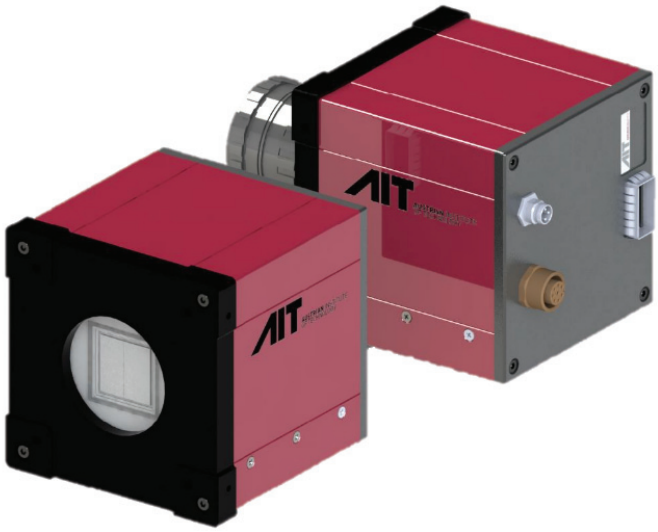
AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

xposure camera

MORE THAN JUST A HIGH SPEED LINESCAN CAMERA **



FEATURES

- 60 x 2016 pixels
- High speed: 600kHz (mono), 200kHz (color)
- High dynamic range: > 53dB
- High signal to noise ratio: > 40dB
- Small size: 85 x 85 x 85 mm

ADVANTAGES

Sensor made in Germany:

- Manufactured in own production
- Automotive certified
- Long term availability

BENEFITS

xposure enables new applications with only one camera:

- Linescan and areascan
- Single Sensor Photometric Stereo*
- Single Sensor Lightfield*
- Multispectral*
- OCT

600KHZ MULTI-LINESCAN CMOS CAMERA FOR INLINE INSPECTION

xposure camera is especially designed for high-speed inline-quality inspection. With in total 60 lines xposure camera is much more than a high-speed linescan camera. Each of the 60 lines can be read out individually. One line (monochrome) can be captured with 600kHz and three lines (RGB) with 200kHz. All 60 lines can be captured at frame rates up to 10kHz.

xposure camera offers single sensor multi-line-scan capabilities which opens unexpected capabilities for e.g. inline 3D surface analysis. Even more high-performance applications come into reach by adding for example computational imaging methods, which include correction of optical aberration, noise reduction, adaptive time delay integration (TDI) and dynamic range enhancement by employing multiple exposures. The xposure camera is an enabler for a novel embedded network of smart high-performance cameras

- line-scan mode with up to 600kHz
- Areascan mode for easy mechanical adjustment
- 40 GigE Vision Ethernet Standard (QSFP with 4 x 10 GBit/s Ethernet)
- large high-end FPGA (Altera Arria 10 SOC with Linux OS) allows customizable pre-processing, protocols or interfaces
- cascading of cameras to form a network of cameras
- cascading of trigger and sync signals (1 camera can act as a master)
- very compact due to using newest FlexPrint technologies with 10 GHz, thus flexible mounting and flexible camera housings possible
- customized IO boards inside the camera possible with same dimensions (e.g. CameraLink (mini),machine inter faces, LED lighting control)

* future options

** available Q1/2017

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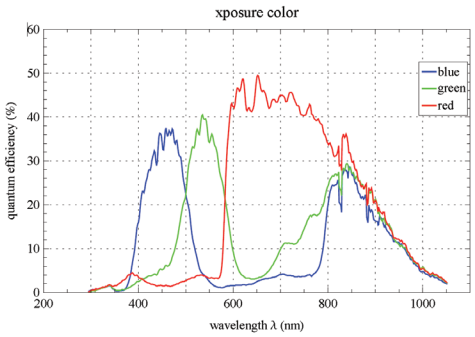
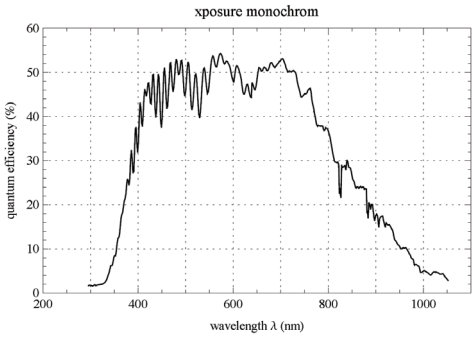
SENSOR DATA

Parameter	MEASURED VALUES				
	463 nm	518nm	627nm	860nm	
▶ Dynamic range	54.4	53.2	54.0	53.5	dB
▶ Max. signal to noise ratio	41.4	40.8	41.2	41.0	dB
▶ Dark noise	25,5	25.4	25.2	25.7	e-
▶ Noise Equivalent Energy	33	29	24	32	pJ/cm²
▶ Camera gain	0.058	0.058	0.059	0.058	DN/e
▶ Quantum efficiency	42.2	42.1	42.7	23.8	%
▶ Saturation irradiance	32953	28642	30912	53141	ph/px
▶ Nonlinearity	1.13	0.50	0.77	0.74	%

EMVA1288: monochrome sensor, 500 kHz line-rate, 1.4 µs exposure time

SPECTRAL SENSITIVITY

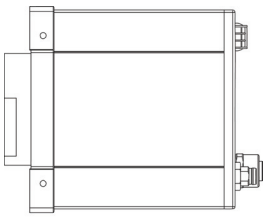


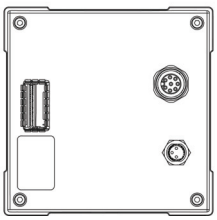


SPECIFICATIONS

▶ Pixels per Line	2016	plus 32 dark pixels/line
▶ Pixel Size	9 x 9 µm²	100% fill factor
▶ Number of Lines	60	organized in 20 triples
▶ Vertical Pitch	18 µm	
▶ Line-rate Mono (max.)	600 kHz	Single line read out
▶ Line-rate RGB (max.)	200 kHz	Tri-linear read out
▶ Frame-rate (max.)	10 kHz	read out of all 60 lines
▶ ADC's	600 kSamples / s	On-chip, column-parallel
▶ Sensor Output	16 taps à 10 bit, 80 MHz	
▶ Total Image Data Bandwidth	12 Gbit / s	

TECHNICAL DRAWINGS





FEATURES

▶ Dimensions	85 x 85 x 85 mm	without lens & lens adapter
▶ Lens mount	M42x1	flange focal distance 6.50mm
▶ Power	12–24 VDC	Binder M8, 3pol
▶ Power Dissipation	max. 15 Watt - @12 VDC & Arria 10 SX270	
▶ Trigger	2 trigger inputs 2 trigger outputs	Binder M12, 8pol
▶ Operating Temp.	0°C ... 50°C	
▶ Humidity	20% ... 80%, rel. non-condensing	
▶ Interface	10GigE Vision (QSFP with 4x10 GBit/s)	
▶ Dual-core ARM Cortex	Cortex A9 MPCore™ processor	

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