FCB-EX Series

Color Block Cameras

SONY
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FCB-EX2200
FCB-EX2200P

FCB-EX2400
FCB-EX2400P

FCB-EX2700
FCB-EX2700P

Super **HAD CCD II**

INTRODUCTION

Sony is proudly introducing a new family of standard definition (SD) camera blocks to the FCB Series block camera line-up. Cameras in the new FCB-EX Series offer excellent picture quality with a horizontal resolution of 670 TV lines, thanks to the use of Super HAD CCD II™ image sensors and a newly developed image processor. These cameras also incorporate high-performance optical zoom lenses (including high-resolution 40x, and bright 28x and 18x lenses), allowing you to select the right camera according to your varying needs.
All of these cameras inherit a multitude of features from Sony's world-renowned FCB Series such as Wide-D*, Auto ICR, and Spherical Privacy Zone Masking, and they are specifically designed to be integrated into security domes/cameras. These features and breadth of choice enable you to pick the right camera every time.

* Wide dynamic range.

	FCB-EX2700	FCB-EX2700P	FCB-EX2400	FCB-EX2400P	FCB-EX2200	FCB-EX2200P
Signal systems	NTSC	PAL	NTSC	PAL	NTSC	PAL
Imager sensor	1/4-type Super HAD CCD II					
Lens	40x		28x		18x	
Minimum illumination*	0.6 lx (F1.6, 50%)		0.4 lx (F1.35, 50%)		0.4 lx (F1.4, 50%)	
Digital zoom	12x (480x with optical zoom)		12x (336x with optical zoom)		12x (216x with optical zoom)	
Mass	265 g (9.3 oz)		245 g (8.6 oz)		225 g (7.9 oz)	
Dimensions	50.0 x 60.0 x 90.9 mm (2 x 2 3/8 x 3 5/8 inches)		50.0 x 57.5 x 89.8 mm (2 x 2 3/8 x 3 5/8 inches)		52.7 x 57.5 x 88.5 mm (2 1/8 x 2 3/8 x 3 1/2 inches)	
De-fog	●		●		●	
Wide-D (Wide dinamic range)	●		●		●	
Image stabilizer	●		●			
StableZoom	●		●			
Auto ICR (Auto IR-cut Filter Removal)	●		●		●	
Spherical privacy zone masking	●		●		●	
Noise reduction	●		●		●	
Slow AE response	●		●		●	

* IRE 50%, AGC ON.

FEATURES

Super HAD CCD II Image Sensor

Thanks to high-performance Super HAD CCD II image sensors, the FCB-EX2400, FCB-EX2400P, FCB-EX2200, and FCB-EX2200P achieve excellent sensitivity at as low as 0.4 lx* minimum illumination, and the FCB-EX2700 and FCB-EX2700P at 0.6 lx.* This sensor allows high-quality images to be captured even in dark environments. Furthermore, it delivers an excellent horizontal resolution of 670 TV lines, enabling detail to be captured in scenes.

* IRE 50%, AGC ON.

Progressive Scan Broadens Capabilities

In Progressive Scan mode, the video signal is processed by progressive scan to achieve clear images without any flicker effect. Since network cameras typically have backend systems based on progressive scan, the original picture quality can be maintained without requiring conversion from interlace scan to progressive scan.

Powerful 40x Optical Zoom Lens

FCB-EX2700 and FCB-EX2700P cameras are equipped with a high-resolution 40x optical zoom lens. Together with digital zoom, these cameras achieve a 480x zoom ratio, allowing high-quality picture capture over long distances.

Wide Dynamic Range with New Technology

The Wide Dynamic Range (Wide-D) feature allows for the capture of clear images in extreme lighting conditions.

<Auto Mode>

When shooting in high- or low-contrast lighting situations, the camera monitors the luminance differences within an image and automatically switches the Wide-D feature on and off, depending on the visibility of the subjects and background.

<Interlace Wide-D and Progressive Wide-D Modes>

There are two modes to choose from. Interlace Wide-D mode is ideally suited to high-contrast lighting environments. Progressive Wide-D mode is suited to low-contrast environments.

Visibility Enhancer (VE)

The powerful Visibility Enhancer corrects tone curve dynamically and adaptively on a pixel-by-pixel basis while continuously enabling greater visibility in contrasting environments.

De-fog

The De-fog function helps to improve visibility in low-contrast environments such as foggy or smoky scenes. This feature enhances and optimizes contrast in this type of situation.

High-quality Digital Output

The camera is equipped with a digital interface ($Y/C_B/C_R$ 4:2:2) which is comparable to ITU-R BT656. Using this digital interface, the quality of the camera's video signal does not deteriorate. In addition, there is no need for an external analog/digital converter between the camera and any other equipment.

Various Operation Modes

The camera has four operation modes so you can choose the best one depending on your priorities for the application: for example, sensitivity, resolution, or other factors.

Enhanced Noise Reduction

By combining 2D and 3D noise reduction, the camera offers a wide selection of noise-reduction settings, from Level 1 to Level 5, to allow you to choose the ideal level for different shooting conditions.

Image Stabilization

The image stabilization function minimizes the appearance of shaky images caused by low-frequency vibration. This function is useful for outdoor surveillance and traffic monitoring applications.

StableZoom™

StableZoom is a function for performing correction using the image-stabilization function in accordance with the zoom ratio, and smoothly zooming up using a combination of the optical zoom and digital zoom. In StableZoom mode, this function starts naturally without bringing an abrupt change to the horizontal angle of view.

Advanced White Balance

For the White Balance function, there are two different modes: Outdoor Auto mode and Sodium Vapor Lamp mode. These modes are designed to adapt to changing natural light outdoors and to changing sodium vapor lamp lighting, respectively.

Extended Operating Temperature

These cameras can operate in a range of temperature from -5°C to 60°C.

Temperature Readout

Each camera unit's internal temperature can be read out via VISCA. This data can be used as reference data to activate peripherals such as a fan or heater inside the camera equipment.

Slow AE Response

These cameras allow the user to set the auto response speed (up to two minutes) to enable the cameras to adapt to changes in lighting conditions. For example, when shooting in an underground parking lot, valuable images could otherwise be missed when car headlights cause an abrupt change in lighting conditions.

Other Features

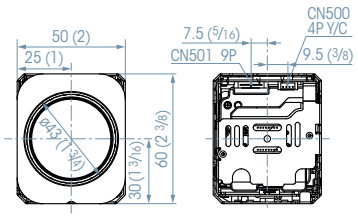
- Auto IR-cut Filter Removal (Auto ICR)
- Advanced Spherical Privacy Zone Masking
- Electronic Flip (E-Flip)
- Multi-line On-screen Display
- Video Motion Detection
- Picture Freeze
- SMART (Sony Modular Automatic Lens Reset Technology)
- Gain Limit Setting
- Zoom Limit Setting
- Zoom Speed-up In Zoom Direct Mode (Focus Trace On/Off)
- Focus Compensation in ICR Mode
- Alarm Signal Output in Auto ICR Mode
- Image Stabilization Hold
- Color Enhancement

DIMENSIONS

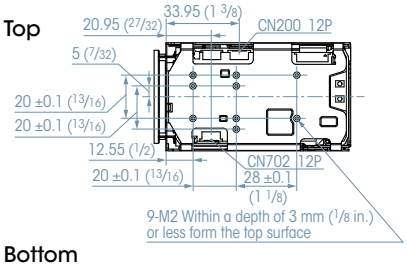
Unit: mm (inches)

FCB-EX2700 / FCB-EX2700P

Front



Top



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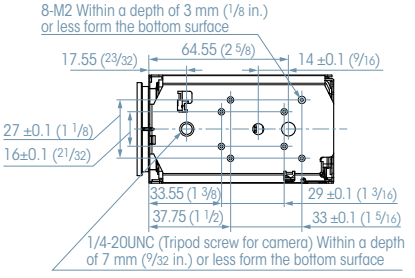

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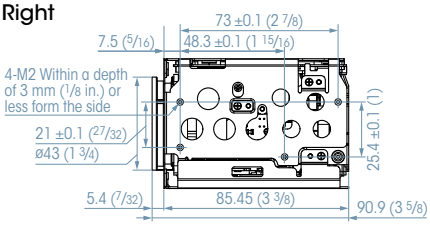

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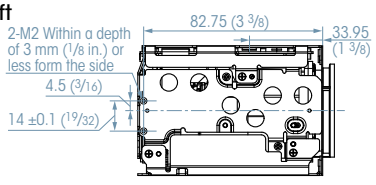
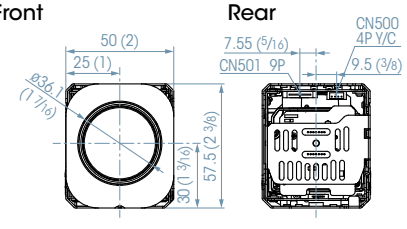


FCB-EX2400 / FCB-EX2400P

Front

Rear



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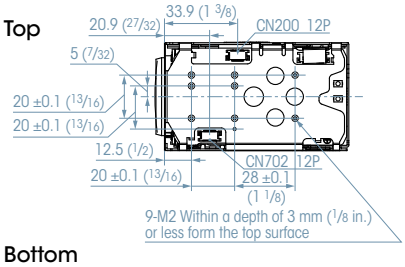

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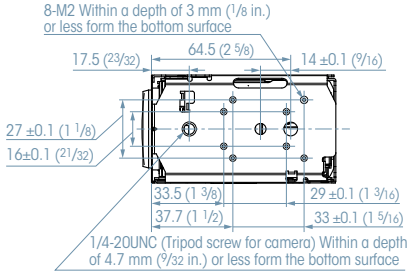

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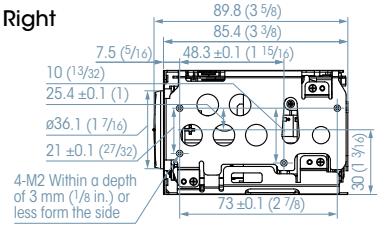

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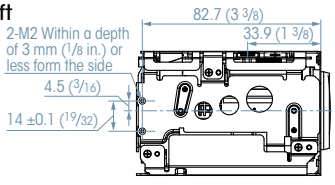
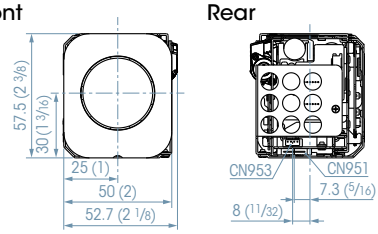


FCB-EX2200 / FCB-EX2200P

Front

Rear



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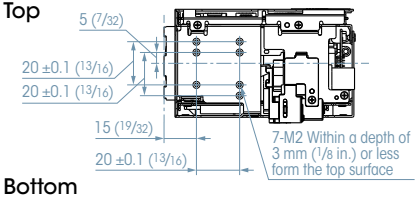

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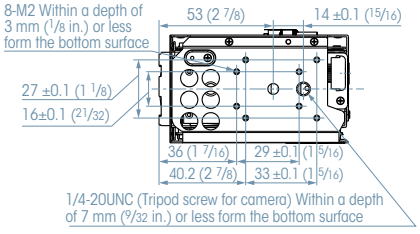

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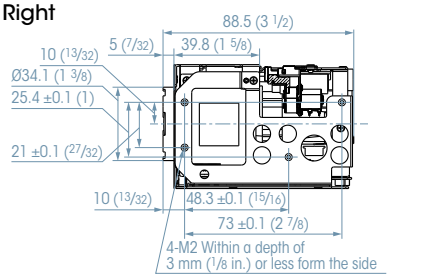

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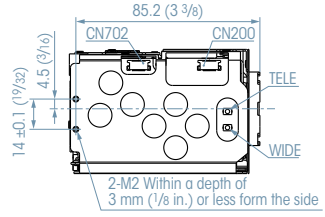

SPECIFICATIONS

	FCB-EX2700	FCB-EX2700P	FCB-EX2400	FCB-EX2400P	FCB-EX2200	FCB-EX2200P
Camera						
Image sensor	1/4-type Super HAD II CCD					
Image sensor (Number of effective pixels)	Approx. 480,000 pixels	Approx. 570,000 pixels	Approx. 480,000 pixels	Approx. 570,000 pixels	Approx. 480,000 pixels	Approx. 570,000 pixels
Horizontal resolution	670TVL					
Signal system	NTSC	PAL	NTSC	PAL	NTSC	PAL
Minimum illumination (50%, Normal mode)	Color: 0.6 lx Typical (F1.6, AGC on, 1/60 s) Color: 0.04 lx Typical (F1.6, AGC on, 1/4 s) ICR-ON: 0.01 lx (F1.6, AGC on, 1/4 s)	Color: 0.6 lx Typical (F1.6, AGC on, 1/50 s) Color: 0.04 lx Typical (F1.6, AGC on, 1/3 s) ICR-ON: 0.01 lx (F1.6, AGC on, 1/3 s)	Color: 0.4 lx Typical (F1.35, AGC on, 1/60 s) Color: 0.03 lx Typical (F1.35, AGC on, 1/4 s) ICR-ON: 0.01 lx (F1.35, AGC on, 1/4 s)	Color: 0.4 lx Typical (F1.35, AGC on, 1/50 s) Color: 0.03 lx Typical (F1.35, AGC on, 1/3 s) ICR-ON: 0.01 lx (F1.35, AGC on, 1/3 s)	Color: 0.4 lx Typical (F1.4, AGC on, 1/60 s) Color: 0.03 lx Typical (F1.4, AGC on, 1/4 s) ICR-ON: 0.01 lx (F1.4, AGC on, 1/4 s)	Color: 0.4 lx Typical (F1.4, AGC on, 1/50 s) Color: 0.03 lx Typical (F1.4, AGC on, 1/3 s) ICR-ON: 0.01 lx (F1.4, AGC on, 1/3 s)
Recommended illumination	100 lx to 100,000 lx					
S/N ratio	More than 50 dB					
Gain	Auto / Manual (-3 step to 28 step, +2 step / total 16 steps)					
	Max. Gain Limit (6 step to 28step, +2 step step / total 12 steps)					
Shutter speed	1/1 s to 1/10,000 s, 22 steps					
Sync system	Internal / External (V-Lock)					
Exposure control	Auto, Manual, Priority mode (shutter priority & iris priority), Bright, EV compensation, Slow AE					
Backlight compensation	Yes					
Aperture control	16 steps					
White balance	Auto, ATW, Indoor, Outdoor, Outdoor Auto, Sodium Vapor Lamp (Fix / Auto), One-push, Manual					
Lens	40x optical zoom		28x optical zoom		18x optical zoom	
	f=3.06 mm (wide) to 122.4 mm (tele)		f=3.5 mm (wide) to 98.0 mm (tele)		f=4.1 mm (wide) to 73.8 mm (tele)	
	F1.6 to F4.6		F1.35 to F3.7		F1.4 to F3.0	
Digital zoom	12x (480x with optical zoom)		12x (336x with optical zoom)		12x (216x with optical zoom)	
Focusing system	Auto (Sensitivity: normal, low), One-push AF, Manual, Interval AF, Zoom Trigger AF, Focus compensation in ICR on					
Horizontal viewing angle	60.0° (wide end) to 1.6° (tele end)		55.8° (wide end) to 2.1° (tele end)		48.0° (wide end) to 2.8° (tele end)	
Minimum object distance	10 mm (wide end) to 1500 mm (tele end) (Default: 320 mm)		10 mm (wide end) to 1500 mm (tele end) (Default: 300 mm)		10 mm (wide end) to 800 mm (tele end) (Default: 290 mm)	
Camera Features						
Auto ICR	Yes					
Wide-D*1	Yes (On / Off) (On: 90dB)					
Noise reduction	Yes					
Progressive scan mode	Yes					
Image stabilizer	Yes				No	
Stablezoom	Yes				No	
Digital output	Yes					
Tone reproduction	Yes (VE)					
Spherical privacy zone masking	Yes					
Motion detection	Yes					
Alarm	Yes					
Slow AE response	Yes (Approx. 2 minutes)					
Picture effects	E-Flip, Nega Art, Black & White, Mirror image, Color enhancement					
Picture freeze	Yes					
Slow shutter	Yes					
Temperature readout	Yes					
Title display	20 characters/line, max. 11 lines					
Camera mode display	Yes					
Key switch control	Yes					
Camera operation switch	Yes					
Interface						
Video output (SD)	Analog: VBS Y/C, Digital: Y/C_B/C_R 4:2:2 (ITU-R BT656 Style)					
Camera control interface	VISCA (CMOS 5 V level), Baud rate: 9.6 Kbps, 19.2 Kbps, 38.4 Kbps Stop bit: 1 bit					
General						
Power requirements	6.0 V to 12.0 V DC					
Power consumption	2.4 W (zoom / focus inactive, 9 V), 3.2 W (zoom/focus active, 9 V)					
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)*2	50.0 x 60.0 x 90.9 mm (2 x 2 3/8 x 3 5/8 inches)		50.0 x 57.5 x 89.8 mm (2 x 2 3/8 x 3 5/8 inches)		52.7 x 57.5 x 88.5 mm (2 1/8 x 2 3/8 x 3 1/2 inches)	
Mass	265 g (9.3 oz)		245 g (8.6 oz)		225 g (7.9 oz)	

*1 Wide dynamic range. *2 The values for dimensions are approximate.

PIN ASSIGNMENTS

4-pin for Y/C Video Out

CN953: FCB-EX2200/FCB-EX2200P
CN500: FCB-EX2400/FCB-EX2400P, FCB-EX2700/FCB-EX2700P

Pin No.	Name	Level
1	Y_OUT	1.0 Vp-p (75 Ω terminate) Luminance signal
2	GND (for Y signal)	–
3	C_OUT	Chrominance signal
4	GND (for C signal)	–

Connector: JST S4B-ZR-SM4A-TF (LF)

9-pin for DC/Video Out

CN951: FCB-EX2200/FCB-EX2200P
CN501: FCB-EX2400/FCB-EX2400P, FCB-EX2700/FCB-EX2700P

Pin No.	Name	Level
1	RxD	CMOS 5.0 V (Low: max 0.8 V, High: min 2.0 V) Read Data
2	TxD	CMOS 5.0 V (Low: max 0.1 V, High: min 4.4 V) Send Data
3	GND (for RxD & TxD)	–
4	DC IN	9.0 V ±3.0 V
5	GND (for DC IN)	–
6	VBS OUT	1.0 Vp-p (75 Ω terminate)
7	GND (for VBS OUT)	–
8	V LOCK PULSE	External VD-Lock Pulse (Negative, 3.0 Vp-p 50% duty)
9	GND (for V LOCK PULSE)	–

Connector: KYOCERA ELCO 00 6200 509 130 000+

12-pin for Digital Out

CN200: FCB-EX2200/FCB-EX2200P, FCB-EX2400/FCB-EX2400P, FCB-EX2700/FCB-EX2700P

Pin No.	Name	Level
1	GND	
2	Digital Out 0	0 - 3.3 Vp-p
3	Digital Out 1	0 - 3.3 Vp-p
4	Digital Out 2	0 - 3.3 Vp-p
5	Digital Out 3	0 - 3.3 Vp-p
6	Digital Out 4	0 - 3.3 Vp-p
7	Digital Out 5	0 - 3.3 Vp-p
8	Digital Out 6	0 - 3.3 Vp-p
9	Digital Out 7	0 - 3.3 Vp-p
10	GND	
11	CLOCK	0 - 3.3 Vp-p
12	GND	

Connector: KYOCERA ELCO 08 6222 012 101 848+
[FFC 0.5 mm Pitch]

12-pin for Key Switch Control

CN702: FCB-EX2200/FCB-EX2200P, FCB-EX2400/FCB-EX2400P, FCB-EX2700/FCB-EX2700P

Pin No.	Name	Level
1	GND	–
2	GND	–
3	KEY_AD0	Pull up to 3.0 V by 100 kΩ
4	KEY_AD1	Pull up to 3.0 V by 100 kΩ
5	KEY_AD2	Pull up to 3.0 V by 100 kΩ
6	KEY_AD3	Pull up to 3.0 V by 100 kΩ
7	KEY_AD4	Pull up to 3.0 V by 100 kΩ
8	KEY_AD5	Pull up to 3.0 V by 100 kΩ
9	KEY_AD6	Pull up to 3.0 V by 100 kΩ
10	KEY_AD7	Pull up to 3.0 V by 100 kΩ
11	NC	–
12	Strobe	Strobe timing pulse (0 to 3.0 V)

Connector: KYOCERA ELCO 08 6222 012 101 848+

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