

ERGO640

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 that is tailored to Internet of Things (IoT) applications.

The ERGO640

Based on a time-domain pixel-level A/D conversion, ERGO's patented pixel architecture can capture 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.

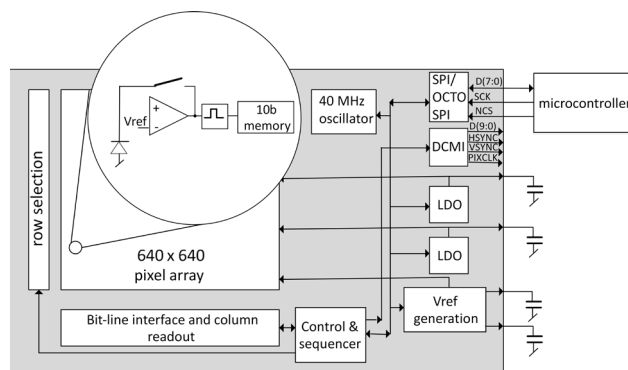
Logarithmic data representation enables a 120 dB dynamic range coverage with 10-bit data words, facilitating the analysis of visual scenes in real-world applications that naturally contain vastly changing environmental conditions.

ERGO's 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/OCTO-SPI interface for control and a DCMI or the SPI/OCTO-SPI for data readout, it facilitates interfacing with any kind of microcontroller, making it ideally suited for the implementation of low power vision systems. Different sub-sampling modes enable a reduction of up to 64 times the size of a data frame to allow ultra-low-power activity monitoring. Moreover, ERGO's very low bill of material facilitates its integration in any system.

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

Key features

- Resolution: VGA (640 x 640)
- 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 monitoring
- Region-of-interest readout
- Power consumption at 10 fps: < 1 mW
- Supply voltage: 1.8 V and 3.3 V
- Chip size: 4.4 mm x 4.9 mm
- SPI/OCTO-SPI interface for control
- DCMI or SPI/OCTO-SPI for data readout
- Patented pixel implementation



ERGO640 block diagram with external components



High dynamic range image

Applications

- Activity tracking
- IoT and Wearables
- Code reading
- Biometry
- Retrofit meter reading