Better Visualization with Sony's FCBs

The latest Sony's 1/2.8-type Full HD color image sensor *1 for surveillance offers high sensitivity with a minimum illumination of 0.009 lx*2.
Equipped with full HD resolution and 30x optical zoom, the camera is also effective in fields such as infrastructure inspections, unmanned drones, and smart livestock and aquaculture.
The dimensions are equivalent to those of the conventional FCB-EV7520 series, for easy replacement.

Full HD

STARVIS 2

FCB-EV9520L

Full HD (1080p/60) LVDS
30x Optical Zoom

Infrastructure inspection

Rescue operations / Security drones

Smart livestock and aquaculture

Infrastructure facility inspections involve a large human workload. ROVs (Remotely Operated Vehicles) equipped with cameras are increasingly being used for underwater facilities. In addition to full HD high resolution image quality and 30x optical zoom, the low-light performance enables shooting in dark areas, contributing to improved safety and efficiency in underwater inspection work. This applies to above ground drone inspection applications as well.

The first 72 hours are considered critical in rescue operations. The IR function using near-infrared light and the low minimum subject illumination of 0.009 lx *2 enable search activities after sunset and at night by improving visibility under night vision, thereby increasing the survival rate expected in rescue operations in mountainous areas and at sea.

AI-based image identification technology is increasingly being used in the aquaculture and livestock farming sectors. The outstanding low-light performance and WDR function are advantageous for capturing the details required for machine processing, thus demonstrating reduction in manpower requirements. Our visibility-focused imaging and camera control technologies cultivated in surveillance cameras contribute to reducing labor shortages and costs in primary industries.

*1 As of 2023
*2 Min. illumination In the case of ICR-Off, 1/30s, 50%, High sensitivity mode On

High Sensitivity

Improved low-light visibility with the latest image sensor
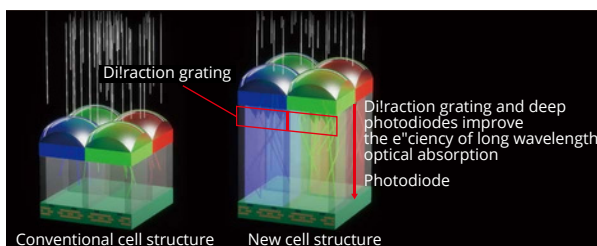
Through introduction of new cell structures and circuit technology, the series efficiently uses light, achieving twice the sensitivity compared to conventional image sensors. Consequently, clear images can be captured even during the night and in dark environments.

Image Conparison

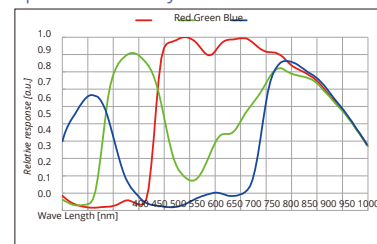FCB-EV7520 series   FCB-EV9520L   FCB-EV7520 series   FCB-EV9520L
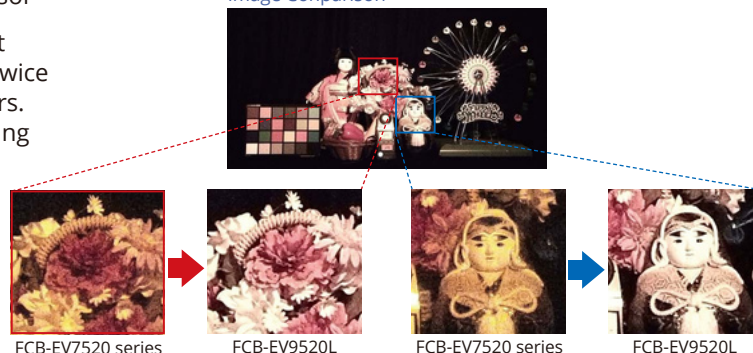
New Cell Structure

Compared to conventional cell structures, diffraction gratings have been applied, and the photodiode layer is deeper. By securing a longer light path length, the absorption efficiency of the long wavelength is increased, and achieves high sensitivity.

Di!raction grating

Di!raction grating and deep photodiodes improve the e"ciency of long wavelength optical absorption

Photodiode

Conventional cell structure   New cell structure

Spectral Sensitivity

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.

*Available during full HD or HD output

Image Stabilizer: ON   Image Stabilizer: Super+
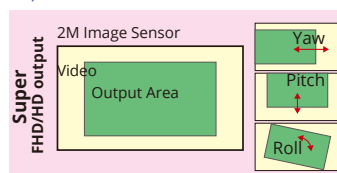

FCB-EV7520 series   FCB-EV9520L

■ Super

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

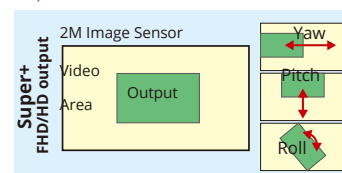### ■ Super+

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

Compatibility

Easy replacement of conventional 1/2.8-type models

The same sized housing as for the conventional FCB-EV7520 series makes it easy to replace*. Also, LVDS output pin assignments are compatible.

* The lens position is shifted down by approx. 2 mm.

FCB-EV7520 series   FCB-EV9520L

89.7(3 5/8)   50(2)   60(2 3/8)

mm (inches)

Main Functions Comparison
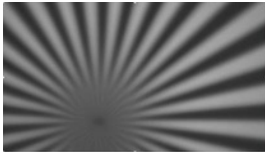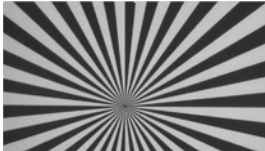
	FCB-EV7520 series	FCB-EV9520L
Image Sensor	1/2.8-type 2M STARVIS™ STARVIS	1/2.8-type 2M STARVISTM 2 STARVIS 2
Signal System	1080p / 60	1080p / 60
Minimum Illumination ICR OFF*	0.01 lx	0.009 lx
Minimum Illumination ICR ON*	0.0015 lx	0.00008 lx
Optical Zoom	30 x	30 x
Horizontal Viewing Angle	63.7°	64.0°
Image Stabilization	EIS	Super Image Stabilizer (Super/Super+)
Optical Axis Gap Compensation Function	–	Yes
Spot Forcus/AE/AWE	–	Yes
ICR ON COLOR	–	Yes
Interface	LVDS, CVBS	LVDS
Dimensions (W x H x D)	50 x 60 x 89.7 mm (2 × 2 3/8 × 5 3/8 inches)	50 x 60 x 89.7 mm (2 × 2 3/8 × 5 5/8 inches)

* 1/30s, 50%, High sensitivity mode ON

Advanced AF Performance

Sophisticated AF Algorithm   Sony's proprietary AF algorithm enables zoom and focus at the same time.

Difficult Conditions	Dark environments with a mixture of visible light and IR light	Environments with locally strong light sources
Shooting condition Camera Mode	ICR ON Switching wide and tele	ICR OFF Switching wide and tele
General Camera Cannot zoom and focus at the same time. Cannot refocus after defocusing.		
FCB-EV9520L Zoom and focus at the same time in difficult conditions Algorithm design minimizes defocusing	 * image	 * image

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.
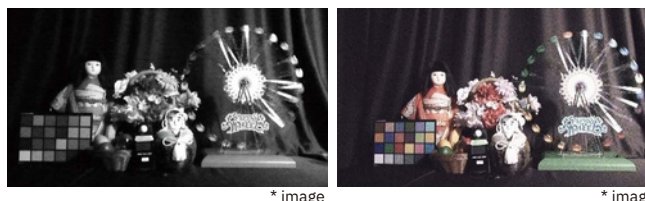The new ICR ON COLOR function enables the camera to capture shots with color even when the IR cut filter is removed.
ICR ON is effective for color visibility in dark environments.

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

FCB-EV7520 series (ICR:ON)   FCB-EV9520L (ICR:ON COLOR)

* image   * image

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   ON

* image   * image

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 36× using a combination of the optical zoom and digital zoom.

Picture Effect
•E-FLIP•Freeze • 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). 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

FCB-EV9520L

Basic Specifications	
Image Sensor (Number of effective pixels)	1/2.8-type STARVIS 2 CMOS Sensor (Approx. 2.13M pixels)
Output Image Size (H x V)	1920x1080, 1280x720
Signal System	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)	ICR-Off mode: 0.009 lx (Shutter Speed: 1/30 s), 0.0012 lx (Shutter Speed: 1/4 s or 1/3 s) ICR-On mode: 0.00008 lx (Shutter Speed: 1/30 s), 0.000005 lx (Shutter Speed: 1/4 s or 1/3 s, 30%)
Minimum Illumination (50%, High Sensitivity Mode OFF)	ICR-Off mode: 0.09 lx (Shutter Speed: 1/30 s), 0.012 lx (Shutter Speed: 1/4 s or 1/3 s) ICR-On mode: 0.00063 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
Lens (wide to tele)	30x optical zoom
Zoom Mode	f= 4.3 mm to 129 mm, F1.6 to F4.7
Digital Zoom	Standard Mode / Variable Mode / Direct Mode
Zoom Movement Speed	12x (360x with optical zoom)
Wide end to Tele end	TBD
Wide end to Digital 12x tele	TBD
Digital wide to Digital 12x tele	TBD
Focusing System	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	TBD
Horizontal Viewing Angle (wide to tele)	Distortion Compensation Off : 64.0° to 2.4° Distortion Compensation On : 61.5° to 2.3°
Minimum Object Distance (wide end to tele end)	10 mm to 1200 mm

Camera Features	
Auto ICR	Yes:ON (B&W/Color)
Wide Dynamic Range (Wide-D)	Yes
Visibility Enhancer	Yes
Defog	Yes (low/mid/high)
Noise Reduction	Yes (3D + 2D / Independent setting (3D, 2D))
Progressive Scan Mode	Yes
Image Stabilization	Yes: Super image stabilizer (Super / Super+)
StableZoom*1	Yes
Spot Light Avoidance	Yes
Motion Detection	Yes
Privacy Zone Masking	Yes
Alarm	Yes
Slow AE Response	Yes
Picture Effects	Yes
Picture Freeze	Black White (Monochrome Image)
Electronic-Flip (E-FLIP)	Yes
Mirror Image	Yes
Slow Shutter	Yes
Temperature Readout	Yes
Title Display	Yes
Camera Mode Display	Yes (20 characters / line, max. 11 lines)
Interface	Yes (English)

General	
Video Output	Digital : Y/Pb/Pr 4:2:2 (LVDS) (Y: 8 bit, C: 8 bit, Vsync, Hsync, Field, Clock) (SMPTE274M/SMPTE296M)
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
Power Requirements	7.0 V to 12.0 V DC
Power Consumption	TBD
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/m3)
Storage Humidity	20% to 95% (Absolute humidity: 36 g/m3)
Dimensions (W x H x D)	50 x 60 x 89.7 (2 x 2 3/8 x 3 5/8 in.)
Mass	Approx. 239 g (8.4 oz)

*1 StableZoom increases the magnification by combining optical zoom and digital zoom.

Dimensions · Connector

Front   Right side   Unit: mm (inches)
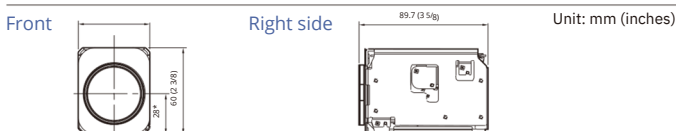
* The lens position is shifted down by approx. 2 mm than FCB-EV7520 series.

Digital output connector
KEL Co. USL00-30L-C

Digital output connector

For pin assignment, please refer to the technical manual for details.