✧ Switch from 960H to HD (1080p / 720p): Press Right for 5 Seconds
  - ✧ Switch between NTSC and PAL: Press Downward for 5 Seconds
7. Screw back the outer housing and adjust the camera angle simultaneously.



8. Adjust the Zoom / Focus using the Zoom / Focus screws, then secure it with supplied two **Rubber Plugs**.



9. Screw the two set screws by using the supplied **Hexagon Wrench**.



## 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	0123456789ABCDEFGHIJKLMN OPQRSTUVWXYZ▶→ ← ↑ ↓ () ^ _ █ /=&:~.,			
		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			
				Black DPC	On	Off	
						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

<b>P/N</b>	EBD935F
<b>Pickup Device</b>	1/2.9" SONY 2.24M pixels CMOS
<b>Video Format</b>	NTSC and PAL( can be switched via OSD)
<b>Picture Elements</b>	1920 (H)*1080 (V)
<b>Scanning System</b>	Progressive Scan
<b>Sensitivity</b>	0 lux with IR on
<b>S/N Ratio</b>	Over 48dB (AGC off)
<b>Electronic Shutter</b>	AUTO, Manual (X30~1/ 50000), FLK
<b>Gamma Correction</b>	0.45
<b>Lens Type</b>	DC Iris 2.8-12mm, F1.4
<b>BLC</b>	OFF/HSBLC/BLC Selectable
<b>AGC</b>	0~15 Levels
<b>White Balance</b>	ATW/AWC-SET/INDOOR/OUTDOOR/MANUAL/AWB
<b>Sync Mode</b>	Internal
<b>Day/Night</b>	Ext, Auto, Color, B/W
<b>UTC Function</b>	Supported
<b>IR LED /Distance</b>	36 Units. Up to 30m/100ft. (depending on scene IR reflectivity)
<b>OSD Languages</b>	12-Language
<b>DNR</b>	2DNR/3DNR, Off
<b>DEFOG</b>	Off/Auto
<b>D-WDR</b>	On/Off/Auto
<b>Sens-up</b>	Off/On(x30~x2)
<b>Mirror</b>	Off, Mirror, V-flip, Rotate
<b>Motion Detection</b>	Off/On for 4 selectable zones
<b>Privacy Mask</b>	Off/On for 4 selectable zones
<b>Environment</b>	IP66 Weather Resistant
<b>Power Source</b>	12VDC
<b>Power Consumption</b>	3.5w max.
<b>Operating Temperature</b>	-10°C~50°C / 14°F~122°F
<b>Humidity</b>	Less than 80%
<b>Dimensions</b>	120 x 95mm/ 4.72" x 3.74"
<b>Weight</b>	740g / 1.63lbs.
<b>Certifications</b>	CE / FCC / RoHs

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



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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!