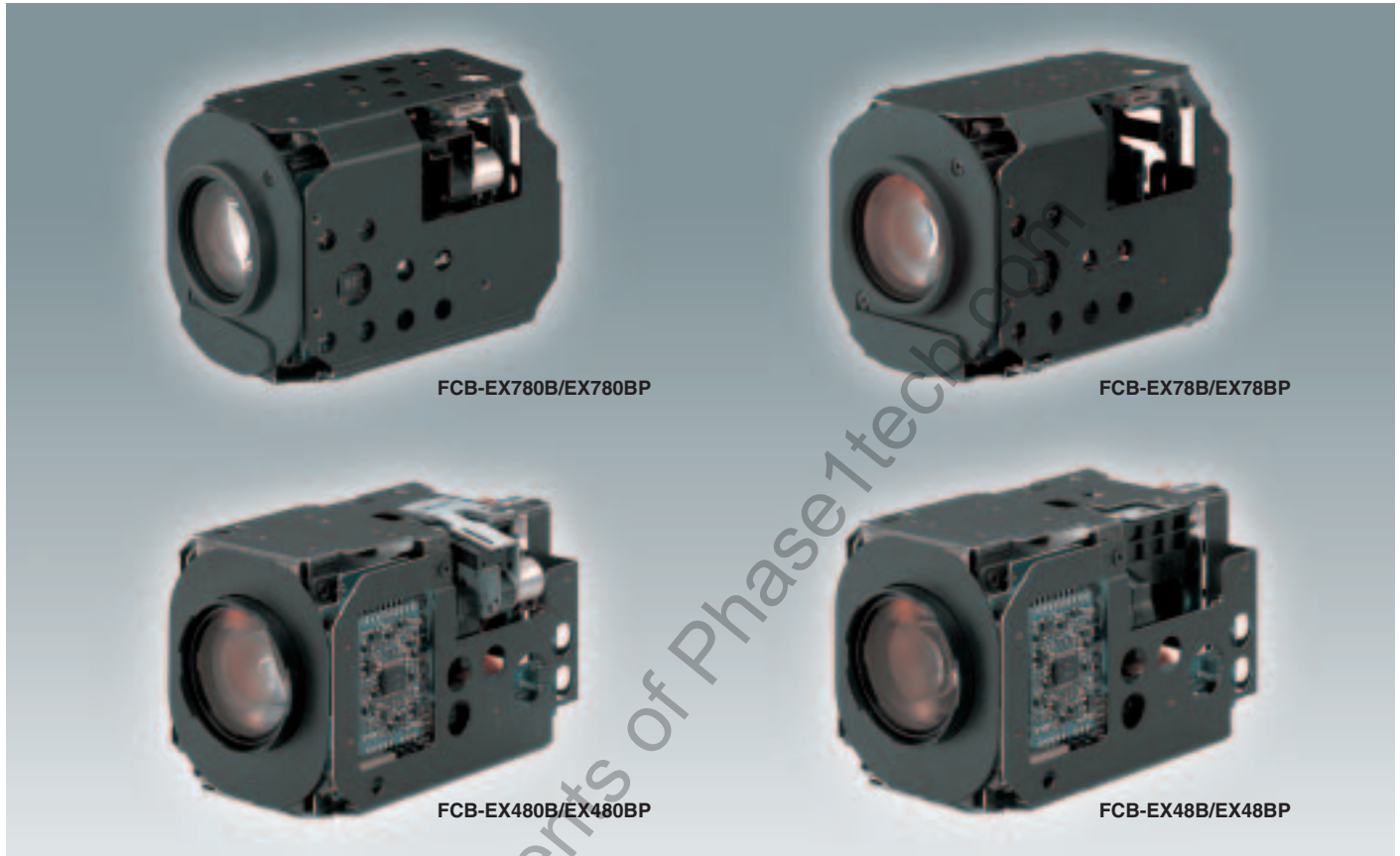


FCB-EX Series FCB-EX780B/EX780BP FCB-EX78B/EX78BP FCB-EX480B/EX480BP FCB-EX48B/EX48BP

Component/OEM



OUTLINE

Sony's new FCB-EX Series of color block cameras represent an evolution in security dome, police vehicle and traffic monitoring applications. Incorporating familiar and convenient features such as Spot AE, Auto ICR (IR Cut filter Removal)^{*1}, quick camera control via a high-speed serial interface (max. 38.4 Kb/s), and various customizable settings, these FCB-EX cameras offer superb flexibility and easy operation.

The FCB-EX cameras are equipped with new and unique surveillance features such as an E-Flip function that electrically flips the picture for correct image display and an alarm function that enables changes to be detected within any given area of the picture. In addition, these FCB-EX cameras feature an advanced Privacy Zone Masking function for sophisticated masking controls - a necessity in many surveillance

applications. With these new and unique features, the FCB-EX cameras are the ideal choice for indoor and outdoor dome applications. Incorporating high-performance Digital Signal Processing (DSP), the FCB-EX Series offers greatly enhanced picture quality and operability compared to conventional block cameras. Moreover, all of these FCB-EX cameras use lead-free solder and halogen-free mounting boards, and achieve low power consumption. The dimensions and mounting-hole position of these new FCB-EX cameras are exactly the same as those of earlier FCB-EX Series cameras^{*2} allowing them to be easily interchanged. Combining superb picture quality and a variety of unique and convenient features, the new FCB-EX cameras are the perfect match for demanding security dome applications.

^{*1}: FCB-EX780B/EX780BP and FCB-EX480B/EX480BP only

^{*2}: FCB-EX780S/EX780SP, FCB-EX480A/EX480AP and FCB-EX48A/EX48AP

FEATURES

- Advanced Privacy Zone Masking function (max. 24 masking blocks)
- E-Flip function
- Newly developed Alarm function
- Picture freeze during zoom, focus, preset and lens initializing
- Key switch connector (CN701) and DC/video connector (CN903)^{*1}
- High-performance Digital Signal Processing (DSP)
- High-speed serial interface (max. 38.4 Kb/s) and TTL signal level control (VISCA™ protocol)

- Auto ICR (IR Cut filter Removal)^{*2}
- Image stabilizer^{*3}
- Various customizable settings
- Internal/External sync
- Low power consumption (1.6 W with motors inactive)
- EEPROM backup system without battery
- Lead-free solder and halogen-free mounting boards

^{*1}: DC/video connector (CN903): FCB-EX480B/480BP and FCB-EX48B/EX48BP only

^{*2}: FCB-EX780B/EX780BP and FCB-EX480B/EX480BP only

^{*3}: FCB-EX780B/EX780BP and FCB-EX78B/EX78BP only

FEATURES DESCRIPTION

Advanced Privacy Zone Masking

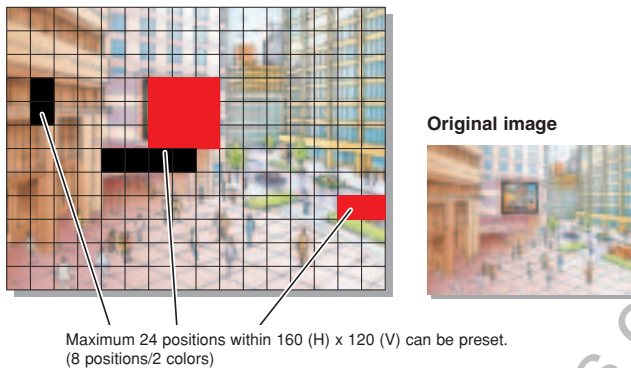
With the advanced Privacy Zone Masking function, unwanted or prohibited areas within an image can be masked appropriately. A maximum of 24 masking areas can be preset to any of 160 horizontal and 120 vertical masking blocks, and up to eight block positions with two colors can be selected together. In addition when zoom is engaged, the size of the masking areas will adjust in proportion to the zoom position. The masking position can be made to interlock with a security dome's pan/tilt to achieve a comprehensive masking operation. For the user convenience, a coordinate grid can be superimposed to easily locate the masking position.

Masking Controls

Maximum number of preset masking blocks	24 blocks
Maximum number of masking blocks to be displayed	8 blocks
Resolution of masking blocks	160 (H) x 120 (V)
Interlock with zoom	Yes
Interlock with pan/tilt *1	Yes
Maximum colors to be preset	28 *2
Maximum colors to be displayed	2 *2
Translucent masking	Yes
Gray scale	Yes *3
Individual masking On/Off	Yes
Interlock speed setting *1	Yes
Title/day/time superimposition	Yes

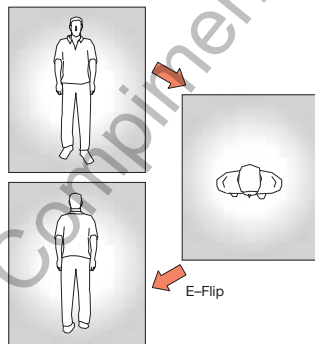
*1 When used in a security dome *2 Including translucent color *3 6 gradations selectable

Masking image



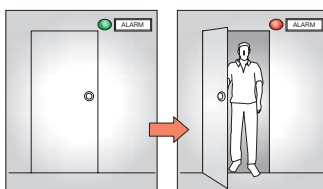
E-Flip (Electronic Flip)

The FCB-EX cameras have an E-Flip function that electrically flips an image upside down. In a dome application for example, if a tracked object moves beneath the camera dome, the image can be inverted to maintain the correct display. This E-Flip function realizes higher mechanical reliability as compared to a mechanical flip function.



Alarm Function

The FCB-EX Series provide a new Alarm function which can detect changes within an area of the picture designated by the user. When a change in AF, AE or both AF and AE is detected, the camera outputs an alarm trigger signal to the external equipment via the VISCA protocol. In combination with the Spot AE, these cameras also detect changes of luminance level and output an alarm signal. The detection area can be applied to any of 16 vertical and 16 horizontal blocks.



Day/Night Mode

The FCB-EX cameras feature a new "Day/Night" alarm function. These cameras can output an alarm signal via the VISCA protocol in response to a change in the designated brightness/darkness level. In outdoor dome applications for example, a control center can be instructed to turn lights on and off when a Day/Night alarm is received.

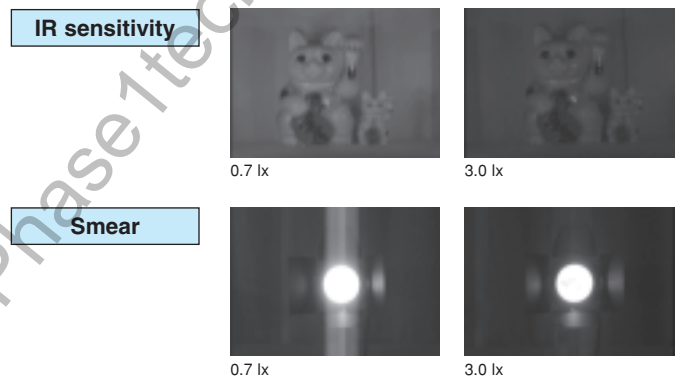
Picture Freeze

The FCB-EX cameras are equipped with Picture Freeze function which outputs a freeze-frame picture or a muted picture during zoom, focus, lens initializing, and preset operations. In a dome application for example, if a user does not want to show an image while panning from "A" to "B" points, the camera outputs the "A" point freeze-frame image and then outputs the normal picture once panning is completed.

EXview HAD CCD™

(FCB-EX480B/EX480BP and FCB-EX48B/EX48BP)

The adoption of Sony EXview HAD CCD technology improves basic camera features, providing advantages over earlier FCB models such as superb sensitivity of 0.7 lx (typical), low smear levels and D-range.



Auto ICR (IR Cut filter Removal) Mode

(FCB-EX780B/EX780BP and FCB-EX480B/EX480BP)

The Auto ICR function automatically switches the settings to attach or remove the IR Cut filter for increased sensitivity. 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 filter is automatically enabled (ICR OFF). The ICR automatically engages depending on the ambient light, allowing the cameras to be effective in day and night environments.

When auto slow shutter is on

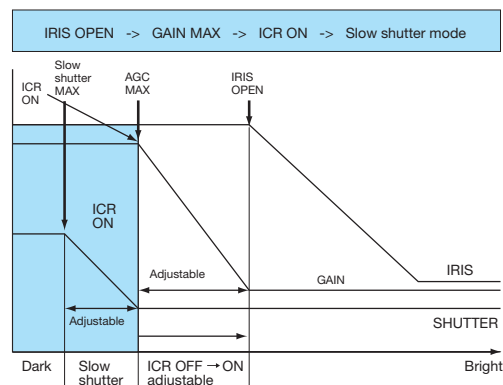


Image Stabilizer

(FCB-EX780B/EX780BP and FCB-EX78B/EX78BP)

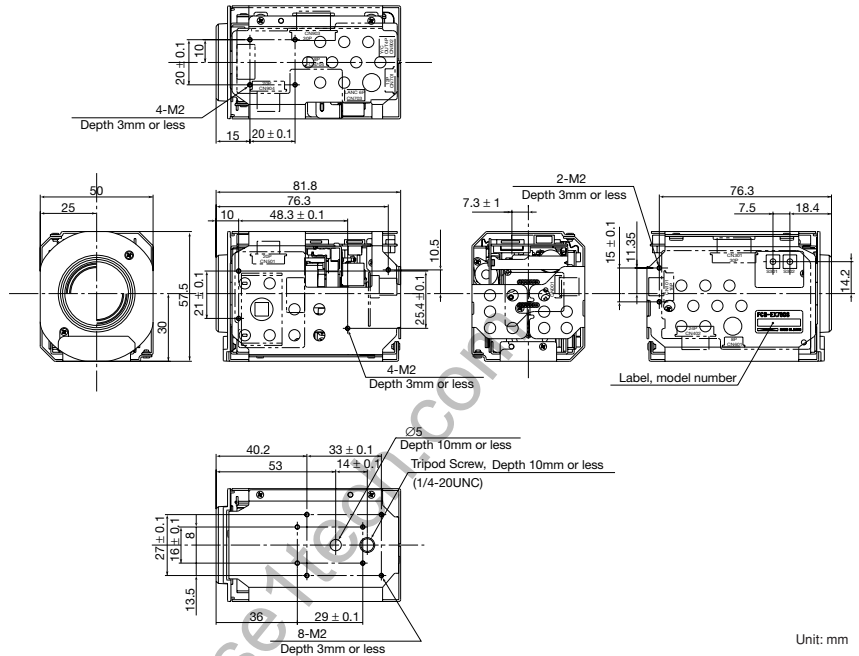
The image stabilizer function minimizes the appearance of shaky images caused by low-frequency vibration and maintains a normal horizontal resolution. This function is useful for outdoor surveillance and traffic monitoring applications.

FCB SERIES LINE-UP



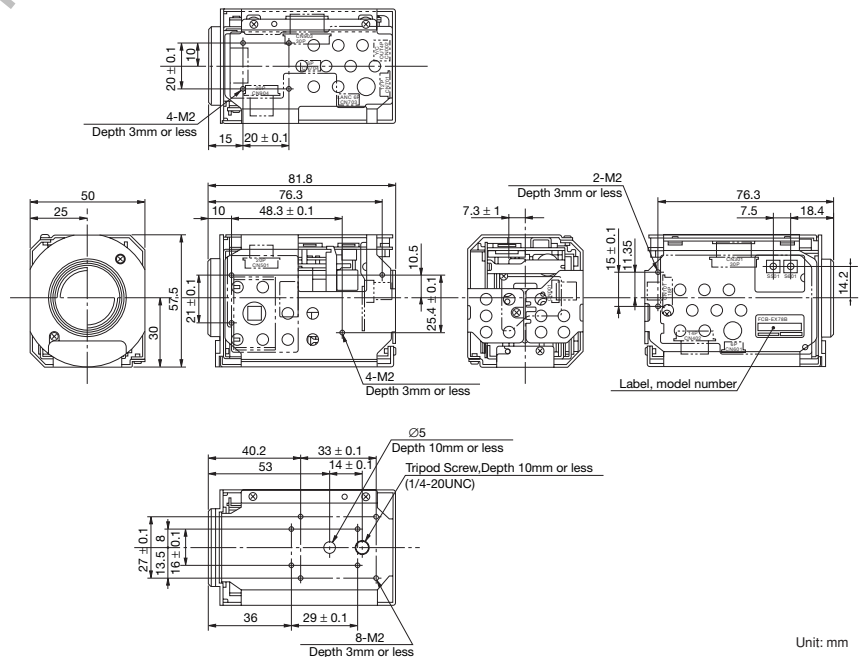
FCB-EX780B/EX780BP

- 1/6 type Super HAD™ CCD
- 300x zoom ratio (25x optical, 12x digital)
- Auto ICR (IR Cut filter Removal) mode to achieve near-infrared sensitivity
- Image stabilizer
- Advanced Privacy Zone Masking
- E-Flip function
- Alarm function
- Picture Freeze
- Key switch connector (CN701)
- Spot AE
- Electronic shutter/slow shutter
- High-speed serial interface (maximum 38.4 Kb/s) and TTL signal-level control (VISCA protocol)
- Internal/External sync



FCB-EX78B/EX78BP

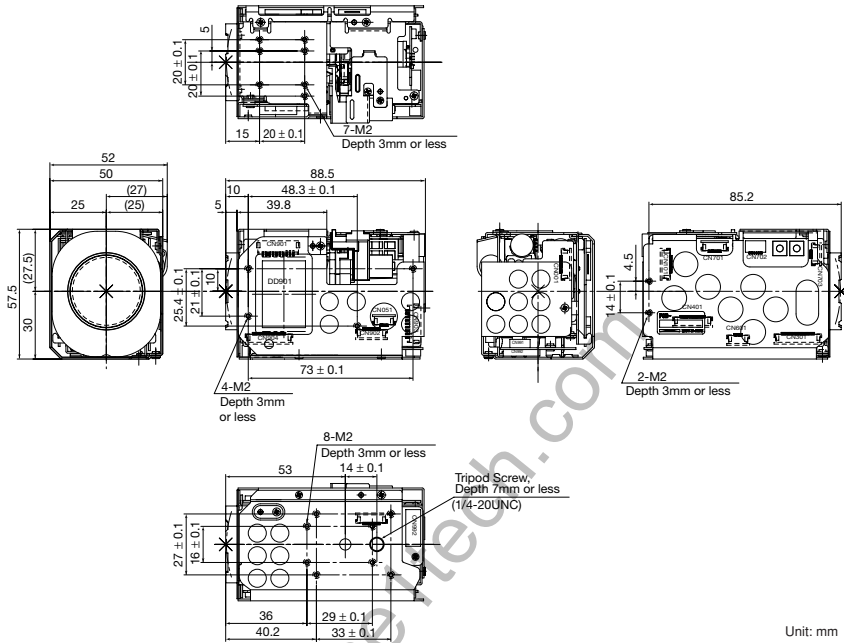
- 1/6 type Super HAD CCD
- 300x zoom ratio (25x optical, 12x digital)
- Image stabilizer
- Advanced Privacy Zone Masking
- E-Flip function
- Alarm function
- Picture Freeze
- Key switch connector (CN701)
- Spot AE
- Electronic shutter/slow shutter
- High-speed serial interface (maximum 38.4 Kb/s) and TTL signal-level control (VISCA protocol)
- Internal/External sync





FCB-EX480B/EX480BP

- 1/4 type EXview HAD[®] CCD
- Extremely low minimum illumination of 0.7 lx (typical)
- Auto ICR (IR Cut filter Removal) mode to achieve near-infrared sensitivity
- 216x zoom ratio (18x optical, 12x digital)
- Advanced Privacy Zone Masking
- E-Flip function
- Alarm function
- Picture Freeze
- Key switch connector (CN701) and DC/video connector (CN903)
- Spot AE
- Electronic shutter/slow shutter
- High-speed serial interface (maximum 38.4 Kb/s) and TTL signal-level control (VISCA protocol)
- Internal/External sync

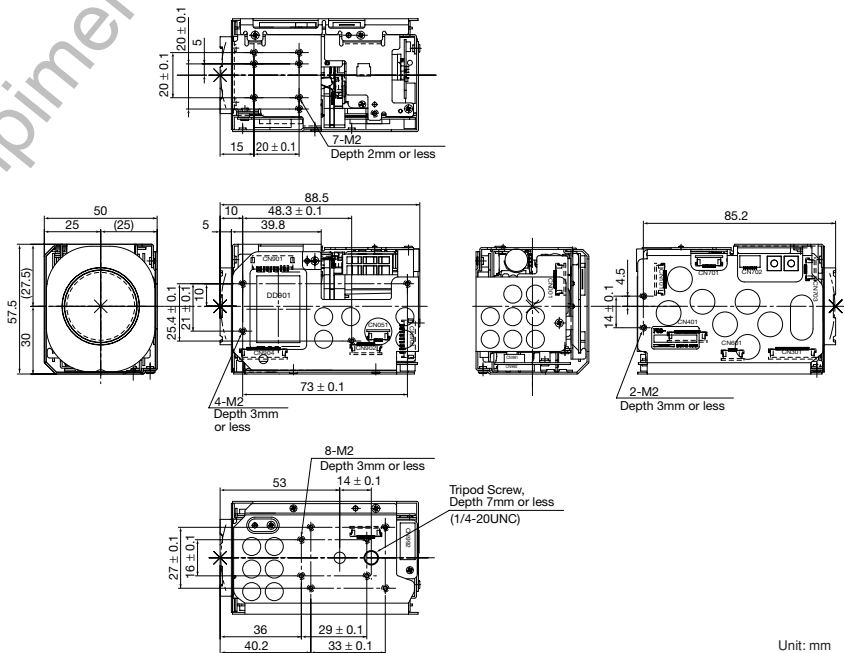


Unit: mm



FCB-EX48B/EX48BP

- 1/4 type EXview HAD CCD
- Extremely low minimum illumination of 0.7 lx (typical)
- 216x zoom ratio (18x optical, 12x digital)
- Advanced Privacy Zone Masking
- E-Flip function
- Alarm function
- Picture Freeze
- Key switch connector (CN701) and DC/video connector (CN903)
- Spot AE
- Electronic shutter/slow shutter
- High-speed serial interface (maximum 38.4 Kb/s) and TTL signal-level control (VISCA protocol)
- Internal/External sync



Unit: mm

SPECIFICATIONS

	FCB-EX780B	FCB-EX78B	FCB-EX480B	FCB-EX48B
Image sensor	1/6 type Super HAD CCD		1/4 type EXview HAD CCD	
Number of effective pixels	Approx. 680,000 pixels		Approx. 380,000 pixels	
Lens	25x zoom, f=2.4 mm (wide) to 60 mm (tele), F1.6 to F2.7		18x zoom, f=4.1 mm (wide) to 73.8 mm (tele), F1.4 to F3.0	
Digital zoom	12x (300x with optical zoom)		12x (216x with optical zoom)	
Angle of view (H)	45 ° (wide end) to 2.0 ° (tele end)		48 ° (wide end) to 2.8 ° (tele end)	
Minimum working distance	35 mm (wide end) to 800 mm (tele end)			
Sync system	Internal/External (V-Lock)			
Minimum illumination	2.5 lx (typical) (50 IRE)		0.7 lx (typical) (50 IRE)	
S/N ratio	49 dB		More than 50 dB	
Electronic shutter	1/1 to 1/10,000 s, 22 steps			
White Balance	Auto, ATW, Indoor, Outdoor, One-push, Manual			
Gain	Auto/Manual (-3 to 28 dB, 2 dB steps)			
AE control	Auto, Manual, Priority mode, Bright, EV compensation, Back-light compensation			
EV compensation	-10.5 to +10.5 dB (1.5 dB steps)			
Back-light compensation	On/Off			
Privacy Zone Masking	On/Off (24 positions)			
Flicker cancel	Auto			
Focusing system	Auto (Sensitivity: normal, low), One-push AF, Manual, Infinity, Interval AF, Zoom Trigger AF			
Picture effect	E-Flip, Neg. Art, Black & White, Mirror Image			
Camera operation switch	Zoom tele, Zoom wide			
Video output	VBS: 1.0 Vp-p (sync negative), Y/C Output			
Camera control interface	VISCA (TTL signal level), baud rate: 9.6 Kb/s, 19.2 Kb/s, 38.4 Kb/s, Stop bit: 1/2 selectable			
Storage temperature	-4° F to 140° F (-20° C to 60° C)			
Operating temperature	32° F to 122° F (0° C to 50° C)			
Power consumption	6 V to 12 V DC, 1.6 W (motors inactive) 2.7 W (motors active)		6 V to 12 V DC, 1.6 W (motors inactive) 2.5 W (motors active)	
Weight	Approx. 8.1 oz (230 g)			
Dimensions (W x H x D)	2 x 2 3/8 x 3 1/4 inches (50 x 57.5 x 81.8 mm)		2 1/8 x 2 3/8 x 3 1/2 inches (52 x 57.5 x 88.5 mm)	

	FCB-EX780BP	FCB-EX78BP	FCB-EX480BP	FCB-EX48BP
Image sensor	1/6 type Super HAD CCD		1/4 type EXview HAD CCD	
Number of effective pixels	Approx. 800,000 pixels		Approx. 440,000 pixels	
Lens	25x zoom, f=2.4 mm (wide) to 60 mm (tele), F1.6 to F2.7		18x zoom, f=4.1 mm (wide) to 73.8 mm (tele), F1.4 to F3.0	
Digital zoom	12x (300x with optical zoom)		12x (216x with optical zoom)	
Angle of view (H)	45 ° (wide end) to 2.0 ° (tele end)		48 ° (wide end) to 2.8 ° (tele end)	
Minimum working distance	35 mm (wide end) to 800 mm (tele end)			
Sync system	Internal/External (V-Lock)			
Minimum illumination	2.5 lx (typical) (50 IRE)		0.7 lx (typical) (50 IRE)	
S/N ratio	49 dB		More than 50 dB	
Electronic shutter	1/1 to 1/10,000 s, 22 steps			
White Balance	Auto, ATW, Indoor, Outdoor, One-push, Manual			
Gain	Auto/Manual (-3 to 28 dB, 2 dB steps)			
AE control	Auto, Manual, Priority mode, Bright, EV compensation, Back-light compensation			
EV compensation	-10.5 to +10.5 dB (1.5 dB steps)			
Back-light compensation	On/Off			
Privacy Zone Masking	On/Off (24 positions)			
Flicker cancel	N/A			
Focusing system	Auto (Sensitivity: normal, low), One-push AF, Manual, Infinity, Interval AF, Zoom Trigger AF			
Picture effect	E-Flip, Neg. Art, Black & White, Mirror Image			
Camera operation switch	Zoom tele, Zoom wide			
Video output	VBS: 1.0 Vp-p (sync negative), Y/C Output			
Camera control interface	VISCA (TTL signal level), baud rate: 9.6 Kb/s, 19.2 Kb/s, 38.4 Kb/s, Stop bit: 1/2 selectable			
Storage temperature	-20° C to 60° C (-4° F to 140° F)			
Operating temperature	0° C to 50° C (32° F to 122° F)			
Power consumption	6 V to 12 V DC, 1.6 W (motors inactive) 2.7 W (motors active)		6 V to 12 V DC, 1.6 W (motors inactive) 2.5 W (motors active)	
Weight	Approx. 8.1 oz (230 g)			
Dimensions (W x H x D)	2 x 2 3/8 x 3 1/4 inches (50 x 57.5 x 81.8 mm)		2 1/8 x 2 3/8 x 3 1/2 inches (52 x 57.5 x 88.5 mm)	

* When used continuously for more than 24 hours, it is recommended to initialize the lens system every 24 hours to extend the life of the lens. The 'Initialize Lens' command takes a little less than 3 seconds to initialize the focus and zoom.

SPECIFICATION COMPARISON CHART

	FCB-EX780B/EX780BP	FCB-EX78B/EX78BP	FCB-EX480B/EX480BP	FCB-EX48B/EX48BP
Lens	25x		18x	
Image stabilizer	Yes		No	
CCD	Super HAD CCD		EXview HAD CCD	
Sensitivity	2.5 lx		0.7 lx	
ICR	Yes	No	Yes	No
Dimensions (W x H x D)	50 x 57.5 x 81.8 mm (2 x 2 ³ / ₈ x 3 ¹ / ₄ inches)		52 x 57.5 x 88.5 mm (2 ¹ / ₈ x 2 ³ / ₈ x 3 ¹ / ₂ inches)	50 x 57.5 x 88.5 mm (2 x 2 ³ / ₈ x 3 ¹ / ₂ inches)

PIN ASSIGNMENT

■ CN901 --- 9-pin for DC/video out/VD-Lock Pulse/VISCA

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 ± 3.0V
5	GND (for DC IN)	
6	VBS OUT	1.0 ± 0.2 V
7	GND (for VBS OUT)	
8	V LOCK PULSE	External VD-Lock Pulse (EX.FV: Negative, 3.0 Vp-p 50% duty)
9	GND (VL PULSE)	

Connector: ELCO 00 6200 509 13000

■ CN902 --- 4-pin for Y/C video out

Pin No.	Name
1	Y_Out
2	GND (for Y signal)
3	C_Out
4	GND (for C signal)

Connector: JST S4B-ZR-SM3A-TF

■ CN903 --- 9-pin for DC/video out

Pin No.	Name	Level
1	DC IN	6.0 V to 12.0 V
2	GND (for DC IN)	
3	NC	
4	VBS OUT	Composite video signal
5	GND (for VBS OUT)	
6	Y_OUT	1.0 ± 0.2 V
7	GND (for Y signal)	
8	C_OUT	
9	GND (for C signal)	

Connector: JST S9B-ZR-SM3A-TF

■ CN701 --- 12-pin for Key Switch control

Pin No.	Name
1	GND
2	GND
3	KEY_AD0
4	KEY_AD1
5	KEY_AD2
6	KEY_AD3
7	KEY_AD4
8	KEY_AD5
9	KEY_AD6
10	KEY_AD7
11	NC
12	Strobe

Connector: Molex 52689-1240 FFC (0.5 mm)

SONY

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