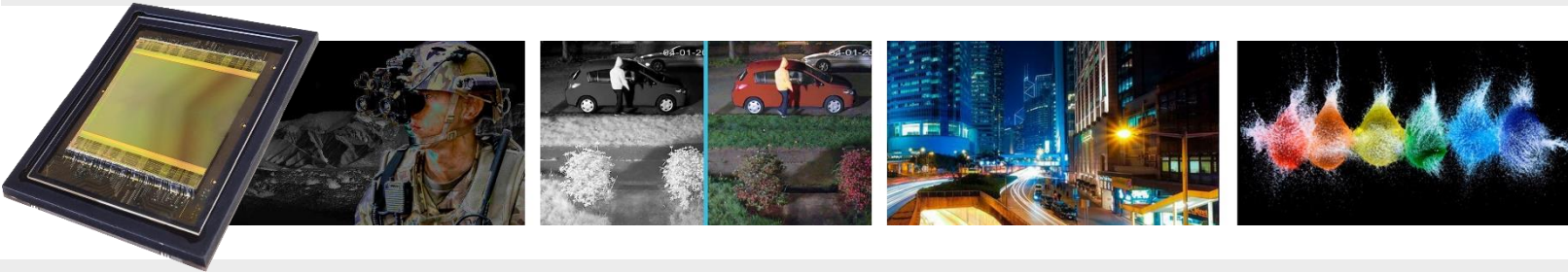


HDPYX 330 & 1600-G

G-Series, ultimate performance in global shutter



3.3 and 16 Megapixel, Global Shutter Low light HDR CMOS image sensors



The HDPYX 330/1600-G image sensors use a groundbreaking global shutter pixel with dual Gain to capture perfect high dynamic range (HDR) images. Outstanding features are high speed, excellent in-scene dynamic, low noise and high sensitivity. The result is a perfect picture in all conditions. Target applications and market include High speed capture, night vision, ITS, robotic and surveillance, low flux scientific, defense image fusion imaging and Full HD Video with electronic stabilization.

Key Features

- Global shutter, low noise pixel
- Deep Trench Technology (DTI) to minimize dark current and crosstalk: Very high MTF in NIR range
- Analog binning 2x2 (charge domain) : Sensitivity x4 for low light conditions.
- Build-in pixel high-dynamic technology (2x CVF Values)
- Cyclic ADC for higher speed (10/11/12bits)
- Multi-sampling (dark and signal) for Low noise mode
- Output format: 10 (high speed), 11, 12 or 16 (HDR) bits
- Bracketing mode (Two consecutive exposures)
- Anti-Black Sun system
- SIMR: 3x3 non overlapping ROIs in the same frame.
- MIMR: x2 ROIs by using the frame sequence mode.
- Frame Context Sequencing (FSC): x2 different successive configurations of frames including the change of:
 - ROI (single or Multiple)
 - Gain (analog and digital) and offset
 - Exposure
 - Period
 - Trig delay
 - Iteration (nb of successive frames in this configuration)
 - Read While Integrate
- GPIO for trigger and Strobe
- 2x8 or 4x8 LVDS output (8 data-1 clock, 12bits, 700Mb/s)
- Serial communication interface (SPI)
- Integrated temperature sensor

Model

HDPYX 330-G

HDPYX 1600-G

• Resolution Class	3.3 Megapixel	16 Megapixel
• Active Pixels	2160 x 1536	4096 x 4096
• Aspect Ratio	4 : 3	1 : 1
• Max Frame Rate	200 fps	100 fps
• Optical Diagonal	2/3"	C-Mount compliant

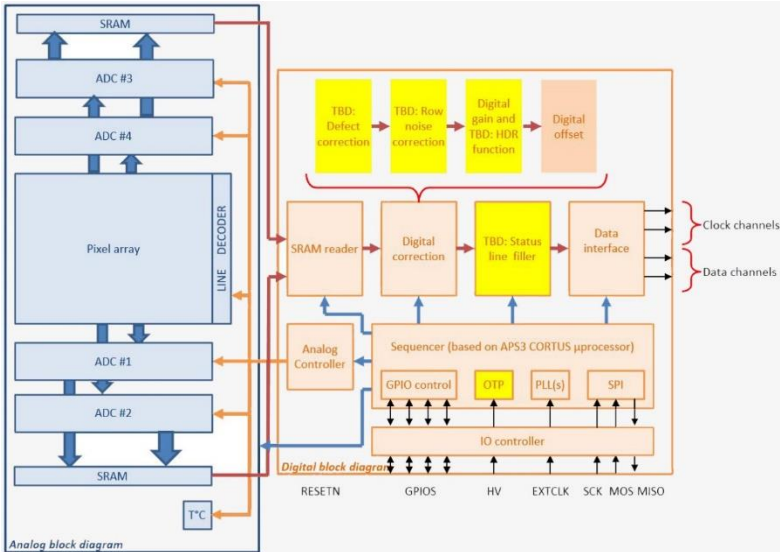
Pixel Performance

- 4.4µm pitch
- Linear Dynamic range up to 84 dB on-chip
- Saturation capacity (Full Well) > 20 ke-
- QE > 65% at 550nm
- SNR Max 43dB
- Noise of 2e- @ max fps, 1.7e- in Low noise mode
- Ultra low crosstalk in NIR: Deep Trench Isolation technology

Operating conditions, packaging and filters

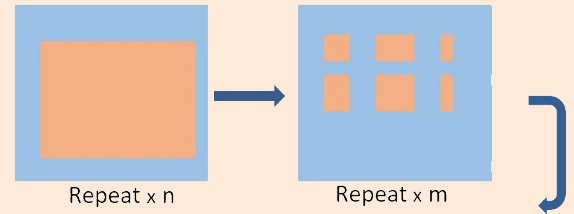
- Power < 3.1W / 1.6W @ full speed (HDPYX 1600-G / 330-G)
- Operating temperature of -40°C to 85°C
- Double side AR coated window
- CLGA package, same pinout for both versions.
- Monochrome or standard RGB Bayer

3.3 and 16 Megapixel, Global Shutter Low light HDR CMOS image sensors



Frame Context Sequencing (FCS):

- 2 different frame contexts:
 - ROI
 - Gain
 - Integration
 - Flip
- Configurable repetition of each context
- ROI: Single, up to 3x3 (2, 3, 4, 6, 9 areas) per context



Operation modes:

- **Low Noise:** Several modes using the multi-sampling and the 2 pixel gains. Binning is available and the 16bits reconstruction is performed on-chip.
- **High Speed:** fps > 100. Binning is also available.
- **HDR with Double Gain** per pixel, no multisampling: At least 120fps for the HDPYX-330-G resolution.
- **Bracketing mode:** To improve the Dynamic Range, 2 successive images with 2 different exposures are captured. The reconstruction is not performed in the chip.
- **Charge domain binning:** 2x2 binning in analog. Frame rate is x2
- **ADC Output format:**
 - 10bits: pixel output high speed applications
 - 11bits: Standard pixel output for one-pixel gain
 - 12bits: One extra cyclic ADC LSB available
 - 16bits: HDR reconstruction is enabled

MODE	HDPYX 1600-G (4096 x 4096)		HDPYX 330-G (2160 x 1536)		
	Low Noise HDR	High Speed	Low Noise HDR	HDR	High Speed
Multi-Sampling	Yes	No	Yes	No	No
Dual Gain	Dual	Single	Dual	Dual	Single
Readout Noise	1.3 / 1.5 e-	-	1.3 / 1.5 e-	< 2 e-	-
Output format	16/24 bits	10/11/12 bits	16/24 bits	16/24 bits	10/11/12 bits
Frame Rate	25 fps @ 16 bits	80 fps @ 12 bits 100 fps @ 10 bits	60 fps @ 16 bits	100 fps @ 16 bits	200 fps @ 12 bits