The HDPYX-G image sensors use a groundbreaking global shutter pixel with dual in-pixel memory to capture perfect 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**

<table>
<thead>
<tr>
<th>Model</th>
<th>HDPYX 160-G</th>
<th>HDPYX 230-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution Class</td>
<td>1.6 Megapixel</td>
<td>2.3 Megapixel</td>
</tr>
<tr>
<td>Active Pixels</td>
<td>1472 x 1104</td>
<td>1944 x 1204</td>
</tr>
<tr>
<td>Aspect Ratio</td>
<td>4 : 3</td>
<td>16 : 10</td>
</tr>
<tr>
<td>Frame Rate</td>
<td>75 fps</td>
<td>60 fps</td>
</tr>
<tr>
<td>Optical Diagonal</td>
<td>1/3” / 5.9mm</td>
<td>1/2.5” / 7.3mm</td>
</tr>
</tbody>
</table>

**Pixel Performance**

- 3,2um 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
1.6 and 2.3 Megapixel, Global Shutter HDR CMOS image sensor

**Operation modes**
The sensor can work in Linear mode with up to 11 bits per pixels.
HDR image capture is done in two phases:
1. A short 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.