

Hydra3D+

THE TIME-OF-FLIGHT SOLUTION TAILORED FOR HIGH-END 3D VISION APPLICATIONS



Hydra3D+ is a 0.5M CMOS image sensor designed for indirect Time-of-Flight (ToF) operation and engineered using Teledyne e2v's patented HiRho™ technology, which enables outstanding Near Infrared (NIR) sensitivity and precision. This innovative sensor features unique on-chip characteristics, which deliver differentiation to high-end 3D vision applications.

Hydra3D+ combines its 10 μm three tap pixel with on-the-fly tap control capabilities, to deliver fast, real-time, and highly accurate results in any conditions (indoors, outdoors, wide ranges of reflectivity, multi-system configurations and moving scenes), making it the perfect fit for challenging environments.

SENSOR FEATURES

HiRho™ pixel architecture

Gate transfer times as low as 10 ns with the benefit of 10 μm three tap pixel

High spatial resolution

832 x 600 pixels

On-chip, high speed, linear HDR

Accumulation of configurable exposures in a single frame

Flexible tap management

On-chip tap exposure control memory for on-the-fly frame-to-frame exposure control

CUSTOMER BENEFITS

Optimal system light power while ensuring **high precision** across a wide range of scenarios

Large FoV and fine angular resolution
+30% distance or angular range vs. VGA

Speed-optimized HDR modes

Supports wide ranges of reflectivity, at various distances, and without compromising on speed

Application tailored operation

Supporting all modulation techniques, real-time configuration changes, and 2D-3D interleaving



Sensor Characteristics

Resolution – pixels	832 x 600
Aspect ratio	4 : 3
Size type	2/3" (10.3mm diagonal)
Pixel type / size – square	Three-tap global shutter – gated global shutter / 10 µm
Maximum frame rate @12 bits	416.7 (Full frame @ 12 bits) ¹
FFxQE – %, @ 850 nm / 940 nm	41 / 31 ²
Transfer time – ns	Down to 10
Linearity: L _{Emin} / L _{Emax} – %	<0.5%
Full well capacity ³ – e-	20k
Temporal noise ³ – e-	12
Dynamic Range ^{3,4} – dB	67

¹ Considering only readout. Exposure is not concurrent.

² In 2D greyscale mode

³ For a single tap

⁴ Single readout, 2D greyscale mode

EMBEDDED FEATURES

- Multiple acquisition modes: distance measurement and greyscale
- High Dynamic Range mode through non-destructive readout
- Programmable exposure times
- Row-wise ROI (up to 4 for distance measurement, 1 for 2D greyscale image)
- Column-wise ROI (with 64 column granularity)
- Row sub sampling (factor 2, 4, 8)
- Frame-to-frame “hot” changes of exposure parameters and ROI
- Multiple trigger modes
- HFPN correction
- On-chip multi-system management

ECOSYSTEM

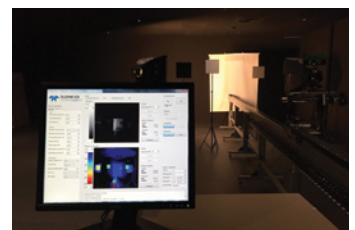
- Evaluation Kit to assess performance and operating modes
- iToF system simulation to obtain optimal sensor configuration
- Reference Design to accelerate time-to-market
- Dedicated 3D labs for customized training, configurations, and calibrations.

SYSTEM INTEGRATION

- Package: ceramic LGA
- Operating temperature [-40°C to 105°C]
- Scalable LVDS outputs (13, 7 or 4 channels)
- Individual column output slices per LVDS
- Up to 416 fps raw output (3 taps, readout limited)
- Sensor control: SPI
- Light control: LVDS or single ended pad.

TYPICAL APPLICATIONS

- Warehouse/logistics management
- Robotics
- Factory safety automation
- Specialized light pulse analysis
- ITS
- Surveillance
- Construction/building mapping



ORDER CODE - HYDRA3D+ SENSORS

EV3S0M5B-CLVH000-T

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