SONY

FCB-4K Series

Colour Block Camera

FCB-ES8230

FCB-ER8550, FCB-ER8530

Features

4K CMOS sensor for crisp image quality

External synchronization function (FCB-ER8550)
This function synchronizes video signals from multiple video cameras to prevent image distortion that may occur when switching camera images.

Super Resolution Zoom
- FCB-ER8550/ER8530 has 30x zoom, which is achieved in conjunction with optical 20x zoom.
- Our unique "By Pixel Super Resolution technology" prevents image degradation when an image is enlarged, providing excellent images at their original resolution.

Various video outputs from 4K to SD

Optical image stabilizer (FCB-ES8230)
This function stabilizes the lens to reduce image degradation and capture high-quality images.

Other Features
- Auto ICR
- Noise Reduction (NR)
- Defog (low/mid/high)
- Visibility Enhancer (VE)
- Privacy Zone Masking
- Slow AE Response

Exmor R 4K

FCB-ER8550 (with external synchronisation)
FCB-ER8530
- 1/2.5-type Exmor R CMOS sensor
- Quad Full HD
- Optical Zoom 20x
  (Super Resolution Zoom 30x)

FCB-ES8230 (with ND filter)
- 1.0-type Exmor R CMOS sensor
- Quad Full HD
- Optical Zoom 12x
  (Super Resolution Zoom 18x)

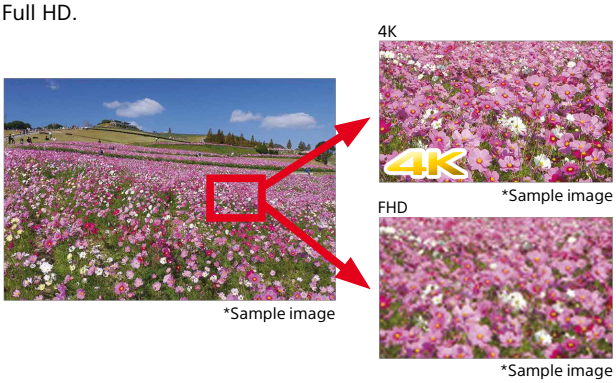
A new 4K camera block series featuring Sony's most advanced Exmor R™ CMOS sensor.

FCB-ER8550/ER8530 is similar in size as the FCB-EV series, full HD models with 30x optical zoom, making them easily interchangeable with each other.
FCB-ER8550 has an external synchronization function that allows synchronized image capturing by multiple cameras. 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

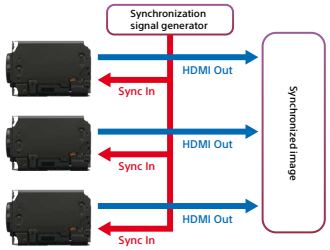
Delivers 4 times higher resolution than Full HD (1080p).
Realize a high-definition (fine) image quality that allows users to see the details of images even when viewed on a large screen and realistically reproduces textures that could not be expressed with Full HD.



External Synchronization (FCB-ER8550 only)

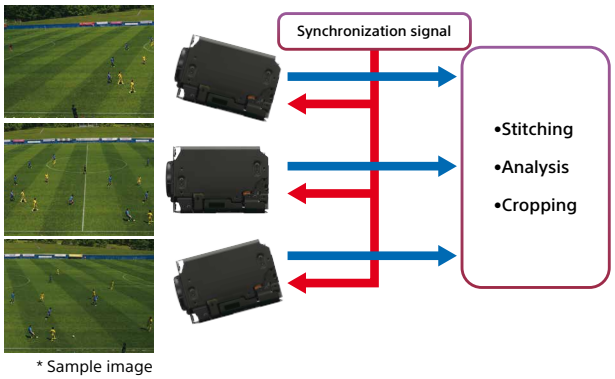
Prevents screen distortion when the camera image switches by synchronizing the timing of image signals including those of multiple video cameras. Also, prevents image distortion by synchronizing the timing of the image signal with other devices including LED lights.

Multiple camera configuration (example)



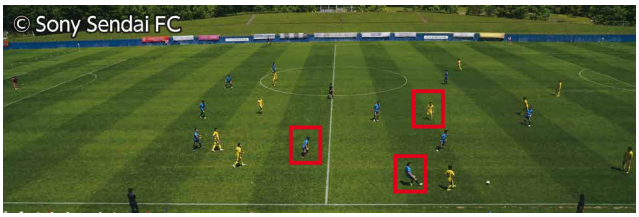
[Application] Example of sporting event analysis

Images captured by multiple cameras are stitched together to create an image of the overall stadium.
This configuration is optimal for tracking and taking statistics of athletes or analyzing events on the field of play.
External synchronization can prevent noise that may occur when cameras are switched to follow an object (athletes, balls, etc.)



* Sample image

Sporting event analysis



* Sample image

* The parts in red frames are not displayed on the actual screen.

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”.

Conventional digital zoom

*Sample image

Super Resolution Zoom

*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.

OFF

*Sample image

ON

*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 subject 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.

OFF

*Sample image

ON

*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

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.
• Electronic image stabilization: FCB-ER8550/ER8530
• Optical image stabilization: FCB-ES8230
Optical image stabilization helps maintain original resolution to reduce image degradation and capture high-quality images.

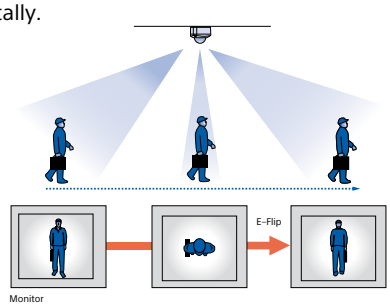
StableZoom™

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 Efect

• 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 colour 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 maximise 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 colour for each line.

ND Filter Mode (FCB-ES8230 only)

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.

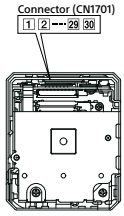
Pin assignment & connector

CN701

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	O	XSDO_ACC_LED	Only FCB-ER8550
15	I	EXT_SYNC	Only FCB-ER8550
16	O	EXT_SYNC_LOCK	Only FCB-ER8550
17	I	Hot Plug Detect	TMDS Out : 5V DC TMDS Stop : Open or GND
18	O	+ 5V Power	
19	I	USB_VBUS	USB communication active:5 V DC USB communication inactive: Open or GND
20	—	GND	
21	I/O	USB_D —	
22	I/O	USB_D +	
23	—	GND	

Pin No.	I/O	Name	Level
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)

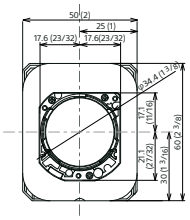


* It is assumed that Pin No. 18 is used as the 5 V power supply of HDMI.
* When you use the USB communication, connect VBUS of the USB host to Pin No. 19.
If you cannot prepare VBUS, connect Pin No. 18 to Pin No. 19.

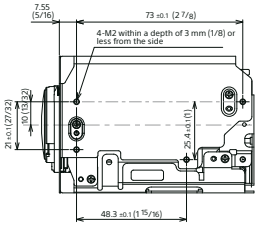
Dimensions

FCB-ER8550/ER8530

Front

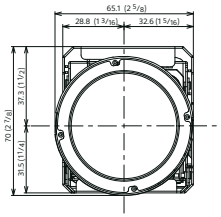


Left side

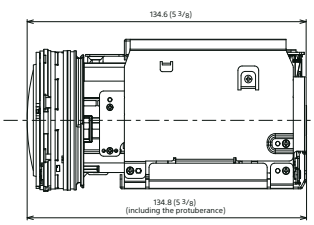


FCB-ES8230

Front



Left side



Units: mm (inches)

Specifications

Basic Specifications		FCB-ER8550 With external synchronization	FCB-ER8530	FCB-ES8230
Image Sensor (Number of effective pixels)		1/2.5-type Exmor R CMOS Sensor (8.51M pixels)		1.0-type Exmor R CMOS Sensor (20.4M 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)		0.4 lx (Shutter Speed:1/30 s) 0.06 lx (Shutter Speed:1/4 s or 1/3 s)		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 / External	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 (wide to tele)		20x optical zoom, f = 4.4 mm to 88.4 mm, F2.0 to F3.8		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. 30x with optical zoom) Full HD/HD: 2.0x (max. 40x with optical zoom)		QFHD: 1.5x (max. 18x with optical zoom) Full HD/HD: 2.0x (max. 24x with optical zoom)
Digital Zoom		12x (240x with optical zoom)		12x (144x with optical zoom)
Zoom Movement Speed	Optical wide to Optical tele	3.0 s (Focus Tracking ON)		2.6 s (Focus Tracking On)
	Optical wide to Super resolution zoom tele	3.4 s		2.9 s
	Optical wide to Digital zoom tele	5.0 s		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 time		∞ to Near: 0.1 s		∞ to Near: 0.34 s
Horizontal Viewing Angle	(QFHD/Full HD/HD) (wide end to tele end)	Approx. 70.2° to 4.1° (Image stabilizer OFF) Approx. 60.0° to 3.5° (Image stabilizer ON)		Approx. 64.6° to 6.1° (Image stabilizer OFF) Approx. 64.5° to 6.1° (Image stabilizer ON)
Minimum Object Distance (wide end to tele end)		80 mm to 800 mm		80 mm to 1000 mm
Camera Features				
Auto ICR		Yes		
Wide Dynamic Range (Wide-D) (Auto mode)		–		
Visibility Enhancer		Yes		
Defog		Yes (low / mid / high)		
Noise Reduction		Yes (3D+2D / Independent setting (3D, 2D))		
Image Stabilization		Yes		
StableZoom *1		Yes		
Digital Output		Yes		
Spherical Privacy Zone Masking		Yes		
Motion Detection		–		
Alarm (Auto ICR)		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/Full HD/SD)		Digital Y/Cb/Cr 4:2:2 8 bits component, R/G/B 4:4:4 8bits component, similar to CEA-861-F HDMI1.4b *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		3.0 W (When the motor operates:4.0 W)		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)		50.0 × 60.0 × 93.3 mm (2 × 2 3/8 × 3 3/4 in.)		65.1 × 70.0 × 134.8 mm (2 5/8 × 2 7/8 × 5 3/8 in.)
Mass		Approx. 275 g (10 oz.)		Approx. 520 g (18.3 oz.)

*1 StableZoom: Stable zoom incases the magnifi cation is that combined optical zoom and digital zoom.
*2 For supported video formats, refer to Signal System.

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