FCB-4K Series

FCB-ES8230 *With ND filter NEW

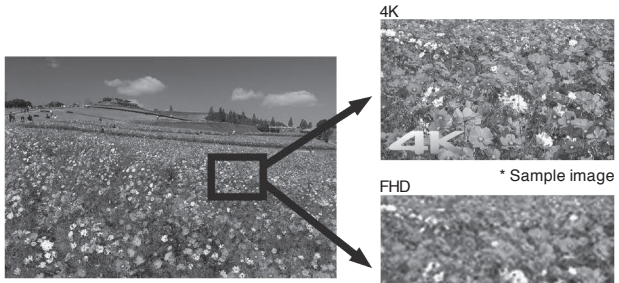
Exmor R 4K

Outline

A new 4K camera block series featuring Sony's most advanced Exmor R™ CMOS sensor.
FCB-ES8230 has a 1.0-type sensor with a large light receiving area that can produce clear, noiseless, high-definition images and incorporates mechanical optical stabilization.

Features

■ 4K
Delivers 4 times higher resolution than Full HD (1080p). Realize a high-definition (fine) image quality that allows users to see the details of images even when viewed on a large screen and realistically reproduces textures that could not be expressed with Full HD.

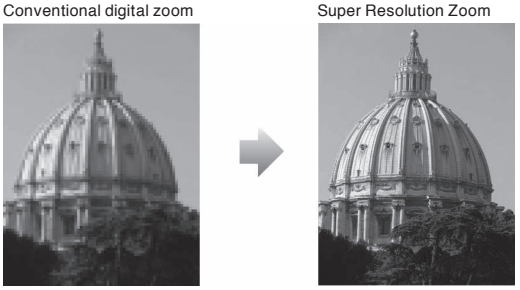


* Sample image
* Sample image
* Sample image

■ Optical Zoom 18x

■ Various video outputs from 4K to SD

■ **Super Resolution Zoom**
Delivers excellent images while maintaining the resolution without reducing image quality when the image is expanded due to the Sony unique “Full pixel super-resolution imaging technology”.



* Sample image
* Sample image

■ **Visibility Enhancer (VE)**
Depending on the imaging scene, the Visibility Enhancer function makes the darker part of a camera image brighter, and automatically correct brightness and contrast to show bright parts clearly.

* Sample image
* Sample image

■ **Defog (low/mid/high)**
When the surrounding area of the subject is foggy and low contrast, the defog mode will reduce the effects of the fog and make the sub-ject appear clearer. You can select from four levels: OFF, Low, Middle and High. The effect level can be automatically adjusted according to the fog density.

* Sample image
* Sample image

■ **Noise Reduction (NR)**
The NR function removes noise (both random and nonrandom) to provide clearer images.

■ **Privacy Zone masking**
Privacy Zone masking protects private objects and areas such as house windows, entrances, and exits which are within the camera’s range of vision but not subject to surveillance. Privacy zone masking can be masked on the monitor to protect privacy.
- Mask can be displayed on 8 places per screen simultaneously.
- Individual on/off zone masking settings.

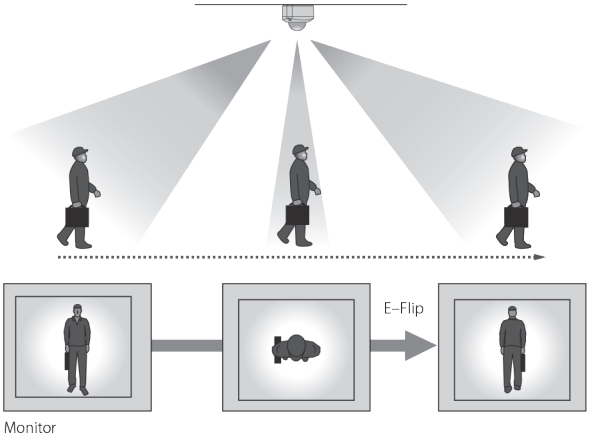
■ **Image Stabilizer *Optical**
Switching on the Image Stabilizer function reduces image blurring caused by, for example, vibration, which allows you to obtain images without much blurring. A correction effect is possible for a vibration frequency of around 10 Hz.
Optical image stabilization helps maintain original resolution to reduce image degradation and capture high-quality images.

■ **StableZoom™**

StableZoom is a function that performs corrections in accordance with the zoom magnification by using the image stabilizer function, and zooms in an image by combining the optical zoom and electronic zoom.

■ **Picture Effect**

- E-FLIP
  This function reverses the video output from the camera vertically and horizontally.



- Freeze
  This function captures an image in the field memory of the camera so that this image can be output continuously.
- Black & White: Monochrome Image

■ **Auto ICR**

Auto ICR Mode automatically switches the settings needed for attaching or removing the IR Cut Filter. With a set level of darkness, the IR Cut Filter is automatically disabled (ICR On), and the infrared sensitivity is increased. With a set level of brightness, the IR Cut Filter is automatically enabled (ICR Off).

■ **Slow AE Response**

The slow AE Response function allows you to reduce the exposure response speed. Usually the camera is set up so that the optimum exposure can be obtained automatically within about 1 second.

■ **White Balance**

Various modes

- Auto
  This mode computes the white balance value output using color information from the entire screen.
- ATW
  Auto Tracing White balance
- Indoor
- Outdoor
- Outdoor Auto
  This is an auto white balance mode specifically for outdoors.
- One Push WB
  The One Push White Balance mode is a fixed white balance mode that may be automatically readjusted only at the request of the user (One Push Trigger), assuming that a white subject, in correct lighting conditions, and occupying more than 1/2 of the image, is submitted to the camera.
- Manual WB
- Sodium Vapor Lamp Auto
- Sodium Vapor Lamp (Fix)
- Sodium Vapor Lamp Outdoor Auto

■ **Focus**

- Auto Focus Mode
  The Auto Focus (AF) function automatically adjusts the focus position to maximize the high frequency content of the picture in a center measurement area, taking into consideration the high luminance and strong contrast components.
- Manual Focus Mode
  Manual Focus has both a Standard Mode and a Variable Mode. Standard Mode focuses at a fixed rate of speed. Variable Mode has eight speed levels.
- One Push Trigger Mode
  When a Trigger Command is sent, the lens moves to adjust the focus for the subject.
- Near Limit
  Can be set in a range from 1000 (∞) to F000 (10 mm).
- Spot Focus

■ Temperature Readout

The camera unit's internal temperature can be read from temperature sensor in stabled in the circuit board. Use it as a reference value.

■ Custom Preset

The camera shooting conditions can be stored and recalled. The settings are recalled when the power is turned on.

■ Memory (Position preset)

Using the position preset function, 16 sets of camera shooting conditions can be stored and recalled. This function allows you to achieve the desired status instantly, even without adjusting the various items each time.

■ Title Display

- You can set a title of up to 11 lines. One line can contain up to 20 characters.
- You can set display on/off, the horizontal position of the first character, blinking state and color for each line.

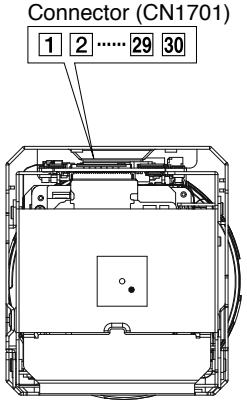
■ ND Filter Mode

A combination of 2 optical neutral density filters can be engaged or disengaged in front of the image sensor to improve the effective range of the Iris and shutter speed, resulting in 1x (filter Off), 1/4x, 1/16x, or 1/64x.

Pin Assignment (CN1701)

Pin No.	I/O	Name	Level
1	—	GND	
2	O	TMDS Clock —	
3	O	TMDS Clock +	
4	—	GND	
5	O	TMDS Data 0 —	
6	O	TMDS Data 0 +	
7	—	GND	
8	O	TMDS Data 1 —	
9	O	TMDS Data 1 +	
10	—	GND	
11	O	TMDS Data 2 —	
12	O	TMDS Data 2 +	
13	—	GND	
14	—	NC	Don't use
15	—	NC	Don't use
16	—	NC	Don't use
17	I	Hot Plug Detect	TMDS Out : 5V DC TMDS Stop : Open or GND
18	O	+ 5V Power	
19	—	USB_VBUS	USB communication active:5 V DC USB communication InActive : Open or GND
20	O	GND	
21	I/O	USB_D —	
22	I/O	USB_D +	
23	—	GND	
24	I	VISCA_RxD	CMOS 3.1V (High : Min 2.3 [V], Low : Max 1.0 [V])
25	O	VISCA_TxD	CMOS 3.1V (High : Min 2.7 [V], Low : Max 0.4 [V])
26	I	RESET	Reset operation : Low (GND) Reset cancel : Open (High Impedance)
27	I	DC IN	6 to 12 V DC
28	I	DC IN	6 to 12 V DC
29	I	DC IN	6 to 12 V DC
30	I	DC IN	6 to 12 V DC

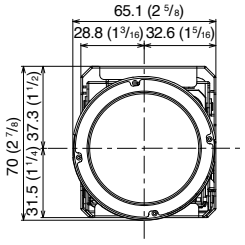
Connector (CN1701)



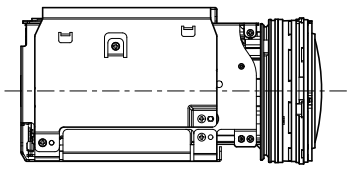
* It is assumed that Pin No. 18 is used as the 5 V power supply of HDMI.
* When you use the USB communication, connect VBUS of the USB host to Pin No. 19. If you cannot prepare VBUS, connect Pin No. 18 to Pin No. 19.

Dimensions

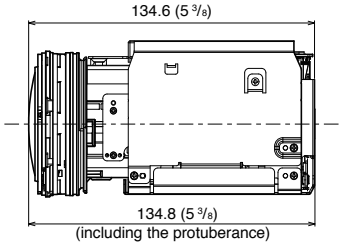
Front



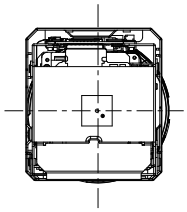
Right side



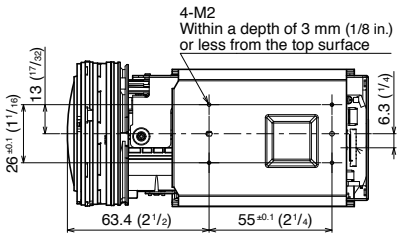
Left Side



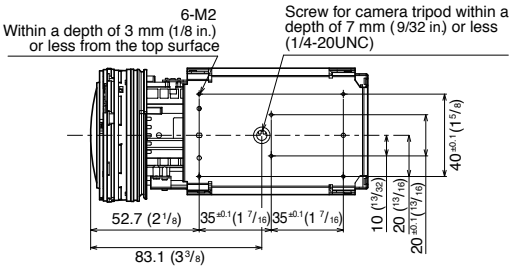
Rear



Top



Bottom



Unit: mm (inches)

Specifications

	FCB-ES8230
Basic specifications	
Image Sensor (Number of effective pixels)	1.0-type Exmor R CMOS Sensor (8510K pixels)
Output Pixels (H × V)	3840x2160 (QFHD), 1920x1080 (Full HD), 1280x720 (HD), 720x480/576 (SD)
Signal System	2160p/29.97, 2160p/25, 2160p/23.98, 1080p/59.94, 1080p/50, 1080p/29.97, 1080p/25, 1080p/23.98, 1080i/59.94, 1080i/50, 720p/59.94, 720p/50, 480p/59.94, 576p/50
Minimum Illumination (50%, High Sensitivity Mode)	0.5 lx (Shutter Speed (1/30 s) 0.067 lx (Shutter Speed : 1/4 s or 1/3 s)
Recommended Illumination	100 lx to 100,000 lx
SNR	50 dB
Gain	Auto / Manual (0 dB to 48.0 dB), 0 to 16 steps
Shutter Speed	1 / 1 to 1 / 10000 s, 22 steps
Sync System	Internal
Exposure Control	0 dB to ± 10.5 dB, 15 steps
Backlight Compensation	Yes
Gamma	Standard / Straight gamma
Aperture Control	16 steps
White Balance	Auto, ATW, Indoor, Outdoor, One Push WB, Manual WB, Outdoor Auto, Sodium Vapor Lamp (Fix/Auto/Outdoor Auto)
AE (Auto exposure mode)	Full Auto, Manual, Priority mode (shutter/iris), Bright, EV Compensation
Lens	12x optical zoom, f= 9.3 mm to 111.6 mm, F2.8 to F4.5
Zoom mode	Standard Mode / Variable Mode / Direct Mode
Super Resolution Zoom	QFHD: 1.5x (max. 18x with optical zoom) Full HD/HD: 2.0x (max. 24x with optical zoom)
Digital Zoom	12x (max. 144x with optical zoom)
Zoom movement speed	
Optical wide to Optical tele	2.6 s (Focus Tracking On)
Optical wide to Super resolution zoom tele	2.9 s
Optical wide to Digital 12x tele	4.6 s
Focusing System	Auto Focus (Normal AF, Interval AF, Zoom Trigger AF [Sensitivity:normal, low]), Manual (Standard, Variable, Direct), One Push Trigger, Near Limit, Spot Focus, IR Correction
Focus movement speed	∞ to Near:0.34 s
Horizontal viewing angle (1080p/1080i mode) (wide) to (tele)	Approx. 64.6° to 6.1° (Image stabilizer OFF) Approx. 64.5° to 6.1° (Image stabilizer ON)
Minimum Object Distance	80 mm to 1000 mm
Camera Features	
Auto ICR	Yes
Wide-D	—
(Auto mode)	—
Visibility Enhancer (VE)	Yes
Defog	Yes (low/mid/high)
Noise Reduction	Yes (3D+2D / Independent setting (3D, 2D))
Image Stabilization	Yes
StableZoom™ (Magnification) *1	Yes
Digital Output	Yes
Spherical Privacy Zone Masking	Yes
Motion Detection	—
Alarm	Yes
Slow AE Response	Yes
Picture Effects	Black & White (Monochrome Image)
Picture Freeze	Yes
Electronic-Flip (E-Flip)	Yes
Mirror image	Yes
Slow Shutter	Yes
Temperature Readout	Yes
Title Display	Yes
Date/Time Display	—
Camera Mode Display	Yes (English)
Key Switch Control	—
Camera Operation Switch	—
Interface	
Video Output (QFHD, FHD, HD)	Digital: Y/Cb/Cr 4:2:2 8 bits component, R/G/B 4:4:4 8 bits component, Comparable to CEA-861-F *2
Camera Control Interface	VISCA protocol (CMOS 3.1V) PTP USB 9.6 kbps, 19.2 kbps, 38.4 kbps, 115.2 kbps, Stop bit:1 bit
General	
Power Requirements	6.0 V to 12.0 V DC
Power Consumption	4.0 W (When the motor operates:5.2 W)
Operating Temperature	-5 °C to +60 °C (23 °F to 140 °F)
Storage Temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Operating Humidity	20% to 80% Absolute humidity: 36 g/m^3
Storage Humidity	20% to 95% Absolute humidity: 36 g/m^3
Dimensions (W x H x D)	65.1 × 70.0 × 134.8 mm (2 5/8 × 2 7/8 × 5 3/8 inches)
Mass	Approx.520 g (18.3 oz.)

*1: StableZoom increases the magnification by combining optical zoom and digital zoom.
*2: For supported video formats, refer to Signal System.