

# Harshcam

## Colour Ruggedized Block Camera

[www.harshcam.net](http://www.harshcam.net)

Recently, Iberoptics has developed an improvement of Sony block camera model FCB-EV9520L that consists in fixing zoom and focus position, in order not to have losses in focus and zoom adjustment during impacts. This ruggedized camera warranties to resist impacts up to 40 G for more than 11 milliseconds.

### Harshcam

Ruggedized camera based on the Sony block FCB-EV9520L camera

- 1/2.8-type CMOS
- Full HD Model (1080/60)
- 30x Optical Zoom (with Digital Zoom 360x)
- **Ruggedized zoom and focus.**  
**Tested up to 40G**



### Features

#### FHD 1/2.8-type CMOS

- Superb Full HD (1920 x 1080 ) picture quality
- Boresight improvement
- Low image latency
- Super Image Stabilizer

#### 30x Optical Zoom lens

Excellent zooming performance & durability

#### Digital Zoom

- 12X Digital Zoom
- Provides 360x zoom at FHD resolution without compromise

#### Form factor compatible with FCB-EV series

Direct Successor to FCB-EV7520 with same size & dimensions for easy migration

#### Other Features

- Defog (Auto, low/mid-high)
- Auto ICR
- Noise Reduction
- Slow AE Response
- Private Zone Masking
- Visibility enhancer
- Flicker compensation
- High Sensitivity

# Key applications

Key applications of the HarshCam include integration in vehicles or systems in harsh working environments, where vibrations, shocks, or impacts belong to the daily business.

## Typical examples:



*All-terrain vehicles for rescue and disaster relief*



*Defense and security*



*Sports*



*Drones and helicopters*



*Construction*

Whenever an imaging system in a critical environment or application suffers from disconnections or random resets due to mechanical reasons the HarshCam is the primary solution to consider.

In this video you can check the performance of the HarshCam

<https://youtu.be/45gWEj07zIY>



# Configuration and connectivity of the HarshCam models

The modifications made on the Sony blocks to achieve the HarshCam are internal and completely transparent for the integrator and the user.  
The connectivity and the control software are therefore the same than those of the original Sony block.

Similarly, the external footprint and dimensions of the Sony block are not affected by the modifications and improvements of the HarshCam.

Thanks to this a HarshCam can replace a standard Sony block of the same base model without further workarounds: simply exchange one unit for the other and power on.

We make it easy to understand the original block behind each HarshCam model:

HarshCam model	Sony block	Imager type
HarshCam-9520	FCB-EV9520L	Full-HD

## 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.

This comparison shows the response of the HarshCam (on the left) and any other block camera (in this case the Sony FCB-9520L, on the right) after a 40G impact.

<https://youtu.be/45gWEj07zIY>



*Best case for the other camera*



*Typical case for the other camera*



# Harshcam Specifications

## Harshcam-9520

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 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	
Wide to Tele (59.94p/50p)	4.8 s (Focus Tracking ON) 3.0 s (Focus Tracking OFF)
Wide to Tele (29.97p/25p)	5.7 s (Focus Tracking ON) 3.0 s (Focus Tracking OFF)
Wide to Digital 12x Tele	6.0 s (59.94p mode) 6.3 s (50p mode) 7.0 s (29.97p mode) 7.3 s (25p mode)
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	∞ to Near: 1.4 s
Horizontal Viewing Angle (wide to tele)	Distortion Compensation OFF : Approx. 64.0° to 2.4° Distortion Compensation ON : Approx. 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 <sup>*1</sup>	Yes
Spot Light Avoidance	Yes
Motion Detection	Yes
Privacy Zone Masking	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
Temperature Readout	Yes
Title Display	Yes (20 characters / line, max. 11 lines)
Camera Mode Display	Yes (English)

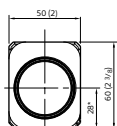
Interface	
Video Output	Digital : Y/Pb/Pr 4:2:2 (LVDS) (Y: 8 bit, C: 8 bit, Vsync, Hsync, Field, Clock) (SMPT274M/SMPT296M)
Camera Control Interface	VISCA protocol (CMOS 3.3V Level, 5.5V tolerance); Baud Rate : 9.6 kbps, 19.2 kbps, 38.4 kbps, 115.2 kbps, Stop bit: 1 bit

General	
Power Requirements	7.0 V to 12.0 V DC
Power Consumption	4.4 W (during motor operation: 5.4 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/m³)
Storage Humidity	20% to 95% (Absolute humidity: 36 g/m³)
Dimensions (W x H x D)	50 x 60 x 89.7 mm (2 x 2 3/8 x 3 5/8 in.)
Mass	Approx. 239 g (8.4 oz)

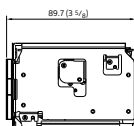
\*1 StableZoom increases the magnification by combining optical zoom and digital zoom.

## Dimensions - Connector

Front Right side Unit: mm (inches)



Right side



\* The lens position is shifted down by approx. 2 mm than FCB-EV7520 series.

## Digital output connector

KEL Co. USL00-30L-C

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

