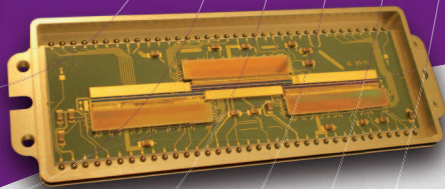


Imagine the invisible

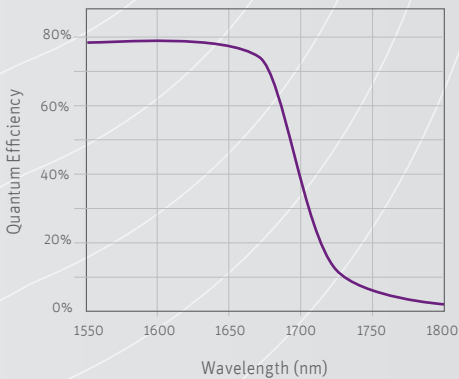
Modules & components

Xlin-1.7-3000

High speed 3000 pixel SWIR line-scan detector



High performance earth observation with high line rate and low noise



The high resolution Xlin-1.7-3000 InGaAs detector is specifically designed for earth observation. The detector is based on mechanical butting of three InGaAs photodiode arrays with each 1024 pixels on a 25 μm pixel pitch, forming a nearly continuous line of 2900 pixels. The sensors come in an hermetically sealed package with an anti-reflective coated window or in an open package (optional).

The read-out integrated circuit includes Correlated Double Sampling (CDS) and autozero features, enabling low Dark Signal Non Uniformity (DSNU).

A selectable integration time and capacitor allow for fine tuning the conversion gain in flight. You can choose from High Sensitivity (HS) mode and High Dynamic Range (HDR) mode. Furthermore the high maximum line rate of 10 kHz enables a high resolution in the time domain.

Thanks to their high sensitivity and quantum efficiency they operate at very low illumination levels.

Designed for use in



Push-broom imaging

Airborne: high speed sensing

Earth and vegetation observation

Spaceborne: high speed remote sensing

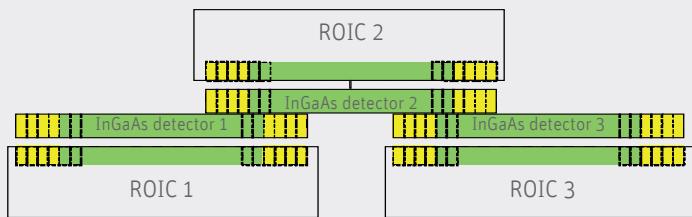
Key features

- 3 x 1024 pixels
- High-speed 10 kHz
- Correlated Double Sampling (CDS)
- High sensitivity in the SWIR range
- Selectable integration time and capacitor

Benefits

- High resolution across track
- High ground resolution along track
- Low noise performance
- Perfectly suited for atmospheric and vegetation inspection
- Inflight adaptivity to illumination conditions

Sensor architecture



Advantage

High resolution with 25 μm pitch allows for more accurate inspection and smaller particle detection

Specifications

Array Specifications	Xlin-1.7-3000
Array characteristics	
Array type	InGaAs photodiode array
Spectral band	0.9 to 1.7 μm
# pixels	3 x 1024 pixels mechanically butted
Pixel pitch	25 μm
Pixel height	25 μm
InGaAs array length	73.2 mm
Pixel operability	> 99 %
Pixel alignment	X-Y direction: < 25 μm (over the full array) Z direction: < 100 μm (over the full array)
Subarray separation (along track)	< 1.5 mm
Fill factor	100 %
ROA	0.27 M. Ω .cm ²
Peak detectivity (at 293K)	3.8 x 10 ¹² cm.sqrt (Hz)/W
Peak Quantum Efficiency (QE)	75%
Detector characteristics	
Integration time range	1 μs up to 1 second
Cooling	Uncooled
Dark Signal Non-Uniformity (DSNU)	< 5%
Modulation Transfer Function at Nyquist (MTF)	> 50 %
Package	Custom made metal can with ceramic substrate and 2 x 36 pins
Window and lid	Double-side coated transmission filter with gold plated lid to allow for seam sealing
Read-Out characteristics	
Technology	CTIA topology 0.35 μm CMOS
Power supply voltage	3.3 V
Correlated Double Sampling (CDS)	Yes
Auto Zero	Yes
# Outputs	3 outputs
Pixel rate (max.)	12.5 MHz
Line time (min.)	100 μs
Operating modes	Integrate Then Read (ITR) Integrate While Read (IWR)
Power consumption (slow scan mode)	< 300 mW per module or < 900 mW for the full array
Gain settings	Selectable from 5fF (HS) till 830fF (HDR)
Gain ($\mu\text{V}/\text{e}^-$)	From 32 (HS) till 0.19 (HDR)
Pixel Well Depth (e^-)*	From 60Ke- (HS) till 10Me- (HDR)
Dynamic Range*	From 60:1 (HS) till 3200:1 (HDR)
Environmental specifications	
Operational temperature range	-40°C to 85°C
Radiation tolerance	Qualified for 10 krad ionizing radiation with maintained performance

* Depending on gain settings

Product selector guide

Part number	# Pixels	Pixel size (μm^2)	Cooling
ASY-008043	3 x 1024	25 x 25	Uncooled

XB-084 iss ue 01| Information furnished by Xenics is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. This information supersedes all previously supplied information.