



FCB Zoomkamas



FCB-EX-E Series
– Digital Interface

FCB-EH Series
- (Full) HD



FCB HD- / EX-E-Serie



Zoom \ Auflösung	HD 1080	HD 720	SD	
			C / D-Serie	E-Serie
36x			FCB-EX1010/P FCB-EX1000/P	FCB-EX1020/P (PS)
28x		FCB-EH3400 (720p/30)	FCB-EX990D/P FCB-EX980S/P	FCB-EX995E/P (PS) FCB-EX985E/P (IS)
20x	FCB-EH6300 (1080p/30) (1080i/60)	FCB-EH3300 (720p/30)	FCB-EX490D/P FCB-EX480C/P FCB-PV480	FCB-EX490E/P (PS)
18x			FCB-EX48C/P FCB-IX47C/P FCB-EX45C/P FCB-IX45C/P	FCB-EX48E/P (IS)
12x		FCB-EH3150 (720p/30)	FCB-EX11D/P FCB-IX11A/P FCB-EX20D/P	FCB-EX15E/P (PS) FCB-EX12E/P (IS)
10x	FCB-H11 (1080i/60) (720p/60)			
3x	FCB-SE600 (1080p/30) (1080i/60)			

(PS) : Progressive Scan
(IS): Interlaced Scan



FCB EX-E-Serie

Neue und verbesserte Features



- 28x Zoom Optik
- „Echtes“ Progressive Scan
- **Digitaler Ausgang** (ITU-BT656)
- Verschiedene Betriebsmodi
- Temperature Readout
- Verbesserte 3D Rauschreduzierung

- **Wide-D**
 - ✓ Auto Wide-D Mode
 - ✓ Interlaced und Progressive Scan Mode
 - ✓ Verbesserte Bildqualität
- **Image Stabilizer**
 - ✓ Neue Methode mit Digitalzoom
 - ✓ StableZoom™
- **Horizontale Auflösung**
 - ✓ Hochauflösend bis zu **550 TV** Linien (früher 540 TV-Linien)
- **Betriebstemperatur**
 - ✓ Erweiterung des Bereiches: **-5°C - 60°C** (früher 0°C - 50°C)
- **Weißabgleich**
 - ✓ Outdoor Auto Mode
 - ✓ Sodium Light Source Mode
- **Title Display (20 Zeichen / 11 Zeilen)**
- **Slow AE Response**
 - ✓ Korrekturzeit \leq **10ms** (früher bis 3min)

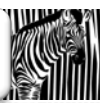
FCB EX-E-Serie Modell-Vergleich



Modell	PS	Zoom	Zoom Speed (Tele ⇌ Wide)	Empfindlichkeit	WD	Stab	ICR	Baugröße
FCB-EX1020/P	✓	36x	4 s	1.4 lx	✓	✓	✓	50 x 58 x 88 mm ³ 230 g
FCB-EX995E/P	✓	28x	2.5 s	0.65 lx	✓	✓	✓	
FCB-EX985E/P		28x	2.5 s	0.25 lx (Super HAD 2)		✓	✓	
FCB-EX490E/P	✓	20x		0.7 lx	✓		✓	
FCB-EX48E/P		18x	2.1 s	0.5 lx				
FCB-EX15E/P	✓	12x		0.95 lx	✓		✓	45 x 47 x 72 mm ³ 146 g
FCB-EX12E/P		12x		0.6 lx			✓	

PS: Progressive Scan
Stab: Image Stabilizer

WD: Wide-D
ICR: Auto IR-Cut-Filter



FCB-HD-Serie Features



- Auflösung bis 1080/30p
- Verschiedene Betriebsmodi (SD und HD)
- Bis 28x Zoom Optik
- Tag- / Nachtfunktion
- **Digitaler Ausgang** (YUV als LVDS)
- Ein einziges 30-Pin-Mikro-Koaxialkabel für:
 - analoge & digitale Daten
 - Spannungsversorgung
 - RS-232-Steuerung
- **Temperature Readout**

- **Wide-D**
 - ✓ Auto Wide-D Mode
 - ✓ Verbesserte Bildqualität
- **Image Stabilizer**
 - ✓ Neue Methode mit Digitalzoom
 - ✓ StableZoom™
- **Weißabgleich**
 - ✓ Auto, One-push, Manual
 - ✓ ATW, Indoor, Outdoor, Outdoor Auto
 - ✓ Sodium Vapor Lamp (Fix/Auto)
- **Erweiterte Funktionen:**
 - ✓ **Title Display (20 Zeichen / 11 Zeilen)**
 - ✓ Motion Detection
 - ✓ Picture Freeze
 - ✓ E-Flip
 - ✓ Privacy Zone Masking
- **Betriebstemperatur**
 - ✓ Erweiterter Bereich: **-5°C - 60°C**

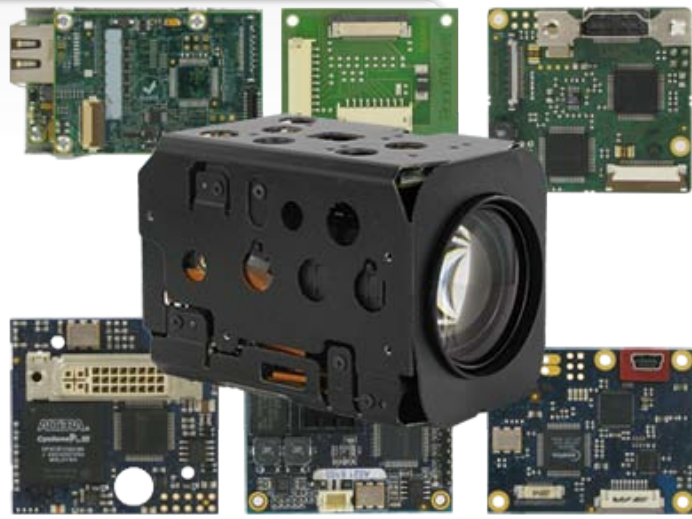
FCB HD-Serie

Modell-Vergleich



Modell	Zoom	Auflösung	Empfindlichkeit	WD	Stab	ICR	Abmessungen
FCB-EH6300	20x	1080p/30, 1080p/25 1080i/60, 1080i/50 720p/60, 720p/50 720p/30, 720p/25	0.5 lx (ohne ICR) 0.095 lx (mit ICR)	✓		✓	50x60mmx87,9 mm ³ 260 g
FCB-EH3400	28x	720p/60, 720p/50 720p/30, 720p/25	0.25 lx (ohne ICR) 0.03 lx (mit ICR)	✓	✓	✓	50x 60x89,7 mm ³ 240 g
FCB-EH3300	20x		0.25 lx (ohne ICR) 0.03 lx (mit ICR)	✓		✓	50x 60x89,7 mm ³ 240 g
FCB-EH3150	12x		0.3 lx (ohne ICR) 0.08 lx (mit ICR)	✓		✓	44.8x46.9x71.8 mm ³ Max. 150 g
FCB-H11	10x	1080i/60, 1080i/50 720p/60, 720p/50	12 lux (ohne ICR) 1 lux (mit ICR)			✓	47.2x43.1x72.2 mm ³ 120 g
FCB-SE600	3x	1080p/30, 1080p/25 1080i/60, 1080i/50 720p/60, 720p/50 720p/30, 720p/25	0.25 lx (ohne ICR) 0.03 lx (mit ICR)	✓		✓	50x47.6x53.4 mm ³ Max. 83 g

Interface Boards



GigE Vision

HDMI

HD-SDI

HD-Analog

USB

DVI

SD-SDI

SD-Analog

Interface-Boards

Modell	GigE Vision	USB 2.0	HD-SDI	SD-SDI	HDMI	DVI	Analog
FCB-EH6300	✓		✓		✓		✓
FCB-EH3400			✓		✓		✓
FCB-EH3300			✓		✓		✓
FCB-EH3150			✓		✓		✓
FCB-SE600			✓		✓		
FCB-H11	✓		✓		✓	✓	✓
FCB EX-E	✓	✓		✓		✓	✓
FCB-EX12/EX15				✓			✓
Max. Kabellänge	100 m	3 m	100 m	100 m	10 m	10 m	10 m

SDI: Serial Digital Interface ist eine serielle, digitale Schnittstelle, primär zur Übertragung von unkomprimierten und unverschlüsselten Videodaten.

- **SD-SDI:** Standard Definition (PAL und NTSC-Auflösung)
- **HD-SDI:** High Definition (720p; 1080i; 1080p) [Hier sind der Anzahl der Zeilen und nicht die Spalten gemeint]

HDMI: High Definition Multimedia Interface ist eine Schnittstelle für die volldigitale Übertragung von Audio- und Video-Daten in der Unterhaltungselektronik.

DVI: Digital Visual Interface ist eine Schnittstelle zur Übertragung von Videodaten (Monitor-Eingang).

Interface-Boards

Modell	Interface	FCB Modelle	IS	PS	SD	HD	Analog	Steuerung		
								RS-232	TTL	Ω
TL 2730	USB2.0	EX-E Serie ¹⁾	✓		✓		CVBS	✓		
TL 2740	USB2.0 & SD-SDI	EX-E Serie ¹⁾	✓		✓		CVBS	✓		
TL 6050 ²⁾	HD-SDI & HDMI	EH6300; H11; EH3400; EH3300 EH3150; SE600	✓	✓		✓	HDTV (YPbPr); CVBS	✓	✓	
TL 6030	HD-SDI & HDMI & optisch	EH6300; H11; EH3400; EH3300 EH3150; SE600	✓	✓		✓	HDTV (YPbPr)	✓	✓	
TL 6020	HD-SDI	2x H11	✓	✓		✓	HDTV (YPbPr) & (RGB)	✓		
TL 2720	SD-SDI	EX-E Serie ¹⁾	✓		✓		CVBS	✓		
TL 2760	2xSD-SDI + HDMI	EX-15E, -12E	✓	✓	✓		CVBS	✓	✓	
TL 6010	DVI/VGA	H11	✓	✓		✓	HDTV (YPbPr); CVBS	✓		
TL 2710	DVI/VGA	EX-E Serie ¹⁾	✓	✓	✓		CVBS; YC; YPbPr	✓	✓	✓

1) FCB-EX12 und 15E werden nicht unterstützt

2) Es gibt 3 Modelle: 2x SDI & HDMI oder 1x SDI oder 1x HDMI

FCB-EX-Serie

Vergleich C-, D- und E-Version

	C ver.	D ver.	E ver.
Horizontal resolution	480 TV lines	530 TV lines	550 TV lines
Progressive Scan mode	No	No	Yes
Wide-D	No	Yes	Yes (Auto mode, IS/PS mode)
Image Stabilization	Yes	No	Yes
StableZoom	No	No	Yes
Digital output	No	No	Yes
Spherical Privacy Zone Masking	Yes (Color, Half tone)	Yes (Color, Half tone, Mosaic)	Yes (Color, Half tone, Mosaic)
Motion detection	No	Yes	Yes
Alarm	Yes	Yes	Yes
Slow AE response	Yes (30 sec.)	Yes (30 sec.)	Yes (10 min.)
Temperature readout	No	No	Yes
Title display	Yes (20 characters/line)	Yes (20 characters/line, max. 11 lines)	Yes (20 characters/line, max. 11 lines)
Camera mode display	Yes (English)	Yes (English/Chinese)	Yes (English/Chinese)



FCB-EX-E-Serie

Vergleich Features (1)

	FCB-EX1020/P	FCB-EX995E/P	FCB-EX985E/P	FCB-EX490E/P	FCB-EX48E/P	FCB-EX12E/P	FCB-EX15E/P
Image sensor	¼-type EXview HAD CCD (PS)	¼-type EXview HAD CCD (PS)	¼-type Super HAD CCD II (IS)	¼-type EXview HAD CCD (PS)	¼-type CCD (IS)	¼-type CCD (IS)	¼-type EXview HAD CCD (PS)
Lens	36x	28x		18x		12x	
Digital zoom	12x (432x Gesamt)	12x (324x Gesamt)		12x (216x Gesamt)		12x (144x Gesamt)	
Horizontal resolution	550 TV lines						
Angle of view (H)	57.8° (wide end) 1.7° (tele end)	55.8° (wide end) 2.1° (tele end)		48.0° (wide end) 2.8° (tele end)		53.6° (wide end) 4.6° (tele end)	
Min. W.D.	320 mm (wide end) 1500 mm (tele end)	10 mm (wide end) 1500 mm (tele end)		290 mm (wide end) 800 mm (tele end)			
Minimum illumination	1.4 lx (F1.6, 50 IRE)	0.65 lx (F1.35, 50 IRE)	0.3 lx (F1.35, 50 IRE)	0.7 lx (F1.4, 50 IRE)	0.5 lx (F1.4, 50 IRE)	0.05 lx (F1.4, 50IRE)	0.03 lx (F1.4, 50IRE)
S/N ratio	More than 50 dB						
Video output	Analog: FBAS, Y/C Digital: Y/Cb/Cr [ITU-R BT656]					Analog: FBAS Digital: Y/Cb/Cr [ITU-R BT656] via LVDS	
Power consumption	2.6 W (motors active: 4.9 W)	2.6 W (motors active: 5.4 W)	2.6 W (motors active: 4.4 W)	2.6 W (motors active: 4.4 W)	1.5 W (motors active: 2.5 W)	1.9 W (motors active: 3.0 W)	2.3 W (motors active: 3.7 W)
Mass	230 g					146 g	
Dimensions WxHxD	50x57.5x87.9mm ³	50x57.5x88.5mm ³		52x57.5x88.5mm ³	50x57.5x88.5mm ³	44.8x46.9x71.8mm ³	
Operation temperature	-5°C to 60°C						
Temperature readout	Yes						
Camera operation switch	Yes (Zoom tele, Zoom wide)					No	No
Key switch control	Yes					No	No
Camera mode display	Yes (English/Chinese)						



FCB-EX-E-Serie

Vergleich Features (2)

	FCB-EX1020/P	FCB-EX995E/P	FCB-EX985E/P	FCB-EX490E/P	FCB-EX48E/P	FCB-EX12E/P	FCB-EX15E/P
Progressive Scan	Yes	Yes	No	Yes	No	No	Yes
Wide-D Auto mode	Yes	Yes	No	Yes	No	No	Yes
Wide-D IS/PS mode	Yes	Yes	No	Yes	No	No	Yes
Image Stabilization	Yes	Yes	Yes	No	No	No	Yes
Stable Zoom	Yes (up to 40x)	Yes (up to 32x)	Yes (up to 32x)	No	No	No	No
Digital output	Yes						
Auto ICR	Yes	Yes	Yes	Yes	No	Yes	Yes
Spherical Privacy Zone Masking	Yes						
Motion detection	Yes						
Alarm	Yes						
Slow AE response	Yes (< 10 min.)						
Picture effects	E-Flip, Nega Art, B/W, Mirror Image, Color enhancement						
WB - Outdoor Auto mode	Yes						
WB- Sodium Vapor Lamp	Yes						
Picture freeze	Yes						
Slow shutter	Yes						
Title display	Yes (20 characters/line, max. 11 lines)						

FCB-HD-Serie

Vergleich Features (1)

	FCB-EH6300	FCB-EH3400	FCB-EH3300	FCB-EH3150	FCB-H11	FCB-SE600
Image sensor	1/2.8" Exmor CMOS	1/4" Exmor CMOS	1/4" Exmor CMOS	1/4" Exmor CMOS	1/3" CMOS	1/2.8" Exmor CMOS
Lens	20x	28x	20x	12x	10x	3x
Digital zoom	12x (240x Gesamt)	12x (336x Gesamt)	12x (240x Gesamt)	12x (144x Gesamt)	12x (120x Gesamt)	12x (36x Gesamt)
Horizontal Angle of view	1080p: 55,4°(W)-2,9°(T) 720p: 37,6°(W)-1,95°(T)	55,4°(W)-2,9°(T)	55,4°(W)-2,9°(T)	53,4°(W)-4,6°(T)	50°(W)-5,4°(T)	1080p: 90°(W)-32°(T) 720p: 60°(W)-21°(T)
Min. W.D.	10 mm (wide end) 1000 mm (tele end)	10 mm (wide end) 1500 mm (tele end)		10 mm (wide end) 1000 mm (tele end)	10 mm (wide end) 800 mm (tele end)	300 mm
Minimum illumination	0.5 lx (ohne ICR) 0.095 lx (mit ICR)	0.25 lx (ohne ICR) 0.03 lx (mit ICR)	0.25 lx (ohne ICR) 0.03 lx (mit ICR)	0.3 lx (ohne ICR) 0.08 lx (mit ICR)	12 lux (ohne ICR) 1 lux (mit ICR)	0.25 lx (ohne ICR) 0.03 lx (mit ICR)
S/N ratio	50 dB	50 dB	50 dB	50 dB	50 dB	50 dB
Signal System	HD: 1080p/29.97 /25 1080i/59.94 /50 720p/59.94 /50 720p/29.97 /25	HD: 720p/59.94/50 720p/29.97/25	HD: 720p/59.94/50 720p/29.97/25	HD: 720p/59.94/50 720p/29.97/25	HD: 1080i/59.94/50 720p/59.94/50 720p/29.97/25	HD: 1080p/29.97/25 1080i/59.94 /50 720p/59.94 /50 720p/29.97 /25
	SD: PAL / NTSC					
Video output	HD: Digital Y/Cb/Cr 4:2:2 via LVDS Analog component (Y/Pb/Pr)				HD: Analog component (Y/Pb/Pr)	HD: Digital Y/Cb/Cr 4:2:2 via LVDS
	SD: Analog VBS				SD: VBS / YC	
Power consumption	3.2 W	2.7 W	2.7 W	2.7 W	4.8 W	1.2 W
Mass	260 g	240 g	240 g	Max. 150 g	120 g	Max. 83 g
Dimensions WxHxD	50x60mmx87,9 mm ³	50x 60x89,7 mm ³	50x 60x89,7 mm ³	44.8x46.9x71.8 mm ³	47.2x43.1x72.2 mm ³	50x47.6x53.4 mm ³



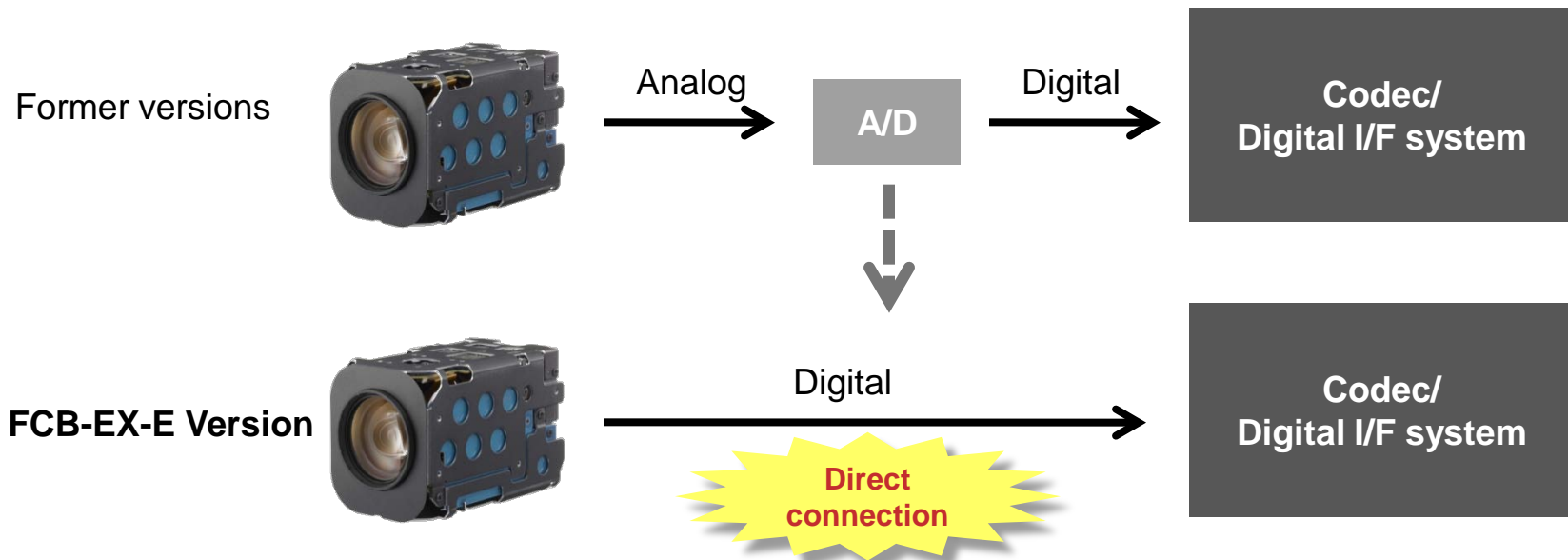
FCB-HD-Serie

Vergleich Features (2)

	FCB-EH6300	FCB-EH3400	FCB-EH3300	FCB-EH3150	FCB-H11	FCB-SE600
White balance	Auto, ATW, Indoor, Outdoor, Outdoor Auto, Sodium Vapor Lamp (Fix/Auto), One-push, Manual				AWB, ATW One Push, Manual 3200K/5600K	Wie EH
Auto ICR	Yes	Yes	Yes	Yes	Yes	Yes
Wide-D	Yes	Yes	Yes	Yes	No	Yes
Back light compensation	Yes					
Image Stabilization	No	Yes	No	No	No	No
Digital noise reduction	Yes	Yes (2D)			No	Yes
Privacy Zone Masking	Yes	Yes	Yes	Yes	No	Yes
Motion detection	Yes	Yes	Yes	Yes	No	Yes
Slow AE	Yes (max. 10 min.)				No	Yes (max. 10 min.)
Picture effects	E-Flip, Nega Art, Black & White, Mirror Image, Color enhancement				Nega Art Black & White	Wie EH
Picture freeze	Yes	Yes	Yes	Yes	No	Yes
Temperature readout	Yes	Yes	Yes	Yes	No	Yes
Title display	Yes (20 characters/line, max. 11 lines)				No	Wie EH

Digital Output

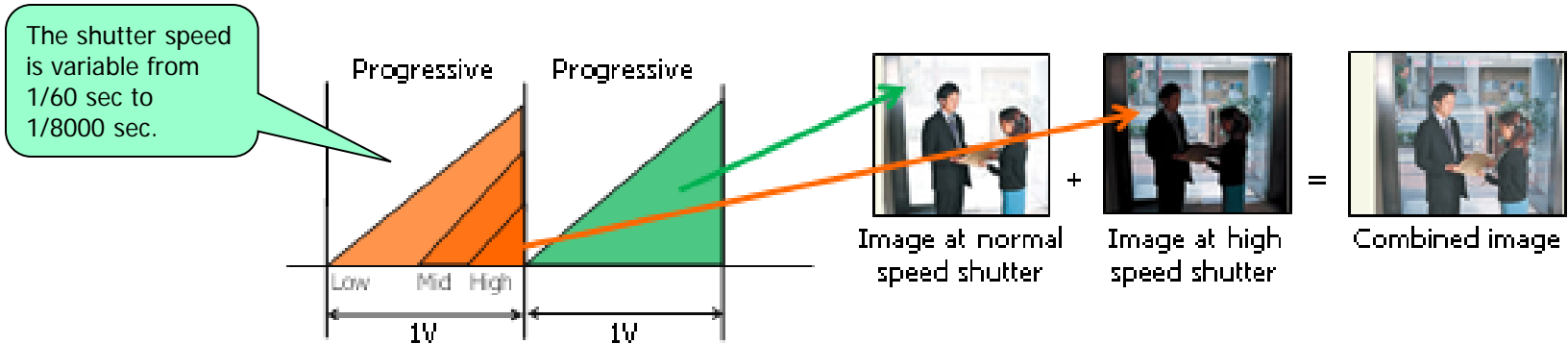
- ✓ digital interface based on the ITU-R BT656
- ✓ no deterioration of the quality of video signal
- ✓ cost saving due to direct connection to codec/system
(no additional components in between)



First in the industry!!!

Wide-D Progressive Scan

- ✓ The image at normal speed shutter in 1V and the image at high speed shutter in 1V are combined.
- ✓ For situations with less difference in luminance.
- ✓ any jagged edges don't appear



Mode	Situation	Pros	Cons
Interlace Wide-D mode	Big difference in luminance	- Moving picture resolution - Sensitivity	- Jagged edges
Progressive Scan Wide-D mode	Less difference in luminance	- No jagged edge	- Moving picture resolution - Sensitivity

“True” Progressive Scan readout

- ✓ smoother and clearer pictures without any flickering effect
- ✓ details within a moving image (e.g. a person running or a number plate on moving car)
- ✓ IP monitoring application



Interlace mode



Progressive Scan mode

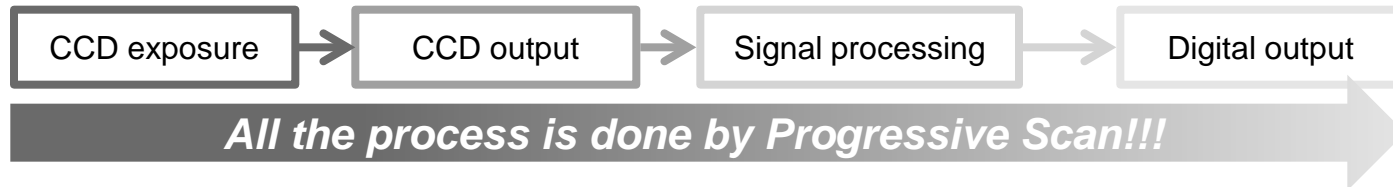


Image Stabilizer

- What improved?
 - **new method by using digital zoom**
 - **no deterioration of the sensitivity**
- How is this achieved?
 - The image from CCD is written into a memory.
 - The image is trimmed and its readout position is determined by the gyro sensor.
 - The trimmed image is enlarged by digital zoom in response to screen size and then is output.

