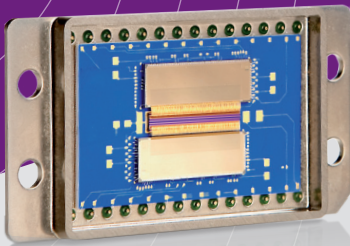


Imagine the invisible

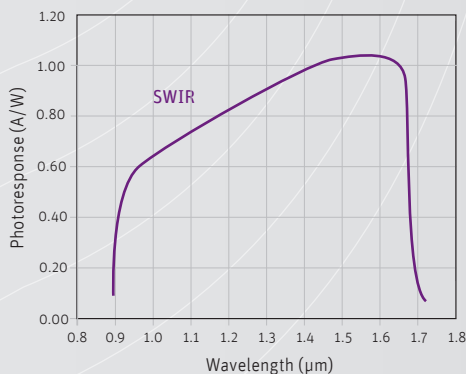
Modules & components

Xlin detector series

High speed
SWIR line-scan detector



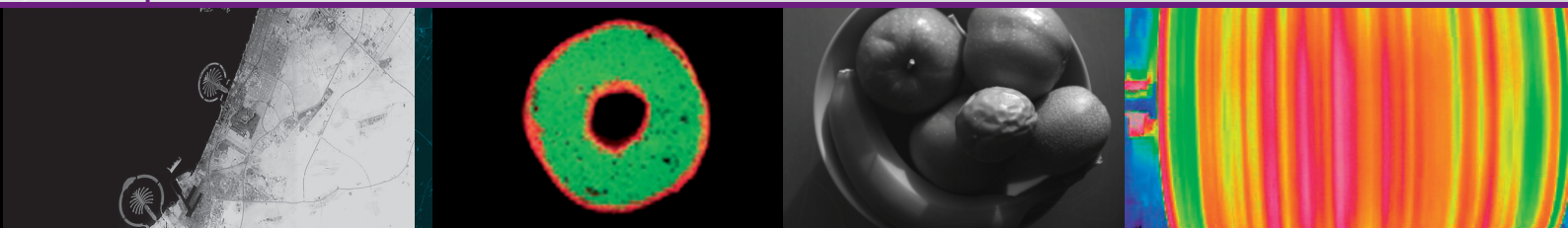
More accurate inspection and smaller particle detection at short wavelengths



The Xlin detector series supports a unique combination of features for high-speed imaging applications in machine vision and spectroscopy. There are three resolution offerings of 512, 1024 and 2048 pixels at different pixel formats ranging from the smallest in the world of $12.5 \times 12.5 \mu\text{m}^2$ to $25 \times 250 \mu\text{m}^2$ rectangular pixels. Due to their high sensitivity and quantum efficiency they operate at very low illumination levels. The high line rate of 40 kHz (1024 pixels version) and 10 kHz (2048 pixel version) enables a high resolution in the time domain.

The InGaAs line-scan sensors are a hybrid assembly of an array of InGaAs photodiodes connected to a state-of-the-art amplifying multiplexer. The sensors come in a hermetically sealed package with anti-reflective coated windows. The devices are equipped with a novel fourth generation multiplexer and can be delivered with an optional 3-stage Thermo-Electric cooler, resulting in a further reduction of the dark current. You can choose from various configurations between High Sensitivity mode (HS) and High Dynamic Range (HDR) mode in order to optimize your performance.

Designed for use in



Remote sensing

Spectroscopy: food inspection

Food sorting

High speed line-scan imaging

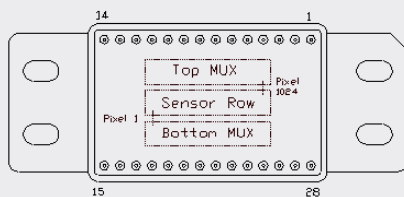
Key features

- High-speed 40 kHz
- Optional TE3 cooling for low-light-level spectroscopy
- High sensitivity
- Unique combination of high resolution with smallest pixel pitch of $12.5 \mu\text{m}$

Applications

- Spectroscopy
- Medical: OCT
- Machine vision
- Non contact thermography
- Non-destructive inspection
- Earth observation (space or airborne)
- Food inspection
- Agriculture monitoring
- Moisture measurement
- Semiconductor process monitoring
- Biomedical & chemical applications
- Pollution and environment monitoring

Sensor architecture



Advantage

High resolution with 12.5 μm pixel pitch allows for more accurate inspection and smaller particle detection.

Specifications

Array Specifications	Xlin-1.7-512	Xlin-1.7-1024	Xlin-1.7-2048
Array characteristics			
Array type	InGaAs		
# Outputs	1 output	2 outputs	
Spectral band	0.9 to 1.7 μm		
# pixels	512 x 1	1024 x 1	2048 x 1
Pixel pitch	25 μm	12.5 μm	
Pixel height	25 μm or 250 μm	12.5 μm or 250 μm	
InGaAs array length	12.5 mm	25 mm	
Thermo-electric cooler	TE1, optional TE3		
Pixel operability	> 99 %		
Line rate	40 kHz	10 kHz	
Detector characteristics			
ROA	250-600[k Ωcm^2]		
Peak sensitivity wavelength	1.6 μm		
Peak Quantum Efficiency	80%		
Gain capacitor characteristics	optimized for 12.5 μm pixel performance		
Gain settings	Various Settings from 5fF (HS) till 2130fF (HDR)		
Gain (e-/ADU count)	Various Settings from 3.6e-/cnt (HS) till 1500e-/cnt (HDR)		
Pixel Well Depth (e-)	Various Settings from 60Ke- (HS) till 25Me- (HDR)		
Dynamic Range	Various Settings from 60:1 (HS) till 3200:1 (HDR)		

Product selector guide

Part number	# Pixels	Pixel size (μm^2)	TE Cooler
ASY-000207	512 x 1	25 x 25	TE1
ASY-000209		25 x 250	TE1
ASY-000212		25 x 250	TE3
ASY-008033	1024 x 1	12.5 x 12.5	TE1
ASY-000210		12.5 x 250	TE1
ASY-000213		12.5 x 250	TE3
ASY-000208	2048 x 1	12.5 x 12.5	TE1
ASY-000211		12.5 x 250	TE1
ASY-000214		12.5 x 250	TE3