

# SONY

## COLOR CAMERA BLOCK FCB-ER9500

### Color Camera Block with 4K/60p output Both Day and Night

**4K** STARVIS 2

The FCB-ER9500 features Sony's STARVIS™ 2 image sensor, for outstanding image quality in extreme low light environments as well as in the brightest lit conditions.

With the 25x optical zoom, capture incredible detail in 4K high-resolution, 60 frame per second video, from wide-angle to the telephoto end.

Easily expand your line-up with 4K, 4M, and full HD models, all designed in the same light weight, compact body, helping to lower system development costs.



HDMI\*  
25x Optical Zoom

4K/60p output

1/1.8-type Image Sensor

High Sensitivity

Super Image Stabilizer

WDR

HDMI\*

ICR ON COLOR

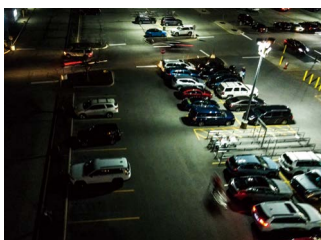
Spot Focus/AE/AWB

**Smooth, high-definition image with 4K/60p output**

**Improved clarity and detail in low-light conditions with 4K 1/1.8-type high sensitivity image sensor.**

**Reliable inner-zoom system with 4K 25x optical zoom**

#### Security



With 25x optical zoom, the FCB-ER9500 provides an image without deterioration in image quality even at the telephoto end. Get clear images in low-light, or in the brightest conditions, helping to better secure high-risk spaces, enhance public safety and enterprise security.

#### Remote



With high resolution video, the FCB-ER9500 provides students or co-workers with a sense of presence as if they were in the classroom helping to overcome the barriers of remote instruction, as well as improved hybrid collaboration.

#### Inspection



Identify even the slightest abnormalities with high resolution images and zoom capability. The FCB-9500 provides detailed observation in remote areas, on the tallest structures, and underwater, typically not easily accessible in a safe and efficient manner.

#### Medical Monitoring

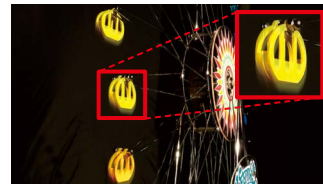


As a surgical camera, the FCB-ER9500 can capture an image of an affected area clearly and shoot movement during surgery smoothly and naturally. It contributes to confirmation of a surgical field and recording of surgery.

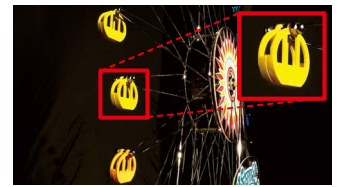
\* Video is output in the TMDS signal format used by HDMI.

## Smooth, high-definition image with 4K/60p output

4K/60p allows for the capture of 60 frames per second, ensuring smooth footage even in fast-moving scenes. This allows for the clear capture of fine details and subtle movements. Because it captures in such fine detail, 4K/60p is useful for tasks that require inspection or detailed observation.



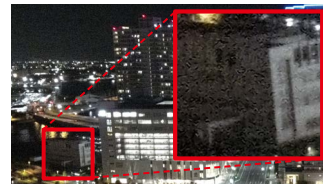
FCB-ER8530 \* image



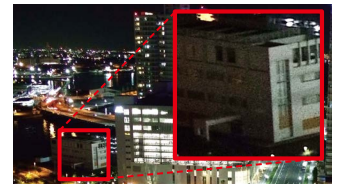
FCB-ER9500 \* image

## Improved clarity and detail in low-light conditions with 4K 1/1.8-type high sensitivity image sensor.

Equipped with a 1/1.8-type high-sensitivity image sensor, visibility under low light conditions is significantly improved compared to previous models. It can capture clear footage even in dark environments and can capture details clearly. Therefore, it is suitable for various applications such as security surveillance, as well as in very dark places, like deep underwater applications.



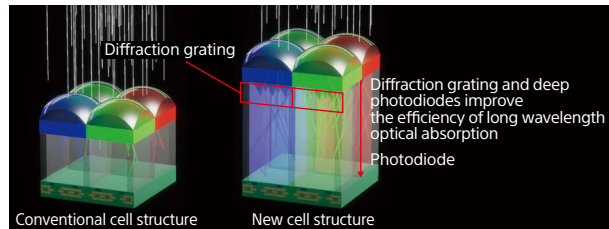
FCB-ER8530



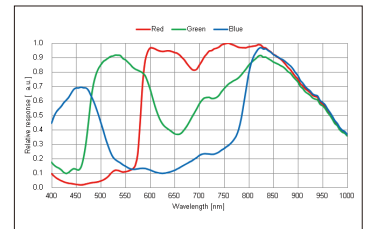
FCB-ER9500

### New Cell Structure

Compared to conventional cell structures, proprietary diffraction gratings have been applied, the photodiode layer is deeper, and the photodiode wall and design is improved. With its longer light path, the absorption efficiency of longer wavelengths is increased, resulting in an even higher level of sensitivity.



### Spectral Sensitivity



Use the graph as a reference value. This data is measured when the IR cut filter is removed and the characteristics of the lens and optical source characteristics are ignored.

## Reliable inner-zoom system with 4K 25x optical zoom

By combining a 25x optical lens, high-quality subject matter footage can be captured even at a distance in full 4K resolution. The lens uses an inner zoom drive system, delivering high-performance zoom functionality in a compact body, resulting in fewer mechanical design limitations, and contributing to a reduction in costly design man-hours.



FCB-ER8530

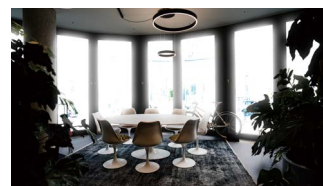


FCB-ER9500

## Wide Dynamic Range (Wide-D)

Wide-D mode is a function for dividing an image into several blocks for correcting blocked-up shadows and blown-out highlights in accordance with the intensity difference. It enables image acquisition in which portions ranging from dark to light can be recognized, even when capturing a subject with a wide intensity range created by backlit or includes extremely light regions of interest.

OFF



\* image

ON

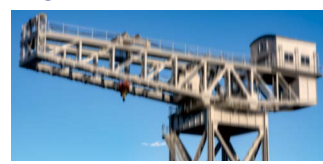


\* image

## Super Image Stabilizer

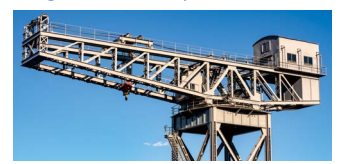
Smooth and stable images even in extreme conditions. Enables capturing of highly precise video with reduced blurring even in harsh environments with strong vibrations by greatly improving blur suppression and image stabilizer. Equipped with the "Super" and "Super+ (plus)"\* modes.

Image Stabilizer: ON



FCB-ER8530

Image Stabilizer: Super+



FCB-ER9500

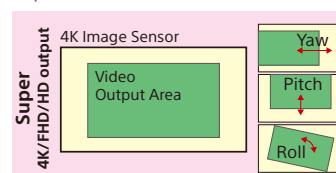
### Super

Suppresses strong vibrations with a wider correction area compared to conventional electronic vibration suppressors.

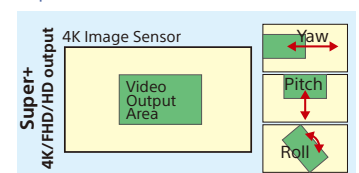
### Super+

By employing a wider correction area than "Super", "Super+" suppresses intense vibrations that exceeds "Super" capability.

Super



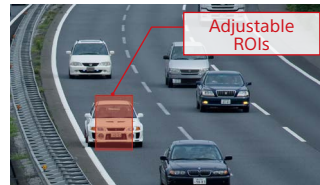
Super+



## Spot Focus · Spot AE · Spot AWB

Enables functioning of AF, AE, and AWB only in specified areas within the screen. Enables independent specification of any rectangle in a 6x8 region of interest on screen.

For example, if the subject location is specified with Spot AE, enables capturing of images with Exposure effects reduced even if brightness changes occur outside the specified frame.



## Color image acquisition during ICR ON

On conventional models, only black and white images are achieved when the IR cut filter is removed.

The new ICR ON COLOR function enables the camera to capture shots with color even when the IR cut filter is removed.

ICR ON is effective for color visibility in dark environments.

\* The precision of color reproduction varies depending on the light source and brightness.

FCB-ER8530 (ICR:ON)



\* image

FCB-ER9500 (ICR:ON COLOR)



\* image

## FCB-ER series (4K model) Main Functions Comparison

Model Name	FCB-ER8530	FCB-ER9500
Image Sensor	<b>Exmor R</b> 1/2.5-type	<b>STARVIS 2</b> 1/1.8-type
Maximum Frame Rate (fps)	2160p / 30	2160p / 60
Minimum Illumination ICR OFF*1	0.4 lx	0.028 lx
Optical Zoom	20x	25x
Horizontal Viewing Angle (Wide°)	Approx. 70.2	Approx. 59.0
Image Stabilization	Electronic	Electronic: Super Image Stabilizer (Super/Super+)
Boresight Correction	-	Yes (narrow FOV)
Spot Focus /AE	Yes	Yes
Spot AWB	-	Yes
ICR ON COLOR	-	Yes
Interface	HDMI*2	HDMI*2

\*1 (Reference value) Shutter Speed 1/30 sec, Video output 50%, High Sensitivity Mode ON

\*2 Video is output in the TMDS signal format used by HDMI.

## FCB-9500 series Line-up

Easily expand your line-up with 4K, 4M, and full HD models, all designed in the same light weight, compact body, helping to lower system development costs.

Model Name	4K FCB-ER9500	4M FCB-EW9500H	Full HD FCB-EV9500M	Full HD FCB-EV9500L
Image Sensor (Number of effective pixels)	<b>STARVIS 2</b> 1/1.8-type 8.39 M	<b>STARVIS</b> 1/1.8-type 4.17 M	<b>STARVIS</b> 1/1.8-type 4.17 M	<b>STARVIS</b> 1/1.8-type 4.17 M
Maximum Frame Rate (fps)	2160p/60	2160p/60	1080p/60	1080p/60
Interface	HDMI*1	HDMI*1	MIPI	LVDS
Minimum Illumination ICR OFF*2	0.028 lx	0.009 lx	0.009 lx	0.009 lx
Minimum Illumination ICR ON*2	0.00016 lx	0.00008 lx	0.00008 lx	0.00008 lx
Zoom	25x Optical Zoom 30x StableZoom *3 12x Digital Zoom	30x Enhanced Optical Zoom 36x StableZoom *3 *4 12x Digital Zoom	30x Enhanced Optical Zoom 36x StableZoom *3 12x Digital Zoom	30x Enhanced Optical Zoom 36x StableZoom *3 12x Digital Zoom
Horizontal Viewing Angle (Wide°)	Approx. 59.0	Approx. 58.1	Approx. 58.1	Approx. 58.1
Dimensions (W x H x D)	56 x 64 x 125 mm	56 x 64 x 125 mm	56 x 64 x 125 mm	56 x 64 x 125 mm
Mass	Approx. 464 g	Approx. 439 g	Approx. 439 g	Approx. 456 g

\*1 Video is output in the TMDS signal format used by HDMI.

\*2 (Reference value) Shutter Speed 1/30 sec, Video output 50%, High Sensitivity Mode ON

\*3 StableZoom increases the magnification by combining optical zoom and digital zoom

\*4 FCB-EW9500H: For 1080p, 1080i, and 720p only.

## Other Functions

\* For the setting values, refer to the technical manual.

### Visibility Enhancer (VE)

Depending on the imaging scene, the Visibility Enhancer function makes the shadows of a camera image brighter, and automatically correct brightness and contrast to show bright objects more clearly.

### Low Focal Plane Distortion Image

The image warp that occurs when capturing rapidly moving subjects is reduced.

### 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
- Individual on/off zone masking settings.

### StableZoom™

"StableZoom" is a function for performing correction using the Image Stabilizer function in accordance with the zoom ratio, and smoothly zooming up to approximately 30x using a combination of the optical zoom and digital zoom.

## Picture Effect

- E-FLIP
- Freeze
- Monochrome

## 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). Also, on systems equipped with an IR light, the internal data of the camera is used to make the proper decisions to avoid malfunctions. Auto ICR Mode operates with the AE Full Auto setting. When the Auto ICR Color Mode is set, the color is added.

## Spot Light Avoidance

Avoid AF / One push AF focus issues when shooting a subject with a bright, spot light source, such as an outdoor light with Spot Light Avoidance.

For example, when shooting outdoors at night with a surveillance camera, the camera may not focus due to the bright light. In that situation, using the Spot Light Avoidance function, reduces the impact of bright lights and you can focus with the AF / One push AF.

## Focus

Equipped with various focus modes.

## AE (Auto Exposure Mode)

### White Balance

Equipped with various modes.

### Motion Detection (MD)

This function instructs the camera to detect movement within the monitoring area and then send an alarm signal automatically.

### Custom Preset

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

### 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

### 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.

## Specifications

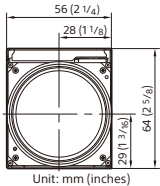
Basic Specifications	
Image Sensor (Number of effective pixels)	1/1.8-type STARVIS™2 CMOS Sensor (Approx. 8.39 M pixels)
Output Image Size (H x V)	3840 x 2160, 1920 x 1080, 1280 x 720
Signal System	2160p/60, 2160p/59.94, 2160p/50, 2160p/30, 2160p/29.97, 2160p/25, 1080p/60, 1080p/59.94, 1080p/50, 1080p/30, 1080p/29.97, 1080p/25, 1080i/60, 1080i/59.94, 1080i/50, 720p/60, 720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/25
Minimum Illumination (50%, High Sensitivity Mode ON) (Reference value)	ICR-Off mode : 0.028 lx (Shutter Speed: 1/30 s), 0.0039 lx (Shutter Speed: 1/4 s) ICR-On mode : 0.00016 lx (Shutter Speed: 1/30 s), 0.0000098 lx (Shutter Speed: 1/4 s)
Minimum Illumination (50%, High Sensitivity Mode OFF) (Reference value)	ICR-Off mode : 0.17 lx (Shutter Speed: 1/30 s), 0.024 lx (Shutter Speed: 1/4 s) ICR-On mode : 0.0013 lx (Shutter Speed: 1/30 s)
Recommended Illumination	100 lx to 100,000 lx
Image S/N	50 dB (Weight On)
Gain	Auto/Manual (0 dB to 50.0 dB), 0 to 28 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), Spot AWB
AE (Auto Exposure Mode)	Full Auto, Manual, Priority mode (shutter/iris), EV compensation, Spot AE, Slow AE
Zoom	25x Optical Zoom, 30x StableZoom*1, 12x Digital Zoom
Lens (wide to tele) (Typical value)	25x Optical Zoom Lens f = 6.5 mm to 162.5 mm, F1.6 to 4.8
Zoom Mode	Standard Mode / Variable Mode / Direct Mode
Zoom Movement Speed (Reference value)	
Wide end to Tele end	5.1 s (Focus Tracking ON), 2.9 s (Focus Tracking OFF)
Wide end to Digital 12x tele	6.3 s (29.97p/59.94p), 6.6 s (25p/50p)
Digital wide to Digital 12x tele	1.3 s (29.97p/59.94p), 1.6 s (25p/50p)
Focusing System (Reference value)	Auto Focus (Normal AF, Interval AF, Zoom Trigger), AF Sensitivity (normal, low), Manual (Standard, Variable, Direct), One Push Trigger, Full Scan One Push Trigger, Near Limit, ICR-on Correction, Spot Focus
Focus Movement Time	∞ - Near 1.6 s
Horizontal Viewing Angle	Approx. 59.0° to Approx. 2.8°
Minimum Object Distance (wide end to tele end)	100 mm to 1200 mm

Camera Features	
Auto ICR	Yes: ON (Monochrome / Color)
Wide Dynamic Range (Wide-D)	Yes
Visibility Enhancer	Yes
Defog	Yes (low/mid/high)
Noise Reduction	Yes (3D + 2D / Independent setting (3D, 2D))
Image Stabilization	Yes: Super image stabilizer (Super / Super+)
Spot Light Avoidance	Yes
Motion Detection	Yes
Privacy Zone Masking	Yes
Alarm	Yes
Slow AE Response	Yes
Picture Effects	Monochrome
Picture Freeze	Yes
Electronic-Flip (E-FLIP)	Yes
Mirror Image	Yes
Slow Shutter	Yes
Temperature Readout	Yes
Title Display	Yes (20 characters / line, max. 11 lines)
Camera Mode Display	Yes (English)
Interface	
Video Output	Digital : Y/Pb/Pr 4:2:2 (HDMI*2) Y:8bit, C:8bit, RGB 4:4:4 (HDMI*2) R:8bit G:8bit B:8bit
Camera Control Interface	VISCA protocol (CMOS 3.3V Level, 5.5V tolerance); Baud Rate : 9.6 kbps, 19.2 kbps, 38.4 kbps, 115.2 kbps, Stop bit: 1 bit
General	
Power Requirements	7.0 V to 12.0 V DC
Power Consumption	5.8 W (during motor operation : 7.0 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 <sup>3</sup> )
Storage Humidity	20% to 95% (Absolute humidity: 36 g/m <sup>3</sup> )
Dimensions (W x H x D)	56 x 64 x 125 mm (2 1/4 x 2 5/8 x 5 in.)
Mass	Approx. 464 g (16.4 oz)

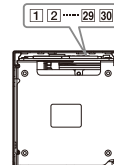
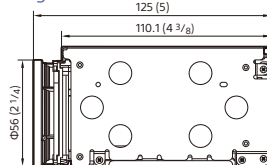
- \*1 StableZoom increases the magnification by combining optical zoom and digital zoom.  
\*2 Video is output in the TMDS signal format used by HDMI.

## Dimensions · Connector

Front



Right side



Digital output connector

KEL Co. USL00-30L-C

Refer to the technical manual for details.

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