HEIMDALL – low power, low resolution image sensor IC
A smart imaging sensor chip for IoT

Key features
- 32x32 image sensor
- Ambient light sensor RGB
- On-chip temperature sensing
- Configurable PIR sensor element interface
- AES-128 encryption
- 8 GPIOs
- Fully differential analogue sensor interface
- 10 bit SAR ADC
- openMSP430 CPU with debug interface
- 32k bytes pFlash non-volatile memory
- 8k bytes RAM
- Digital interfaces: Master/Slave SPI, Master/Slave I2C
- Available in 6x6 CSP ball grid package (incl. lens)
- Supply voltage: 3.3 V
- Supply current: 15 mA (full operational mode)

This is smart, because the chip can be programmed and integrated into a sensor network in master/slave mode.

The image processing can be done on chip or raw data can be extracted to be processed elsewhere. The image sensor is a 32x32 pixel sensor with global shutter or optional rolling shutter, CDS and a maximum frame rate of 30 frames/s. All differential sensor outputs are correlated, double sampled, and muxed into the same signal path; a 2-stage PGA followed by a 10 bit SAR ADC allows for additional analogue sensors. The PIR sensor interface delivers a movement/non-movement output.

Software development and system integration
We support software development e.g. movement tracking, occupation sensing or general image analysis. For larger order quantities the monochromatic image sensor can be customised to a RGB sensor.

HEIMDALL is a complete sensor system available in a 6x6 mm² package and thus suitable for space constrained applications. We support system integration with e.g. wireless data connection/network (LoRa, Wifi, BLE, etc.) or additional sensors to prototypes or modules.

Applications
Sensor networks; Moving object/light/laser tracking/count; Occupancy sensing; Direction sensing; Ambient light triggered image processing; Visual inspection; PIR triggered image processing.

Example of module assembly including lens

For further information please contact us: asic@delta.dk