

SONY

COLOR CAMERA BLOCK FCB-4K Series

Exmor R 4K

A new 4K camera block series featuring Sony's most advanced Exmor R™ CMOS sensor. FCB-7R8550/7R8530 is similar in size as the FCB-7V series, full HD models with 30x optical zoom, making them easily interchangeable with each other. FCB-7R8550 has an external synchronization function that allows synchronized image capturing by multiple cameras. FCB-7S8230 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.



Dimensions : 50.0 (W) × 60.0 (H) × 93.3 (D) mm

1/2.5-type Exmor R CMOS sensor
Quad Full HD
Optical Zoom 20x (Super Resolution Zoom 30x)

FCB-CR8550 * With external synchronization
FCB-CR8530



Dimensions : 65.1 (W) × 70.0 (H) × 134.8 (D) mm

1.0-type Exmor R CMOS sensor
Quad Full HD
Optical Zoom 12x (Super Resolution Zoom 18x)

FCB-CS8230 * With ND filter

4K CMOS sensor for crisp image quality

Various video outputs from 4K to SD

External synchronization function (FCB-ER8550)

Optical image stabilizer (FCB-7S8230)

- This function synchronizes video signals from multiple video cameras to prevent image distortion that may occur when switching camera images.

- This function stabilizes the lens to reduce image degradation and capture high-quality images.

Super Resolution Zoom

Other Functions

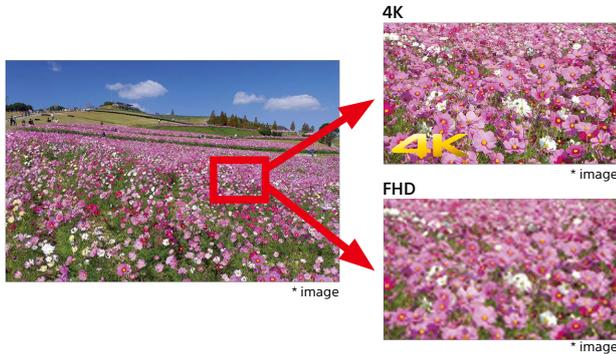
- FCB-CR8550/CR8530 has 30x zoom, which is achieved in conjunction with optical 20x zoom.
- Our unique "By Pixel Super Resolution technology" prevents image degradation when an image is enlarged, providing excellent images at their original resolution.

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

Features

4K

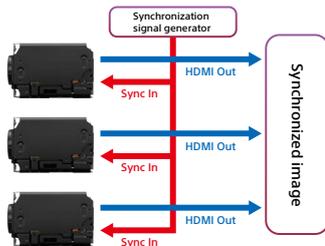
Delivers 4 times higher resolution than Full HD (1080p). Realize a high-definition (fine) image quality that allows users to see the details of images even when viewed on a large screen and realistically reproduces textures that could not be expressed with Full HD.



External Synchronization *FCB-7R8550 only

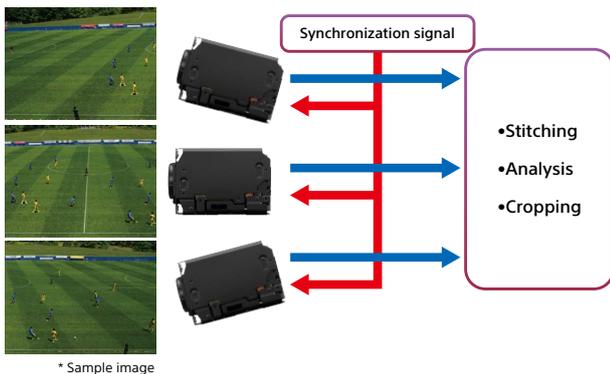
Prevents screen distortion when the camera image switches by synchronizing the timing of image signals including those of multiple video cameras. Also, prevents image distortion by synchronizing the timing of the image signal with other devices including LED lights.

Multiple camera configuration (example)

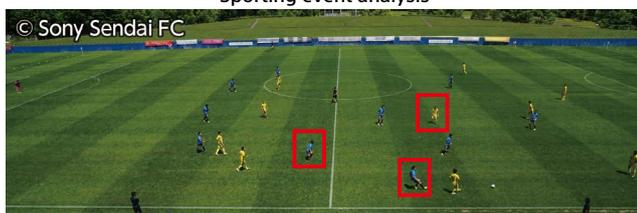


[Application] Example of sporting event analysis

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.)



Sporting event analysis

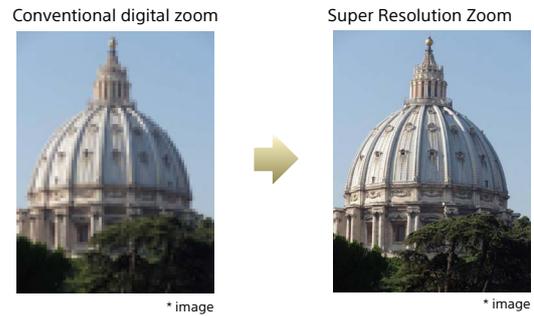


* Sample image

* 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".



Visibility Enhancer (VE)

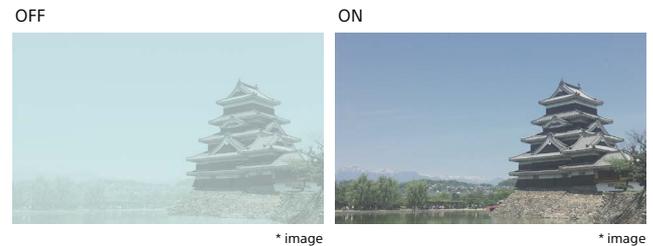
Depending on the imaging scene, the Visibility Enhancer function makes the darker part of a camera image brighter, and automatically corrects brightness and contrast to show bright parts clearly.



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.



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-7R8550/7R8530
 - Optical image stabilization: FCB-7S8230
- Optical image stabilization helps maintain original resolution to reduce image degradation and capture high-quality images.

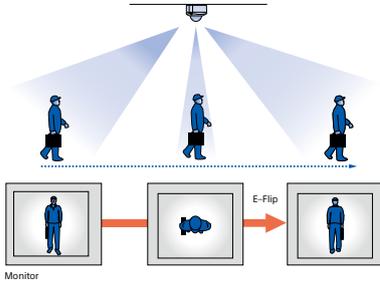
StableZoom™

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 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 color for each line.

ND Filter Mode

*FCB-7S8230 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.

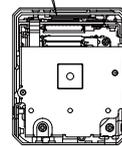
Pin Assignment (CN701)

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)

1 2 29 30



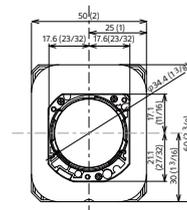
* It is assumed that Pin No. 18 is used as the 5 V power supply of HDMI.

* 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.

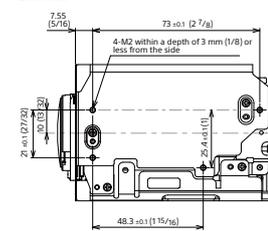
Dimensions

FCB-7R8550/7F8530

Front



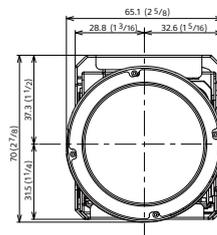
Left side



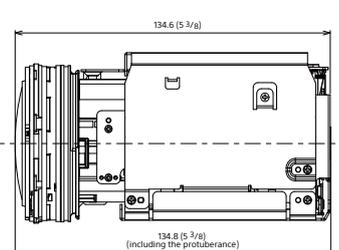
Unit: mm (inches)

FCB-7S8230

Front



Left side



Unit: mm (inches)

Specifications

	FCB-CR8550 With external synchronization	FCB-CR8530	FCB-CS8230
Basic Specifications			
Image Sensor (Number of effective pixels)	1/2.5-type Exmor R CMOS Sensor (8510K pixels)		1.0-type Exmor R CMOS Sensor (8510K pixels)
Output Pixels (H x 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			
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 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	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 x 60.0 x 93.3 mm (2 x 2 3/8 x 3 3/4 in.)		65.1 x 70.0 x 134.8 mm (2 5/8 x 2 7/8 x 5 3/8 in.)
Mass	Approx. 275 g (10 oz.)		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.

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