HDPYX 160 & 230 - *G*
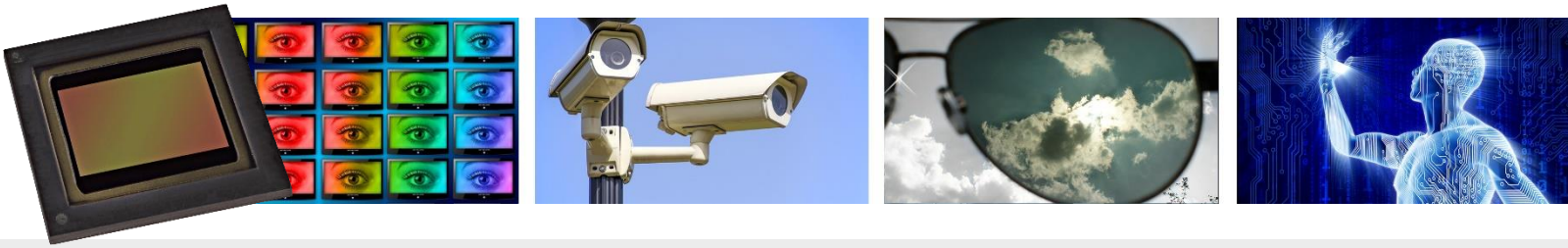
G-Series, ultimate performance in global shutter

1.6 and 2.3 Megapixel, Global Shutter HDR CMOS image sensor

pyxalis
Your Image Sensor Solution

The HDPYX-**G** image sensors use a groundbreaking global shutter pixel with dual in-pixel memory to capture prefect high dynamic range (HDR) images. Outstanding features are excellent in-scene dynamic, low noise and high sensitivity. The result is a perfect picture in all conditions. Target applications and market include scanning, night vision, ITS, robotic and surveillance.

Key Features

- Global shutter pixel for easy use
- Build-in pixel high-dynamic technology
- Monochrome
- RGB+Nir or Bayer (HDPYX 230 only)
- Micro-lenses for higher efficiency
- Square pixels
- Very high MTF in NIR range

- Artefact free HDR processing
- Digital CDS for black level constancy
- Two low noise 11bits ADC
- Pixel processing pipeline (ISP)
- 8/10/12/14/16bits output format
- Linear and compressed mode

- 8 regions of interest (ROI)
- Sequencer
- Context meta data
- GPIO for trigger and status
- Master and slave modes

- Mirror and flip
- Subsampling and binning up to x4

- MIPI CSI-2 output (4 Lanes / 800Mbps)
- Parallel output (12bits / 100 MHz)

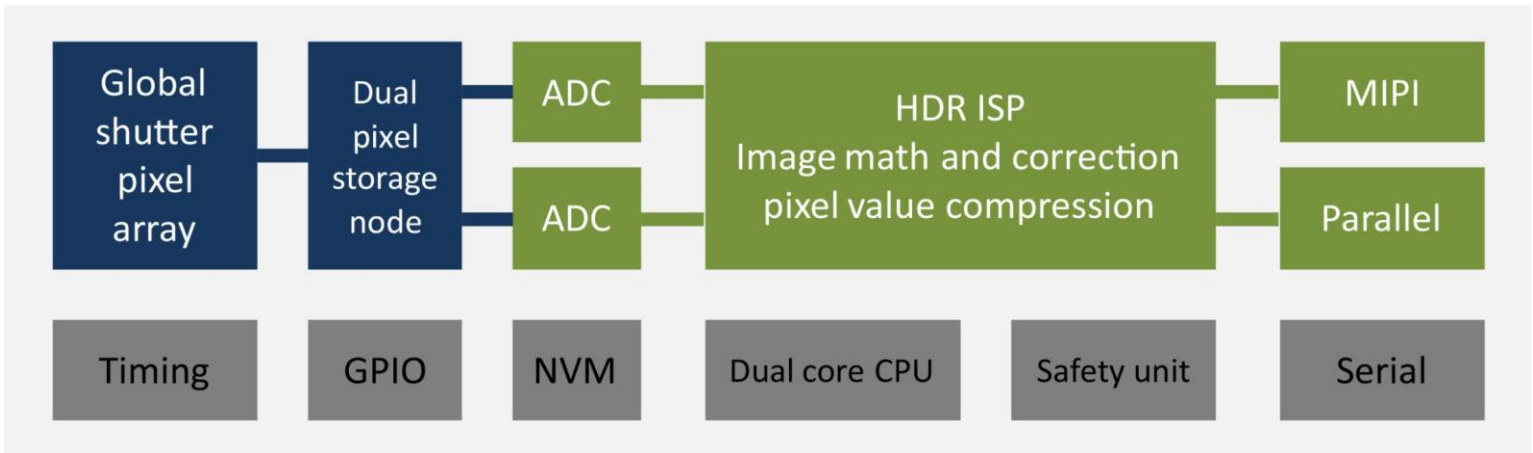| Model	HDPYX 160-*G*	HDPYX 230-*G*
• Resolution Class	1.6 Megapixel	2.3 Megapixel
• Active Pixels	1472 x 1104	1944 x 1204
• Aspect Ratio	4 : 3	16 : 10
• Frame Rate	75 fps	60 fps
• Optical Diagonal	1/3" / 5.9mm	1/2.5" / 7.3mm

Pixel Performance

- 3,2μm pitch
- Linear Dynamic range up to 98 dB
- Single integration with 72dB de DR
- Saturation capacity (Full Well) 2 x 8.5 ke-
- QE 69% at 550nm and 19% at 850nm
- SNR Max 41.6dB
- Noise of 2.1 e- RMS (60°C)
- Dark current of 21.75 e-/s (60°C)

Environment

- Low power design
- Operating temperature of -40°C to 125°c
- Automotive qualified IM2BG4 plastic package
- Automotive qualification AEC-Q100 grade 2
- ASIL B Compliant
- BGA or bare die available

Operation modes

The sensor can work in Linear mode with up to 11 bits per pixels

HDR image capture is done in two phases:

A short and a long exposure in a sequence without noticeable timing gap. The pixel uses two storage nodes for the results. Charges accumulated in long and short timing storage nodes are converted in parallel though a double 11bits ADC. The 22bits result is processed in the image processing unit (ISP) and formatted to a 16bits HDR value.

ISP Special features

Background removal in combination with an illumination source to get higher contrast in pattern projection systems.
Compression from 18 to 8bits for a logarithmic response
Digital correction artefacts like hot pixels.

RGB+NIR Color Filter Array

The color version featured with a RGB+Nir CFA as detailed beside. This pattern offers a better color accuracy (with more green pixels) than a NIR-dense solution.
The Nir Pixels give a solution from very low light or night (mono) to high level (color) applications.

Mono sensor without cover glass

RGB+Nir Sensor without cover glass