

VisionCam EB – Your Event-based Vision Sensor.

The VisionCam EB offers a versatile, programmable camera with a unique new sensor class.

Event-based contrast detection sensors constitute a new way of receiving dynamic visual information. The main advantages of these vision sensors, compared to frame-based image acquisition techniques, are low-latency response, wide-dynamic range operation and pixel-level data redundancy suppression.

The in-pixel change detector is built around a fast continuous-time logarithmic photoreceptor with asynchronous event-driven signal processing. It returns accurate timings of relative increase or decrease in light intensity that exceeds tunable thresholds set over more than 6 decades of illumination (> 120 dB). This frame-free operation directly reduces data volume at the sensor output and benefits in lower required processing resources.

The main processor is a dual-core ARM Cortex-A15 supported by a dual-core accelerator as used in other versions of the VisionCam XM. For communication with the machine/process, there are 2 / 4 digital I/Os, a serial interface and 1.000 Mbit/s Ethernet interface. The programmable camera is delivered, as usual, with a rounded-off software. The camera is freely programmable and runs under Debian based Linux, therefore programming in C++ or other languages quickly results in an application-specific intelligent camera.

Application examples that can be deployed on the VisionCam EB using Prophesee's METAVISION SDK:

High-Speed Tracking

Max Object Speed	2500 pixels/s
Typical Accuracy	< 1 pixel

Object counting

Throughput	> 1000 objects/s
Counting Accuracy @ 1000 objects/s	> 99,5%

Vibration Measurement

Maximum Frequency	> 1000 Hz
Minimal Amplitude Detection	< 1 pixel

Kinematic Monitoring

Motion Period Irregularity Detection	1%
Motion Amplitude Deficiency Detection	1 pixel



PROPHESEE - Sensor / CMOS – event-based

Size	3/4"
Resolution	640 × 480 pixels
Pixelsize	(15 μm) ²
Event Rate	30 000 000 events/s
Dynamic Range	> 120 dB
Nominal Contrast Threshold	25%
Typical Response Latency	200μs

Processor

Manufacturer, Type	Texas Instruments AM5728 Sitara
ARM Cortex-A15 Processor Clock	2 × 1.5 GHz
Floating-Point DSP Processor Clock	2 × 750 MHz
DDR RAM	1 GB DDR3L
Mass Storage	1 × μSD Card ≥ 32 GB (accessible)



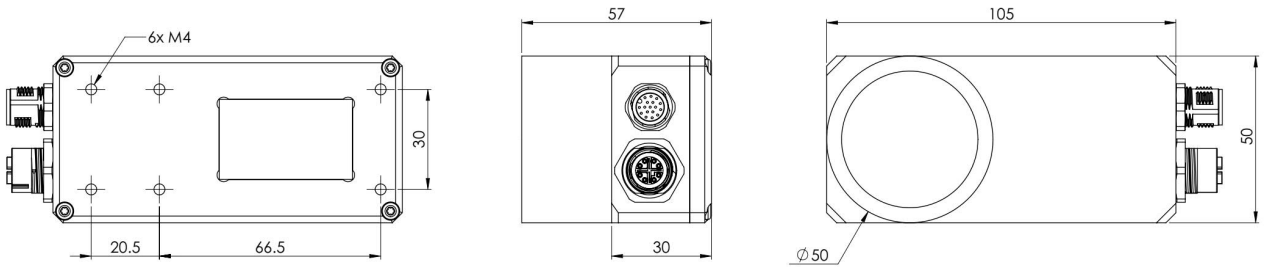
Interfaces

Ethernet TCP/IP, FTP	1000 Mbit/s
Serial Interface	1 × RS-232 (also used for Linux console)
Digital In/Out	2 × Input / 4 × Output, opto-isolated, 24V
Fieldbus	[Optional on demand: PROFINET, EtherCAT, SERCOS, ...]

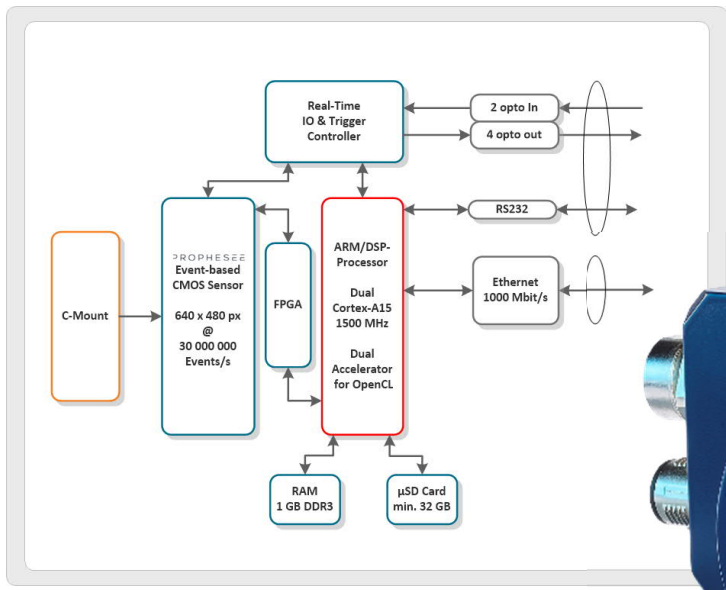
Mechanical / Electrical

Lens Mount	C-Mount
I/O Connector	M12 - 17 Pin
Ethernet Connector	M12 - 8 Pin [Option: RJ 45]
Dimension L × W × D	105 mm × 50 mm × (30 mm + lens tube 27 – 80 mm)
Weight (without lens)	180 g
Power Supply	11 V _{DC} – 26 V _{DC}
Temperature Range	+5 °C ... +35 °C (optimum: +20 °C ... +30 °C)
Protection Class	[Optional on demand: lens tube for IP54]
Mounting	6 × M4

Dimensions



Block Diagram



Lens Tubes

