

## OnyxMax

# HIGH-PERFORMANCE CMOS IMAGE SENSORS FOR EXTREMELY LOW LIGHT CONDITIONS



OnyxMax™ is the next generation of Teledyne e2v's popular Onyx 1.3M low light CMOS image sensor. This new sensor has been designed for extremely low light conditions, down to 1 mLux. The combination of sensitivity and image resolution increases its range, allowing even small objects to be detected in harsh conditions. This makes OnyxMax ideal for a wide range of applications including science, defense, traffic cameras, broadcast, surveillance, border control and astronomy.

### SENSOR FEATURES

High image processing throughput with 120 fps frame rate @ 1.3M resolution

Global shutter and rolling shutter HDR

A high-performance low noise global shutter pixel

Teledyne's patented HiRho technology

### CUSTOMER BENEFITS

High speed and accurate

Flexible integration and resolution

Excellent SNR and frequency contrast in low light conditions

Enhanced NIR responsivity enabling increased signal generation



## Sensor Characteristics

	OnyxMax
RESOLUTION – PIXELS	1,280 x 1,024
PIXEL SIZE SQUARE – $\mu\text{m}$	10
ASPECT RATIO	5/4
DEPTH - BITS	8 / 10 / 12 / 14
FRAME RATE – fps	120 / 120 / 60 / 30
READOUT NOISE – e-rms	1.8
FWC – ke-	14
DYNAMIC RANGE – dB	75
HDR – dB	100
SNRMAX – dB	41.5
Q.E. – %, @ 850 nm	58
MTF – %, @ 850 nm	63
OPERATING POWER CONSUMPTION / STANDBY mW	275 / 1.2

### KEY SPECIFICATIONS

- Global and rolling shutter in serial and overlap modes
- Rolling shutter with HDR mode in serial and overlap modes
- Global shutter with external CDS mode
- Range gating mode for active imaging
- 1" optical format
- Output format true 8 / 10 / 12 / 14bit LVDS and synchronization
- Frame clamp and on-chip fixed pattern noise correction
- SPI controls
- Control input pins: Trigger in, reset
- Light control output – Trigger out
- 3.3 V and 1.8 V power supplies
- 80 MHz input clock
- 67 pins PGA ceramic package

### EMBEDDED FUNCTIONS

- Image statistics and context output
- Sub-sampling
- Two PLL for LVDS and ADC frequencies generation
- Wide dynamic range capabilities
- Accumulation mode for active imaging applications
- Time to read improvement (good first image, abort image)
- Low power

### TYPICAL APPLICATIONS

- Surveillance & security cameras
- Military and law enforcement
- Scientific imaging / astronomy
- Industrial inspection
- Biometric and medical imaging
- Traffic cameras