

## FCB-HD Series Colour Block Camera

The built-in 30x optical zoom and back-illuminated CMOS sensor with 0.01 lx minimum illumination allow capturing of high-fidelity images even at night or in low-light environments, which is very useful for security applications.



**Exmor R**

**STARVIS**

### Features

#### Back-illuminated CMOS sensor

1/2.8-type Exmor R™ CMOS image sensor provides full high-definition and high-quality images. Fine, high-quality images can be captured even at night or in dark places.

#### High-performance 30x lens

The camera is equipped with a bright lens with 30x optical zoom and F1.6 aperture.

#### Highly advanced ISP

Using the image signal processor (ISP), the following images can be obtained.

- Full HD 60 fps output image
- Low focal plane distortion image using the highspeed readout of imager
- Spot Light Avoidance
- Improved sharpness control via aperture settings

### **FCB-EV7520A**

- **Optical Zoom 30x**
- FCB-EV Series High Sensitivity Model
- Full HD (1080p/60)

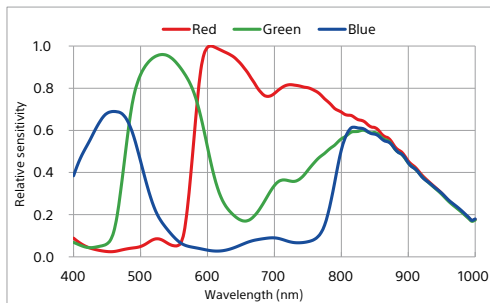
Features

**Exmor R back-illuminated CMOS sensor**

The back-illuminated CMOS image sensor almost doubles sensitivity\*1 and reduces noise compared to traditional front-illuminated CMOS image sensors. Light is received on the back side of the silicon board to effectively capture fine, high-quality images at night or in dark places, which could not be achieved by the image element structure of traditional front-illuminated sensors.

\*1: Comparison of our back-illuminated CMOS image sensor and traditional (front-illuminated) sensors that have the same image element size (1.75 μm)

**Spectral Sensitivity Characteristics**



Use the graph as a reference value. (We can not guarantee these values.) This data is measured when the IR cut filter is removed and the characteristics of the lens and optical source characteristics are ignored.

**Image output**

HD : Digital (LVDS)  
SD : Analog (CVBS)

\*1: The HD Digital output and the SD Analog output cannot be output simultaneously.

**Wide Dynamic Range (Wide-D)**

Wide Dynamic Range mode is a function for dividing an image into several blocks and correcting blocked-up shadows and blown-out highlights in accordance with the intensity difference. It enables you to obtain images in which portions ranging from dark to light can be recognized, even when capturing a subject with a large intensity difference that is backlit or includes extremely light portions.

OFF



ON



**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.

**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



\* image

ON



\* image

**Low Focal Plane Distortion Image**

The FCB-EV7520A captures a high-speed moving image with distortion reduction.

Conventional Model  
(With CMOS sensor)



FCB-EV7520A



**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.

**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.

**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 36x using a combination of the optical zoom and digital 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).

**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.

Example of subject that can be focused using the Spot Light Avoidance feature

OFF



ON



## AE (Auto Exposure Mode)

A variety of AE functions are available for optimal output of subjects in lighting conditions that range from low to high.

- **Full Auto**

Iris, Gain and Shutter Speed can be set automatically.

- **Shutter Priority**

Adjust with Variable Shutter Speed, Auto Iris and Gain.

- **Iris Priority**

Adjust with Variable Iris, Auto Gain and Shutter speed.

- **Manual**

Adjust with Variable Shutter, Iris and Gain.

- **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.

- **Spot AE**

In Spot AE, a particular section of the subject can be designated, and then that portion of the image can be weighted and a value computed so that Iris and Gain can be optimized to obtain an image.

## 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 ( $\infty$ ) to F000 (10 mm). (Initial value: D000h (30 cm))

## Temperature readout

The camera unit's internal temperature can be read from temperature sensor. 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.

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

## 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.

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

## 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.

## Motion Detection (MD)

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

- You can set a frame for the detection range of 17 (horizontally) × 15 (vertically) blocks.
- You can set the frame by assigning the starting point and terminating point vertically and horizontally. You can set up to four frames.
- When the motion is detected in the set frame, the Alarm Replay VISCA Command is sent.

## VISCA/RS-232C

### Overview of VISCA

In VISCA, up to seven peripheral devices like the FCB camera can be connected to one controller using communication conforming to the RS-232C standard.

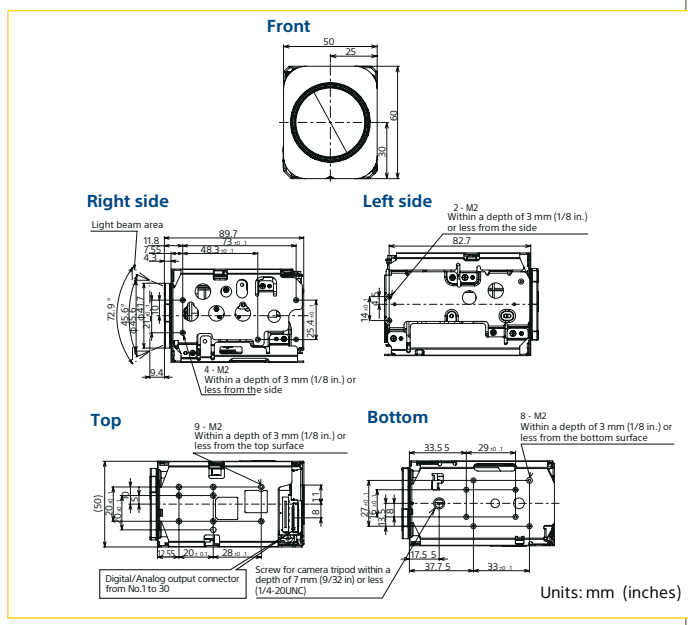
## Exmor R

The Exmor R is a Sony's CMOS image sensor with significantly enhanced imaging characteristics including sensitivity and low noise by changing fundamental structure of Exmor pixel adopted column parallel A-D converter to back-illuminated type.

## STARVIS

The STARVIS is back-illuminated pixel technology used in CMOS image sensors for surveillance camera applications. It features a sensitivity of 2000 mV or more per 1  $\mu\text{m}^2$  (colour product, when imaging with a 706 cd/m<sup>2</sup> light source, F5.6 in 1 s accumulation equivalent), and realizes high picture quality in the visible-light and near infrared light regions.

Pin No.	Name	Level	Pin No.	Name	Level
1	TXOUT3+		16	DC IN	6 to 12 VDC
2	TXOUT3-		17	DC IN	6 to 12 VDC
3	TXCLKOUT+		18	DC IN	6 to 12 VDC
4	TXCLKOUT-		19	GND	
5	TXOUT2+		20	GND	
6	TXOUT2-		21	TXOUT7+	Single out mode: open
7	TXOUT1+		22	TXOUT7-	Single out mode: open
8	TXOUT1-		23	TXOUT6	Single out mode: open
9	TXOUT0+		24	TXOUT6-	Single out mode: open
10	TXOUT0-		25	SD Analog VBS-OUT	
11	GND		26	RESET	Reset: Low (GND), Normal: Open (3.3V)
12	TxD	CMOS 5 V (Low: Max 0.1 V, High: Min 4.4 V)	27	TXOUT5+	Single out mode: open
13	RxD	CMOS 5 V (Low: Max 1.0 V, High: Min 2.3 V)	28	TXOUT5-	Single out mode: open
14	DC IN	6 to 12 V DC	29	TXOUT4+	Single out mode: open
15	DC IN	6 to 12 V DC	30	TXOUT4-	Single out mode: open



# FCB-EV7520A Specifications

www.image-sensing-solutions.eu

Basic Specifications		FCB-EV7520A
Image Sensor (Number of effective pixels)		1/2.8-type Exmor R CMOS Sensor (2130K pixels)
Output Pixels (H×V)		1920x1080, 1280x720
Signal System	HD	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
	SD	NTSC/PAL
Minimum Illumination (50%, High Sensitivity Mode ON)		ICR-Off mode: 0.01 lx (Shutter Speed: 1/30 s), 0.0013 lx (1/4 s or 1/3 s) ICR-On mode: 0.0015 lx (Shutter Speed: 1/30 s), 0.0008 lx (1/4 s or 1/3 s, 30%)
Minimum Illumination (50%, High Sensitivity Mode OFF)		ICR-Off mode: 0.1 lx (Shutter Speed: 1/30 s), 0.013 lx (1/4 s or 1/3 s) ICR-On mode: 0.006 lx (Shutter Speed: 1/30 s)
Recommended Illumination		100 lx to 100,000 lx
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)
AE (Auto Exposure Mode)		Full Auto, Manual, Priority mode (shutter/iris), EV compensation, Spot Exposure, Slow AE
Lens (wide to tele)		30x optical zoom; f= 4.3 mm to 129 mm, F1.6 to F4.7
Zoom Mode		Standard Mode / Variable Mode / Direct Mode
Digital Zoom		12x (360x with optical zoom)
Zoom Movement Speed	Optical wide to Optical tele	5.0 s (Focus Tracking ON); 2.5 s (Focus Tracking OFF)
	Optical wide to Digital 12 x tele	7.0 s (29.97p/59.94p); 7.4 s (25p/50p)
	Digital wide to Digital 12 x tele	2.1 s (29.97p/59.94p); 2.5 s (25p/50p)
Focusing System		Auto Focus (Normal AF, Interval AF, Zoom Trigger AF [Sensitivity: normal, low]), Manual (Standard, Variable, Direct), One Push Trigger, Near Limit, Full Scan One Push Trigger, IR Correction
Focus Movement time		∞ to Near: 1.1 s
Horizontal Viewing Angle	Horizontal Viewing Angle (1080p/1080i) (wide end to tele end)	63.7° to 2.3°
	Horizontal Viewing Angle (720p) (wide end to tele end)	63.7° to 2.3°
Minimum Object Distance (wide end to tele end)		10 mm to 1200 mm
<b>Camera Features</b>		
Auto ICR		Yes
Wide Dynamic Range (Wide-D) (Auto mode)		Yes <sup>*1</sup>
Visibility Enhancer		Yes
Defog		Yes (low/mid/high)
Noise Reduction		Yes (3D+2D / Independent setting (3D, 2D))
Image Stabilization		Yes
StableZoom <sup>*2</sup>		Yes
Spot Light Avoidance		Yes
Digital Output		Yes
Motion Detection		Yes
Spherical Privacy Zone Masking <sup>*3</sup>		Yes
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
Flickerless		Yes
Temperature Readout		Yes
Title Display <sup>*3</sup>		Yes (20 characters / line, max. 11 lines)
Camera Mode Display		Yes (English)
<b>Interface</b>		
Video Output (HD)		Digital: Y / Pb / Pr 4:2:2 (LVDS) (Y: 8 bit, C: 8 bit, Vsync, Hsync, Field, Clock) (SMPT274M/SMPT296M)
Signal System (SD)		Analog (CVBS) PAL / NTSC
Camera Control Interface		VISCA protocol (CMOS 5V Level); Baud Rate: 9.6 kbps, 19.2 kbps, 38.4 kbps, 115.2 kbps, Stop bit: 1 bit
<b>General</b>		
Power Requirements		6.0 V to 12.0 V DC
Power Consumption		3.2 W (When the motor operates: 4.0 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)		50.0 × 60.0 × 89.7 mm (2 × 2 3/8 × 3 5/8 in.)
Mass		Approx. 250 g (8.8 oz.)

\*1 Wide-D (Wide dynamic range): When Wide-D is activated, it automatically switch to Auto mode. \*2 StableZoom increases the magnification by combining optical zoom and digital zoom.

\*3 It can not be displayed during SD analog output.

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