

ERGO imagers

Ultra-low power high dynamic range image sensor

ERGO is an ultra-low power high dynamic range CMOS image sensor dedicated to wearable and remote sensing, being tailored for Internet of Things (IoT) applications.

Based on a time-domain pixel-level A/D conversion, its patented pixel architecture enables the capture of high dynamic range images while consuming less than 1 mW for VGA resolution at 10 fps, a fraction of the power consumption of traditional image sensors.

Logarithmic data representation enables a 120 dB dynamic range coverage with 10-bit data words facilitating the analysis of visual scenes in real-world applications which naturally contain vastly changing environmental conditions.

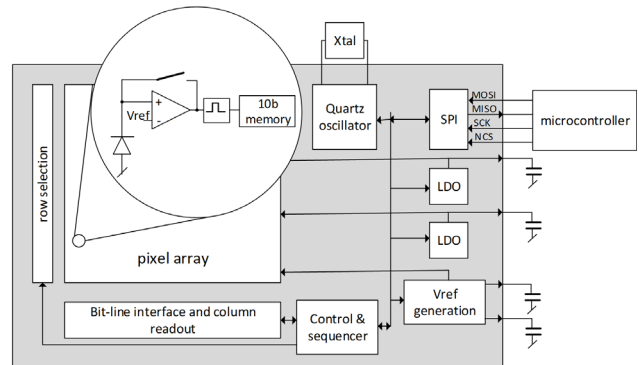
Its in-pixel data memory relaxes data readout timing constraints thus enabling it to be used with microcontrollers with very limited data memory space. Coupled to an SPI interface for both control and readout, it facilitates the interfacing with any kind of microcontroller, making it ideally suited for the implementation of low power vision systems. Different sub-sampling modes enable to reduce up to 64 times the size of a data frame to allow ultra-low power activity monitoring. Moreover, its very low bill of material facilitates its integration in any system.

This state-of-art image sensor makes autonomous vision systems powered by energy harvesting a reality.

Features (QVGA prototype)

- Resolution: 320 x 320 px
- Dynamic range: 120 dB intra-scene
- 10-bit data with logarithmic encoding
- On-chip frame memory
- Sub-sampling by 1/2, 1/4 and 1/8 for low power activity detection
- Region-of-interest readout
- Power consumption at 10 fps: 700 μ W
- Supply voltage: 1.8 V
- Chip size: 4.8 x 5.6 mm
- SPI interface for control and data readout
- Patented pixel implementation

VGA version coming soon



ERGO block diagram with external components



High dynamic range image

Applications

- Activity tracking
- IoT and wearable
- Code reading
- Biometry
- Retrofit meter reading
- Smart toys