

# **FCB-EX Series**

Colour Block Cameras









Sony's FCB Series of color block cameras offers excellent picture quality, superb flexibility, and easy operation in a variety of applications ranging from surveillance to traffic monitoring, and in many other visual communication environments.

FCB-EX1020/ FCB-EX1020P FCB-EX995E/ FCB-EX995EP FCB-EX985E FCB-EX985EP









FCB-EX490E/ FCB-EX490EP FCB-EX48E/ FCB-EX48EP FCB-EX15E/ FCB-EX15EP FCB-EX12E/ FCB-EX12EP

(NTSC Models)	(PAL Models)
FCB-EX1020	FCB-EX1020P
FCB-EX995E	FCB-EX995EP
FCB-EX985E	FCB-EX985EP
FCB-EX490E	FCB-EX490EP
FCB-EX48E	FCB-EX48EP
FCB-EX15E	FCB-EX15EP
FCB-EX12E	FCB-EX12EP
FCB-EX20D	FCB-EX20DP
FCB-EX11D	FCB-EX11DP



These cameras are specifically designed to be integrated into security domes/cameras, police vehicles, photo booths, document stands, and low-vision systems. There are nine cameras in the FCB-EX Series lineup, and each incorporates a wide variety of optical zoom lenses ranging from 10x to 36x. With this breadth of choice, it's never been easier to select the right camera for your specific monitoring applications.

#### Optical zoom lens

Optical Zoom Lens	36x	28x	18x	12x	10x
FCB-EX Series Cameras	FCB-EX1020 FCB-EX1020P	FCB-EX995E FCB-EX995EP FCB-EX985E FCB-EX985EP	FCB-EX490E FCB-EX490EP FCB-EX48E FCB-EX48EP	FCB-EX15E FCB-EX15EP FCB-EX12E FCB-EX12EP	FCB-EX20D FCB-EX20DP FCB-EX11D FCB-EX11DP

### Features

## Bright, Fast, and Robust 28x Zoom Lens

The camera incorporates a new 28x bright zoom lens with f=1.35. This lens has a fast zooming capability (2.5 seconds from tele end to wide end), and high durability.

# 3 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.

## High-quality Digital Output

The camera is equipped with a digital interface (Y/Cb/Cr 4:2:2) which is comparable to ITU-R BT656. Using this digital interface means that 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.

#### 3 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 the user to choose the ideal level for different shooting conditions.

# 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 the background.

#### Interlace Wide-D and Progressive Wide-D Modes

Interlace Wide-D mode is ideally suited to high-contrast environments, while Progressive Wide-D mode is suited to low-contrast environments.

## 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.

#### 2 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.

### High-resolution Images

The camera achieves a high horizontal resolution of 550 TV lines to reproduce very clear and detailed images.

#### High-sensitivity Images

The camera delivers exceptional high sensitivity - ideal for security applications. In particular, the FCB-EX985E and FCB-EX985EP achieve 0.25 lx (F1.35, 50IRE) by employing a Super HAD CCD  $II^{TM}$  sensor and bright 28x lens (f=1.35).

#### 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 Operation Temperature

The camera can operate in a range of temperature from -5°C to 60°C.

#### **4** Temperature Readout

The 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 10 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.

#### Color Enhancement

Ideally suited to low-vision applications, new color enhancement options can make reading text and pictures less challenging. Full-color images can be changed to black and white, and then inverted into two selected colors.



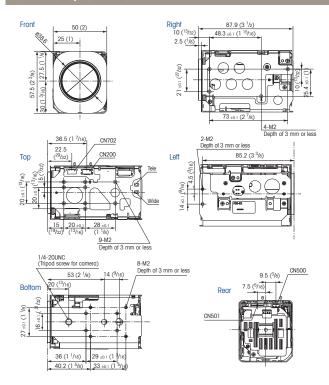
- 5 Auto IR-cut Filter Removal (Auto ICR)
- Advanced Spherical Privacy
  Zone Masking
- 6 Electronic Flip (E-Flip)
- Multi-line On-screen Display
- Video Motion Detection
- 6 Picture Freeze
- SMART (Sony Modular Automatic Lens Reset Technology)
- Gain Limit Setting
- Zoom Limit Setting
- Zoom Speed-up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

Some features are incorporated in selected models only.

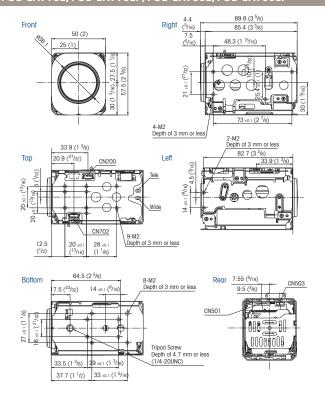
Please refer to the table below to check the feature set (icons 1 to 6) of each model.

FCB-EX1020 FCB-EX1020P	FCB-EX995E FCB-EX995EP	FCB-EX985E FCB-EX985EP	FCB-EX490E FCB-EX490EP	FCB-EX48E FCB-EX48EP	FCB-EX15E FCB-EX15EP	FCB-EX12E FCB-EX12EP	FCB-EX20D FCB-EX20DP	FCB-EX11D FCB-EX11DP
	1	1						
2	2	2						
3	3		3		3			
4	4	4	4	4	4	4		
5	5	5	5		5	5	5	
6	6	6	6	6	6	6	6	6

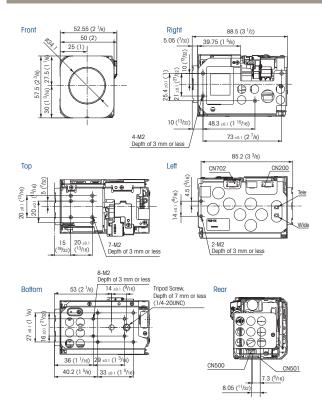
#### FCB-EX1020/FCB-EX1020P



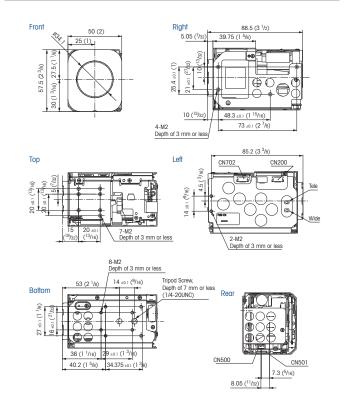
### FCB-EX995E/FCB-EX995EP/FCB-EX985E/FCB-EX985EP



## FCB-EX490E/FCB-EX490EP



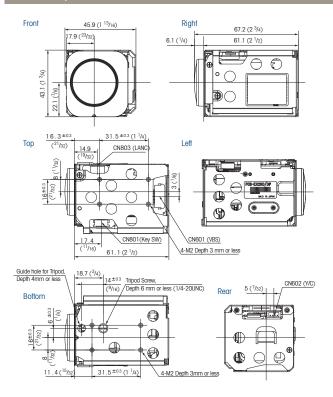
### FCB-EX48E/FCB-EX48EP



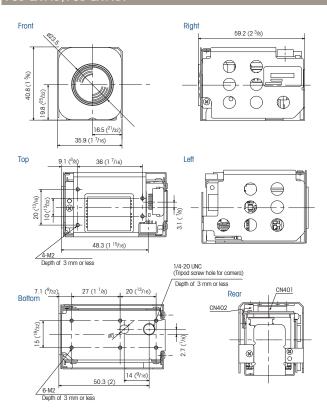


Dimensions (mm)

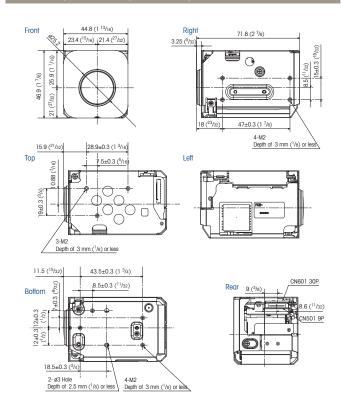
## FCB-EX20D/FCB-EX20DP



## FCB-EX11D/FCB-EX11DP



# FCB-EX15E/FCB-EX15EP/FCB-EX12E/FCB-EX12EP



		FCB-EX1020	FCB-EX1020P	FCB-EX995E	FCB-EX995EP	FCB-EX985E	FCB-EX985EP	FCB-EX490E	FCB-EX490EP
Camera	Signal systems	NTSC	PAL	NTSC	PAL	NTSC	PAL	NTSC	PAL
	Image sensor			CD™ (Progressive		1/4-type Supe	r HAD CCD II™ ce Scan)	1/4-type EXvie (Progress	w HAD CCD™
Effective	number of pixels	380,000 pixels	440,000 pixels	380,000 pixels	440,000 pixels	380,000 pixels	440,000 pixels	380,000 pixels	440,000 pixels
	Lens	f=3.4 mm (wide) t	36x optical zoom lens 28x optical zoom lens =3.4 mm (wide) to 122.4 mm (tele) f=3.5 mm (wide) to 98.0 mm (tele) F1.6 to F4.5 F1.35 to F3.7				18x optical zoom lens f=4.1 mm (wide) to 73.8 mm (tele F1.4 to F3.0		
	Digital zoom	12 x (432x with	optical zoom)		12 x (336x with	optical zoom)		12 x (216x with	optical zoom)
	Angle of view (H)	57.8° (wide) 10 mm (wide) to				to 2.1° (tele)		48.0° (wide) 10 mm (wide) to	
Minimun	n object distance	*Default:			*Default	300 mm		*Default:	
	Sync system				Internal/Exte	ernal (V-lock)			
Minimum ille	umination (50IRE)	1.4 lx (F1.	6, 50IRE)	0.65 lx (F1	.35, 50IRE)	0.25 lx (F1	.35, 50IRE)	0.7 lx (F1	4, 50IRE)
Recomme	nded illumination				100 lx to	100,000 lx			
	S/N ratio				More the	an 50 dB			
	Analog				VBS: 1.0 Vp-p (syr	nc negative), Y/C			
Video output	Digital			Y/(	Cb/Cr 4:2:2 (comp	arable to ITU-R BT6	56)		
Camera	control interface				VISCA (CMC aud rate: 9.6 kbps,	OS 5 V level)			
Electro	nic shutter speed					000 sec, 22 steps			
	White balance		Auto, ATW	, Indoor, Outdoor,	Outdoor Auto, Soc		fix/auto), One-pu	sh, Manual	
	Gain				ual/Max. Gain Limi		•		
	AE control		Auto, Mc	anual, Priority mode	e (shutter priority &	iris priority), Bright,	EV compensation	n, Slow AE	
	Focusing system		Auto, Manual, Priority mode (shutter priority & iris priority), Bright, EV compensation, Slow AE  Auto (Sensitivity: normal, low), One-push AF, Manual, Infinity, Interval AF, Zoom Trigger AF, Focus Compensation in ICR On Mode						
E	EV compensation		Yes						
Backlig	ht compensation	Yes							
	Aperture control	16 steps							
Camera Features	Preset				6 pos	sitions			
Wide	-D (*) Auto mode		Ye	es		N	0	Ye	es
	ide-D IS/PS mode		Ye	es		No Yes			
Im	nage stabilization StableZoom	Yes (	43x)	Ye	es Yes (	(33x)		N N	
	Digital output			ı	Ye	es			
Enhance	d noise reduction	Yes							
	Auto ICR	Yes							
Spherical priva	cy zone masking				Ye	es			
	Motion detection Alarm	Yes							
	Slow AE response	Yes Yes (Longer than 10 minutes)							
	Picture effects		Yes (E-Flip, Nega Art, Black & White, Mirror image, Color Enhancement)						
				Yes (E-Flip, Nega			or Enhancement)		
	Picture freeze Slow shutter			Yes (E-Flip, Nega	Ye	Mirror image, Col es es	or Enhancement)		
Tem	Picture freeze			Yes (E-Flip, Nega	Ye Ye	es	or Enhancement)		
Tem	Picture freeze Slow shutter				Ye Ye	es es es			
	Picture freeze Slow shutter perature readout				Ye Ye	es es es /line, max. 11 lines			
Came	Picture freeze Slow shutter sperature readout Title display era mode display (ey switch control				Yes Yes (20 characters Yes (English*/Cl Ye	es es es /line, max. 11 lines ninese) *default es			
Came	Picture freeze Slow shutter perature readout Title display era mode display (ey switch control Multi-line OSD	Vas (Auth)			Yes (20 characters Yes (English*/Ct	ess ess ess //line, max. 11 lines ninese) *default ess ess		Vas (Auto)	
Came	Picture freeze Slow shutter sperature readout Title display era mode display (ey switch control	Yes (Auto)			Yes Yes (20 characters Yes (English*/Cl Ye	es es es /line, max. 11 lines ninese) *default es		Yes (Auto)	-
Came K General	Picture freeze Slow shutter perature readout Title display era mode display (ey switch control Multi-line OSD	Yes (Auto)	-		Yes (20 characters Yes (English*/Ct Yes	ess ess ess //line, max. 11 lines ninese) *default ess ess		Yes (Auto)	-
Came K General	Picture freeze Slow shutter sperature readout Title display era mode display (ey switch control Multi-line OSD Flicker cancel	Yes (Auto)			Yes (20 characters Yes (English*/Ct Yes	ess ess ess //line, max. 11 lines ninese) *default ess ess Yes (Auto)		Yes (Auto)	-
Came K General Stor	Picture freeze Slow shutter sperature readout Title display era mode display (ey switch control Multi-line OSD Flicker cancel	Yes (Auto)	-		Yes (20 characters Yes (English*/Ch Yes -20°C to	esses esses ess //line, max. 11 lines ninese) *default ess ess Yes (Auto) 0 +60°C		Yes (Auto)	-
Came K General Stor Opera	Picture freeze Slow shutter sperature readout Title display era mode display fey switch control Multi-line OSD Flicker cancel age temperature Storage humidity string temperature perating humidity	Yes (Auto)	-		Yes (20 characters  Yes (English*/CF  Yes (English*/CF)  Yes (English*	ess ess ess ess //line, max. 11 lines ninese) *default ess ess Yes (Auto) 0 +60°C 0 95% +60°C 0 80%		Yes (Auto)	-
Came  K  General  Stor  Opera  Opera	Picture freeze Slow shutter perature readout Title display era mode display (ey switch control Multi-line OSD Flicker cancel age temperature Storage humidity string temperature perating humidity wer requirements		anthon 5 1 MA	Yes (Auto)	Yes (20 characters Yes (English*/Ct Yes (English*/Ct Yes Yes (English*/Ct Yes Yes Yes (English*/Ct Yes Yes Yes Yes (English*/Ct Yes	ess ess ess ess ess //line, max. 11 lines ninese) *default ess ess Yes (Auto) 0 +60°C 0 95% 0 +60°C 0 80% to 12.0 V	-		
Came  K  General  Stor  Opera  Opera	Picture freeze Slow shutter perature readout Title display era mode display (ey switch control Multi-line OSD Flicker cancel age temperature Storage humidity string temperature perating humidity wer requirements wer consumption	2.4 W (motors		Yes (Auto)	Yes (20 characters Yes (English*/C) Yes (English*/C) Yes	ess ess ess ess  //line, max. 11 lines ninese) *default ess ess Yes (Auto)  0 +60°C 0 95% +60°C 0 80% to 12.0 V  2.2 W (motors	-	2.4 W (motors	
Came K General Stor Opera Opera Po	Picture freeze Slow shutter perature readout Title display era mode display (ey switch control Multi-line OSD Flicker cancel age temperature Storage humidity string temperature perating humidity wer requirements		8.1 oz)	Yes (Auto)	Yes (20 characters Yes (English*/Ct Yes (English*/Ct Yes Yes (English*/Ct Yes Yes Yes (English*/Ct Yes Yes Yes Yes (English*/Ct Yes	ess ess ess ess  //line, max. 11 lines ninese) *default ess ess Yes (Auto)  0 95% 0 460°C 0 95% 0 460°C 0 80% to 12.0 V 2.2 W (motors) 8.4 oz)	-		8.1 oz) x 88.5 mm

		FCB-EX48E	FCB-EX48EP	FCB-EX15E	FCB-EX15EP	FCB-EX12E	FCB-EX12EP	FCB-EX20D	FCB-EX20DP	FCB-EX11D	FCB-EX11DP
Camera Signal	l systems	NTSC	PAL	NTSC	PAL	NTSC	PAL	NTSC	PAL	NTSC	PAL
	ge sensor	1/4-type CCD (	(Interlace Scan)		ew HAD CCD™ sive Scan)	1/4-type CCD (	(Interlace Scan)		r HAD CCD II™ ce Scan)		w HAD CCD™ ce Scan)
Effective nu		380,000 pixels	440.000 pixels	380,000 pixels		380,000 pixels	440,000 pixels	380,000 pixels	440.000 pixels	380,000 pixels	440,000 pixels
	pixels		I zoom lens		cal zoom		cal zoom	•	Il zoom lens		I zoom lens
	Lens	f=4.1 mr to 73.8 n F1.4 t	m (wide) nm (tele) o F3.0	f=3.7 mi to 44.4 r	m (wide) nm (tele) o F2.5	f=3.7 mr to 44.4 r	m (wide) nm (tele) o F2.5	f = 5.1 m to 51.0 r F1.8 t	m (wide) nm (tele) o F2.1	f = 4.2 m to 42.0 r F1.8 t	m (wide) nm (tele) o F2.9
	tal zoom		optical zoom) to 2.8° (tele)		optical zoom)		optical zoom) to 4.6° (tele end)		optical zoom) to 5.4° (tele)	1	optical zoom)
Angle of Minimum	m object	46.0 (WIGE)	10 2.0 (Tele)		to 4.6° (tele end) o 800 mm (tele),	55.6 (wide end)	10 4.0 (lele end)		o 800 mm (tele),		to 4.6° (tele)
	distance			*Default	: 290 mm	latana al / Est		*Default	: 150 mm	*Default	: 200 mm
Sync	c system					Internal / Ext	ernal (V-lock)	1/60 s, 1/50 s	mode: 0.25 lx		
illumination	Minimum on (50IRE)	0.4 lx (F1	.4, 50IRE)		.6, ICR off) .6, ICR on)		6, ICR off) .6, ICR on)	(typical) ( 1/4 s, 1/3 s m (typical) ( 1/4 s, 1/3 s m	F1.8, 50IRE) node: 0.015 lx F1.8, 50IRE) ode& ICR On: :al) (F1.8, 50IRE)	1.0 lx (typcal	) (F1.8, 50IRE)
	mended mination					100 lx to	100,000 lx				
	S/N ratio	\/D0.7.0\/				More th	an 50 dB	1,000,1014		1,000 101/	
Video	Analog	Υ,	sync negative), /C		VBS: 1.0 Vp-p (	(sync negative)			sync negative), /C		sync negative), /C
output	Digital		(comparable BT656)	Y/Cb/Cr	4:2:2 via LVDS (c	omparable to IT	U-R BT656)				
	a control interface				Bau	ıd rate: 9.6 kbps,	OS 5 V level) . 19.2 kbps, 38.4 k bit: 1 bit	kbps			
Electronic	ic shutter speed					1/1 sec to 1/10,	000 sec, 22 steps				
White I	balance	Auto, ATW, Ind	loor, Outdoor, O	utdoor Auto, Soc	dium Vapor Lam	p (fix/auto), One	-push, Manual	Auto, A	ATW, Indoor, Out	door, One-push,	Manual
	Gain				al (-3 dB to +28 d mit (+6 dB to +28			Auto	/Manual (-3 dB	to +28 dB, 2 dB s	teps)
Al	E control				al, Priority mode			ht, EV compens	ation, Slow AE		
	g system	Auto (Sensitivity: normal, low), One-push AF, Manual, Infinity, Interval AF, Zoom Trigger AF, Focus Compensation in ICR On Mode  Auto (Sensitivity: normal, lov One-push AF, Manual, Infini Interval AF, Zoom Trigger AF						Manual, Infinity,	One-push AF, I	y: normal, low), Manual, Infinity, oom Trigger AF	
EV compo	ensation Backlight						es				
comp	ensation						es				
Aperture	e control Preset						teps sitions				
Camera Fe						0 00	SITION 10				
	ide-D (*) to mode	N	lo	Y	'es			N	lo		
Wide-D IS/F		N	lo	Y	'es			N	10		
Image stat	bilization bleZoom						lo lo				
	al output			Υ	'es	IN .	10		N		
	ed noise			Υ	'es				١	10	
	Auto ICR	N	lo			Y	es			N	lo
Spherical	l privacy masking					Υ	es				
	detection					Y	es				
Clave A.F.	Alarm	V (I II	10 ' ' '	Υ	'es	10 ' ' '				10	
Slow AE re	e effects		an 10 minutes) s (E-Flip, Nega Ar	t, Black & White	, Mirror image, C	an 10 minutes) Color Enhanceme	ent)	Yes (E-Fli		o 32 times) ck & White, Mirro	r, Image)
	re freeze					Υ	es				
	w shutter					Y	es				
	readout			Y	'es	100 1				10	
	e display ra mode				Ye		/line, max. 11 line	es)			
	display						hinese) *default		,		
Key switch Multi-	h control	Ye	es		N	10 Yo	es	Y	es	N	lo
Flicke	er cancel	Yes (Auto)	-	Yes (Auto)	-	Yes (Auto)	-	Yes (Auto)	-	Yes (Auto)	-
General	Charman										
tem	Storage perature					-20°C to	o +60°C				
Storage I						20% t	o 95%				
	perating perature			-5°C to	) +60°C				0°C to	+50°C	
Operating I		DO / C:	t- 10 0 ′ ′		(0)(1		o 80%		DO ( 6)	/+- 10.0 \ /	
Power requi			to 12.0 V	2.4 W (zoom/fe	6.0 V to ocus inactive) /	12.0 V DC 1.9 W (zoom/fo	ocus inactive) /	0.0144		′ to 12.0 V	
Power cons	-		active: 3.1 W)		(focus active)	3.2 W (zoom)	focus active)		active: 6.5 W)		active: 2.8 W)
Din	Mass nensions		(8.1 oz) x 88.5 mm			(5.3 oz) x 71.8 mm			x 67.2 mm		3.3 oz) x 59.2 mm
	/ x H x D)		3 1/2 inches)			3 x 2 7/8 inches)			1 x 2 3/4 inches)		x 2 3/8 inches)

## 4-pin for Y/C Video Out

CN500	CN602	CN402
FCB-EX1020/FCB-EX1020P	FCB-EX20D/FCB-EX20DP	FCB-EX11D/FCB-EX11DP

FCB-EX1020/FCB-EX1020P FCB-EX995E/FCB-EX995EP

FCB-EX985E/FCB-EX985EP

FCB-EX490E/FCB-EX490EP

FCB-EX48E/FCB-EX48EP

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)

FCB-EX12E/FCB-EX12EP

## 9-pin for DC/Video Out

CN501	CN601	CN401
FCB-EX1020/FCB-EX1020P	FCB-EX20D/FCB-EX20DP	FCB-EX11D/FCB-EX11DP
FCB-EX995E/FCB-EX995EP		
FCB-EX985E/FCB-EX985EP		
FCB-EX490E/FCB-EX490EP		
FCB-EX48E/FCB-EX48EP		
FCB-EX15E/FCB-EX15EP		

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-EX1020/FCB-EX1020P	FCB-EX985E/FCB-EX985EP	FCB-EX48E/FCB-EX48EP
FCB-EX995E/FCB-EX995EP	FCB-EX490E/FCB-EX490EP	

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)

## 30-pin for Digital Out

## CN601

#### FCB-EX15E/FCB-EX15EP FCB-EX12E/FCB-EX12EP

Pin No.	Name	Level
1	TXOUT3+	
2	TXOUT3-	
3	TXCLKOUT+	
4	TXCLKOUT-	
5	TXOUT2+	
6	TXOUT2-	
7	TXOUT1+	
8	TXOUT1-	
9	TXOUT0+	
10	TXOUTO-	
11	GND	
12	TxD	CMOS 5 V (Low: Max. 0.1 V, High: Min. 4.4 V)
13	RxD	CMOS 5 V (Low: Max. 0.8 V, High: Min. 2.0 V)
14	DC IN	6 to 12 V DC
15	DC IN	6 to 12 V DC
16	DC IN	6 to 12 V DC
17	DC IN	6 to 12 V DC
18	DC IN	6 to 12 V DC
19	GND	
20	GND	
21	GND	
22	GND	
23	GND	
24	GND	
25	GND	
26	GND	
27	VBS OUT	
28	GND	
29	V LOCK PULSE	
30	GND	

Connector: USL00-30L-C (KEL Corp.)

## 12-pin for Key Switch Control

CN702	CN801						
FCB-EX1020/FCB-EX1020P	FCB-EX490E/FCB-EX490EP	FCB-EX20D/FCB-EX20DP					
ECD EVONEE/ECD EVONEED	ECR-EVARE/ECR-EVARED						

FCB-EX995E/FCB-EX995EP FCB-EX48E/FCB-EX48EF FCB-EX985E/FCB-EX985EP

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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