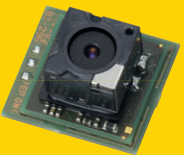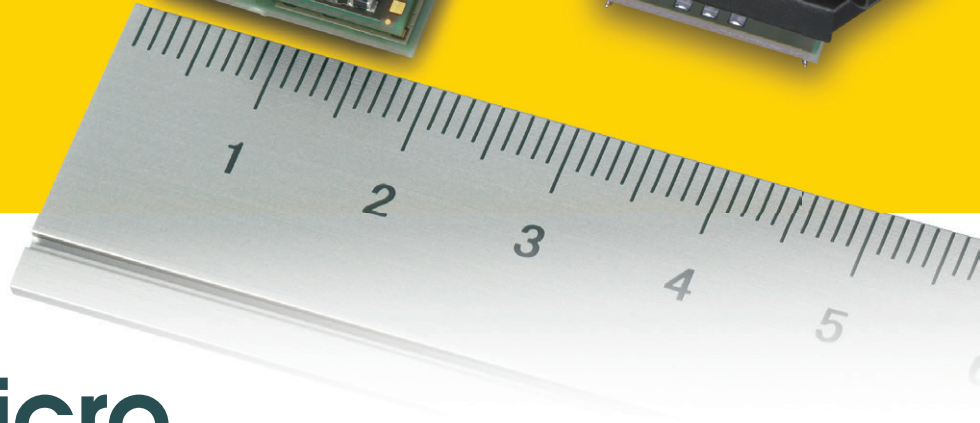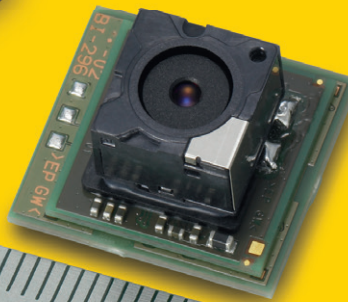FCB-MA133

FCB-MA132

FCB-MA131

FCB-MA130

FCB-Micro
Series

**Colour
Block Cameras**

FCB-MA133
FCB-MA132
FCB-MA131
FCB-MA130

Exmor

FCB-MA133
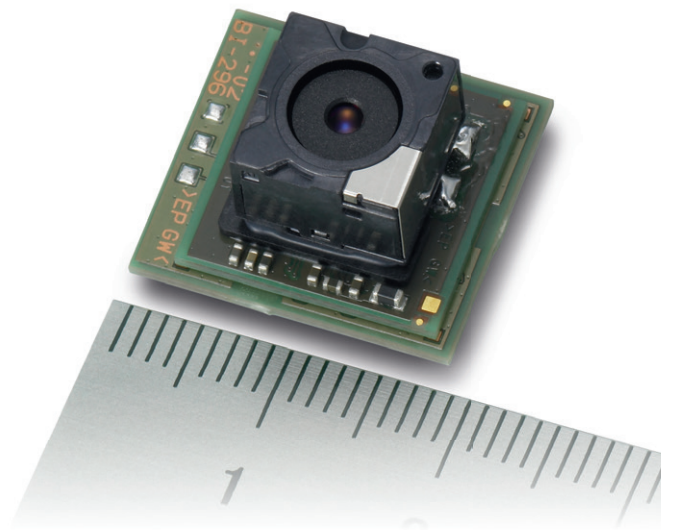# FCB-MA132
FCB-MA131
FCB-MA130

Sony is expanding its popular FCB Micro Series with the introduction of three new ultra-compact, all-in-one colour block cameras.

The new FCB-MA131, FCB-MA132, and FCB-MA133 colour block cameras build on the strong reputation established by the FCB-MA130 by providing excellent picture quality – in both still images and moving pictures – and additionally offering several new lens versions which support a variety of horizontal angle-of-view capabilities.

Incorporating a 1/2.45-type Exmor™ CMOS sensor from Sony, the FCB Micro Series enables users to capture Full HD resolution (1080p/30) movies and still images of up to

13 megapixels. These colour block cameras also feature several other innovative functions, including embedded image stabilization and face detection, thanks to Sony's unique on-board image signal processor.

The unmatched combination of performance and size makes the FCB Micro Series suitable for a wide variety of applications, including document scanning, UAV (unmanned aerial vehicle) use, and other security and industrial applications.

Compact Size
The FCB Micro Series is extremely compact, measuring just 16.5 x 10.3 x 18.0 mm for the FCB-MA130 and less than 28 x 26 x 18.9 mm for the FCB-MA131, FCB-M132 and FCB-MA133, and can be easily integrated into space-restricted products.

Supports Still and Moving Images
The FCB Micro Series supports high-quality images. It achieves 13-megapixel still images and Full HD (1080p/30)-quality moving pictures in a single unit.

Superb Picture Quality
Thanks to Sony's renowned high-quality Exmor image sensor and Sony's original image signal processor, the FCB Micro Series delivers superb picture quality in both still images and moving pictures.
In addition to these technologies, picture quality is optimized by precise adjustment previously developed by Sony during production of mobile phone camera modules.
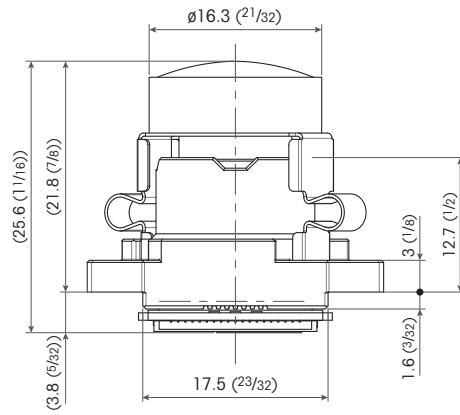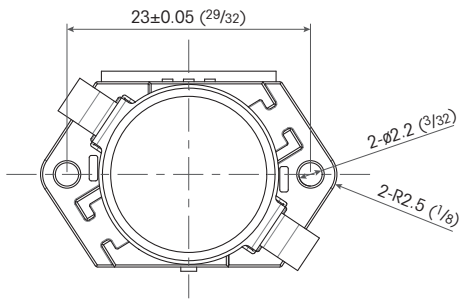
Auto Focus (FCB-MA130 only)
This camera offers a one-push auto focus (AF) function for ease of use.
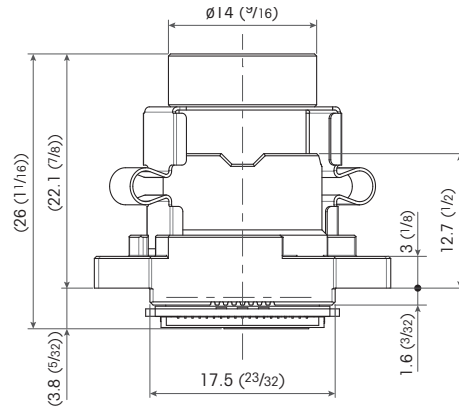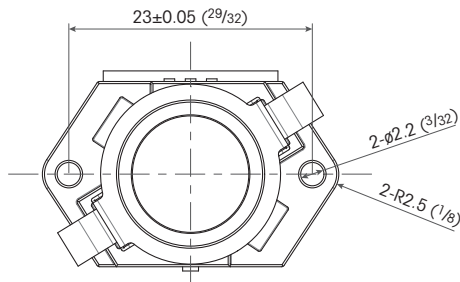
Sony's Original Image Processor
Many useful features are achieved thanks to Sony's original image processor:
• Image Stabilization
• Face Detection
• Adaptive Tone Reproduction
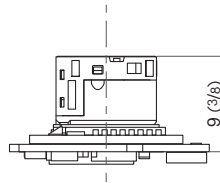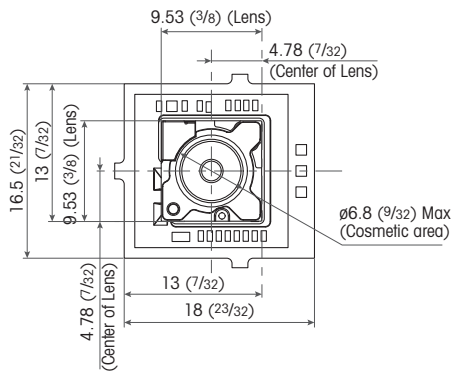• Noise Reduction (3DNR)
• 16x Digital Zoom

FCB-MA133

FCB-MA132 / 131

FCB-MA130

Unit: mm (inches)

FCB-MA133 / FCB-MA132 / FCB-MA131 / FCB-MA130

Pin No.	Symbol	I/O	Type of Power Supply	Description
1	GND	–	–	Ground
2	GND	–	–	Ground
3	VDD_33	–	–	Power Supply (3.3 V)
4	VDD_33	–	–	Power Supply (3.3 V)
5	VDD_33	–	–	Power Supply (3.3 V)
6	VDD_12	–	–	Power Supply (1.2 V)
7	VDD_12	–	–	Power Supply (1.2 V)
8	VDD_12	–	–	Power Supply (1.2 V)
9	VDD_18	–	–	Power Supply (1.8 V)
10	GND	–	–	Ground
11	GND	–	–	Ground
12	N.C.	–	–	Not Connected
13	TRIG	O	V_{DD_18}	Mode Transition Signal
14	C7	O	V_{DD_33}	Parallel Output Video Data (Chroma Parallel Data 7)
15	C6	O	V_{DD_33}	Parallel Output Video Data (Chroma Parallel Data 6)
16	C5	O	V_{DD_33}	Parallel Output Video Data (Chroma Parallel Data 5)
17	C4	O	V_{DD_33}	Parallel Output Video Data (Chroma Parallel Data 4)
18	C3	O	V_{DD_33}	Parallel Output Video Data (Chroma Parallel Data 3)
19	C2	O	V_{DD_33}	Parallel Output Video Data (Chroma Parallel Data 2)
20	C1	O	V_{DD_33}	Parallel Output Video Data (Chroma Parallel Data 1)
21	C0	O	V_{DD_33}	Parallel Output Video Data (Chroma Parallel Data 0)
22	DCLK	O	V_{DD_33}	Parallel Output Video Clock
23	Y7	O	V_{DD_33}	Parallel Output Video Data (Luminance Parallel Data7)

Pin No.	Symbol	I/O	Type of Power Supply	Description
24	Y6	O	V_{DD_33}	Parallel Output Video Data (Luminance Parallel Data6)
25	Y5	O	V_{DD_33}	Parallel Output Video Data (Luminance Parallel Data5)
26	Y4	O	V_{DD_33}	Parallel Output Video Data (Luminance Parallel Data4)
27	Y3	O	V_{DD_33}	Parallel Output Video Data (Luminance Parallel Data3)
28	Y2	O	V_{DD_33}	Parallel Output Video Data (Luminance Parallel Data2)
29	Y1	O	V_{DD_33}	Parallel Output Video Data (Luminance Parallel Data1)
30	Y0	O	V_{DD_33}	Parallel Output Video Data (Luminance Parallel Data0)
31	HD	O	V_{DD_33}	Parallel Output Video H-Active Signal
32	VD	O	V_{DD_33}	Parallel Output Video V-Active Signal
33	GND	O	–	Ground
34	MIPI_D0-	O	*2	MIPI Output Data Lane0(-)
35	MIPI_D0+	O	*2	MIPI Output Data Lane0(+)
36	MIPI_CK-	O	*2	MIPI Output Clock(-)
37	MIPI_CK+	O	*2	MIPI Output Clock(+)
38	MIPI_D1-	O	*2	MIPI Output Data Lane1(-)
39	MIPI_D1+	O	*2	MIPI Output Data Lane1(+)
40	GND	O	–	Ground
41	XRST	I	V_{DD_18}	System Reset, or not connected
42	SDA	IO	V_{DD_18}	I2C Serial Bus Data I/O*1
43	SCL	I	V_{DD_18}	I2C Serial Bus Clock*1
44	GND	O	–	Ground
45	GND	O	–	Ground

*1 An external pull-up resistor (10kΩ) is recommended.
*2 MIPI I/F is based on D-PHY Ver1.00 or later.

FCB-Micro Series Specifications

Camera	FCB-MA133	FCB-MA132	FCB-MA131	FCB-MA130
Image Sensor	1/2.45-type Exmor CMOS (13.19 megapixels)			
Moving Image	1920 x 1080 (FHD), 1600 x 1200 (UXGA), 1280 x 960 (SXGA), 1280 x 720 (HD), 1024 x 768 (XGA), 800 x 480 (WVGA), 640 x 480 (VGA); 30fps/25fps*[1]			
Still Image	4192 x 3104, 4128 x 3096 (13M), 3264x2448 (8M), 2592 x 1944 (5M), 1920 x 1080 (FHD), 1280 x 960 (SXGA), 1280 x 720 (HD) ,640 x 480 (VGA)			
Minimum illuminator (Typ.)	6 lx	4 lx		6 lx
Gain	Auto (2 dB-36 dB)			
Shutter Speed	1/25 to 1/5000 s, 24 Step			
Sync System	Internal			
Exposure Control	Auto, Hold, Manual, Shutter priority, Gain priority			
Backlight Correction	Yes			
White Balance	Auto, Hold, ATW, Fixed (Light Bulb, Neutral Colour Fluorescent Light, Clear Sky, Cloudy Sky, Daylight Colour Fluorescent Light, Light Bulb Colour Fluorescent Light)			
Lens	F2.8 f=2.8 mm	F2.2 f=3.8 mm	F2.2 f=12 mm	F2.8 f=5.3 mm
Digital Zoom	16x			
Focusing System	Fixed*[3]			One-push AF, MF
Viewing Angle (Movie, 1920 x 1080)	Horizontal: 115° Vertical: 62°	Horizontal: 85° Vertical: 46°	Horizontal: 26° Vertical: 15°	Horizontal: 52° Vertical: 29°
Viewing Angle (Still, 4192 x 3104)	Horizontal: 128° Vertical: 91°	Horizontal: 94° Vertical: 67°	Horizontal: 28° Vertical: 21°	Horizontal: 57° Vertical: 42°
Minimum Object Distance	Adjustable*[3]			100 mm
Camera Features				
Auto ICR	No			
Adaptive Tone Reproduction	Yes			
Noise Reduction (3DNR)	Yes			
Image Stabilization for Still Image	Yes			
Image Stabilization for Moving Image	Yes			
Face Detection	Yes			
Picture Effect	Yes (Flip horizontal, Flip vertical)			
Interface				
Video Output	CMOS Clock 81MHz, Parallel 16bit (Y/Cb/Cr 4:2:2) / Sync Signal (HD, VD)			
Video Output (HD)	MIPI D-PHY Clock 324MHz, Data 2lane CSI-2 (Y/Cb/Cr 4:2:2)			
Camera Control Interface	I2C			
General				
Power Requirements	3.3±0.1, 1.8±0.1, 1.2-0.05/+0.1 V DC			
Power Consumption (Typ.)	Normal: 710 mW –			Normal: 710 mW AF Active: 730 mW
Operating Temperature	-5°C to +50°C*[4] 23°F to 122°F*[4]			-5°C to +50°C 23°F to 122°F
Storage Temperature	-20°C to + 60°C -4°F to +140°F			
Dimensions (W x H x D)*[2]	28.0 x 25.6 x 18.9 mm 1 1/8 x 1 1/16 x 3/4 inches	28.0 x 26.0 x 18.9 mm 1 1/8 x 1 1/16 x 3/4 inches		16.5 x 10.3 x 18.0 mm 21/32 x 13/32 x 23/32 inches
Mass*[2]	8.7 g 0.307 oz	9.7 g 0.342 oz	9.5 g 0.335 oz	2.2 g 0.078 oz

*1 Non-standard video format.
*2 The values for Dimensions and Mass are approximate.
*3 It is possible to adjust the focus by turning the lens.
*4 For this product, focus position fluctuates according to temperature change.
Even in a temperature-controlled environment, it is necessary to match the focus to suit operating temperature conditions.

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