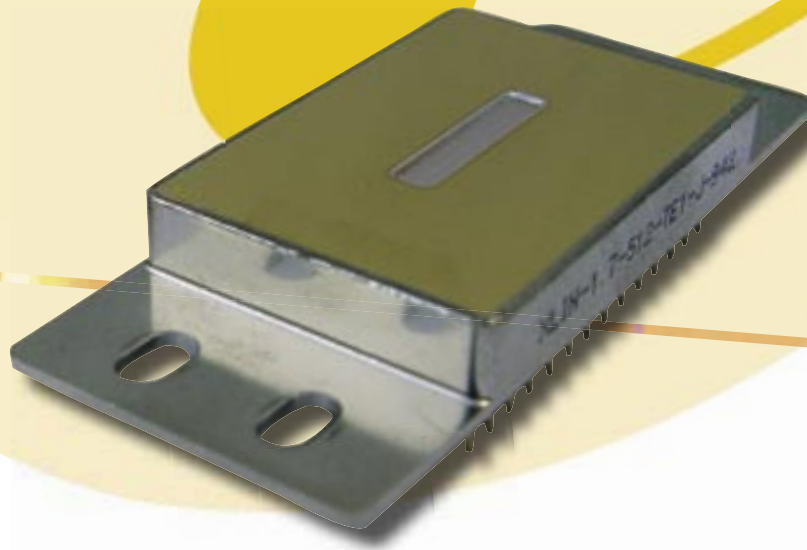


XLIN 1.7 0.9 – 1.7 μm InGaAs Linear Arrays
XLIN 2.2 1.0 – 2.2 μm InGaAs Linear Arrays
XLIN 2.5 1.1 – 2.5 μm InGaAs Linear Arrays



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 **XenICs**
Partnering Your Infrared Solution

The XenICs Solution

High quality

XenICs infrared detectors are characterized by high detectivity, good stability and high uniformity.

High flexibility

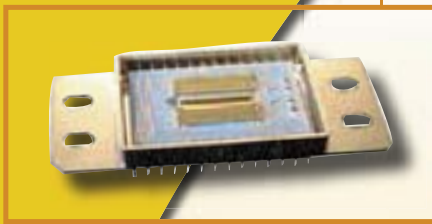
XenICs delivers custom products according to the agreed specification and planning, combining stringent technology requirements with application-dependent user needs to deliver fast custom-based solutions, even for small volumes.

Imagine the invisible
the invisible

XLIN 1.7 / 2.2 / 2.5

The InGaAs series of linear photodiode arrays is specifically suited for near infrared spectroscopy and line-scan imaging applications. The linear image sensor is a hybrid assembly of an array of InGaAs photodiodes connected to a charge amplifying multiplexer.

The sensors come in hermetically sealed packages with anti-reflection coated windows. The device is equipped with a novel, third generation multiplexer, which reduces further the dark current of the device. The sensors are standard delivered with an extended flat bottom package with fixation holes for optimal thermal coupling. Thermo-electric coolers (single-stage TE1, two-stage TE2 or three-stage TE3) reduce dark current and enable longer integration times.



Key features

- Up to 2.5 μm wavelength response
- Maximal read-out rate: 2.5 MHz
- High detectivity
- Wide dynamic range
- Low noise and low dark current
- Good uniformity
- High linearity
- Built-in thermoelectric cooler (option)
- Temperature sensor included
- Low cross-talk
- Four selectable integration capacitors between 0.1 and 16 pF
- Absolute current calibration input

XLIN applications

- Near-infrared spectroscopy
- Spectral characterization
- Thermal imaging of hot objects (in the 200°C to 800°C range)
- On-line process control
- Web processing
- Non-destructive inspection
- Food inspection
- Agriculture monitoring
- Moisture measurement
- Biomedical & chemical applications
- Pollution and environment monitoring
- Semiconductor process monitoring

PRODUCT SPECIFICATIONS

Array type	Wavelength range (μm)	Number of pixels	Pixel pitch (μm)	Pixel height (μm)	Thermo-electric cooler	Defective pixels
XLIN-1.7-128	0.9 – 1.7	128	50	500	TE0/TE1	0 – 2%
XLIN-1.7-256	0.9 – 1.7	256	50	500	TE0/TE1	0 – 2%
XLIN-1.7-512	0.9 – 1.7	512	25	500	TE0/TE1	0 – 2%
XLIN-2.2-128	1.0 – 2.2	128	50	500	TE2/TE3	0 – 2%
XLIN-2.2-256	1.0 – 2.2	256	50	500	TE2/TE3	0 – 2%
XLIN-2.2-512	1.0 – 2.2	512	25	500	TE2/TE3	0 – 2%
XLIN-2.5-128	1.1 – 2.5	128	50	500	TE2/TE3	2 – 5%
XLIN-2.5-256	1.1 – 2.5	256	50	500	TE2/TE3	2 – 5%
XLIN-2.5-512	1.1 – 2.5	512	25	500	TE2/TE3	2 – 5%
XLIN-1.7-512-SQ	0.9 – 1.7	512	25	25	TE0/TE1	0 – 2%

Customized pixel geometries are available on request.

INGAAS DETECTOR CHARACTERISTICS

	XLIN 1.7	XLIN 2.2	XLIN 2.5
ROA [kΩcm ₂]	1 x 10 ³	2.7	0.15
Peak sensitivity wavelength [μm]	1.5	1.8	2.0
Peak detectivity [cm sqrt(Hz)/W]	7.5 x 10 ¹²	5 x 10 ¹¹	8 x 10 ¹⁰

LINE SCAN CAMERA SYSTEM FOR XLIN ARRAYS: XEVA-LIN



The XEVA-LIN digital camera combines any XLIN detector array with control and communication electronics. It allows you to choose the most suitable detector for your specific application.

The line scan camera is operated from a single 12V – 5A power supply (included in the configuration) and includes all voltage regulating circuits, a temperature stabilization circuit for the cooling of the detector and the signal output analog to digital conversion. The camera

head interfaces to a PC via USB 2.0 or CameraLink and is available in various speed versions. The camera is delivered with X-Control application software that offers direct access to various camera settings such as exposure time, gain settings and operating temperature. It allows the user to acquire and display 12 or 16-bit data.

CONNECTOR TYPES XEVA-LIN

Power	4-way TRIAD-01 [Thomas&Betts]
Trigger	5-way TRIAD-01 [Thomas&Betts]
USB	4-way TRIAD-01 [Thomas&Betts] on USB camera Mini USB-B on CL camera
CL	MDR-26, only on CL camera

CAMERA SPECIFICATIONS	XEVA-LIN
Optical interface	C-Mount, Spectrometer fixation holes Anti-condensing construction
Camera control	USB 2.0
Image acquisition	USB 2.0 / CameraLink
Trigger interface	TTL level triggers
Line rate	Up to 3 KHz over USB ⁽¹⁾ Up to 9 KHz over CL ⁽¹⁾
Exposure time range	1 µsec up to several minutes
A to D signal conversion	12 bit or 16 bit, software selectable
Gain selection	0.1pF, 1pF, 8pF or 16pF, software selectable
Noise level	1.0 ADU in 12 bit mode ⁽²⁾ 8.0 ADU in 16 bit mode ⁽²⁾
Cool-down time	TE-cooled: 120 sec
Camera cooling	Forced convection cooling
Power consumption	< 4 Watt, cooler: 30 W max
Ambient operating temp range	0 to 50 °C
Humidity	non-condensing
Dimensions	100 x 100 x 100 mm ³
Weight camera head	App. 1.8 kg
Weight power supply	300 gr
Input voltage	12 V – 5 A

(1) computer dependent, Minimal PIV, 1 GHz or better required

(2) Noise is measured with a linear InGaAs-1.7 device, operated at room temperature in the lowest gain setting (16pF) and with integration time 1ms.

X-Control GUI to set control parameters, to capture and display data.

SOFTWARE	
• Integration time control over the full range	
• Readout clock rate	
• Output AD converter adjustment (level and range)	
• Detector temperature control	
• Detector Bias offset and correction	
• Selection of 4 gain settings (integration capacitors)	
• Inverting output signal	
• Reverting Pixel axis	
• Display modes:	Linear intensity display Pixel or line history Line scan image of max. 256 lines Line intensity average (256 lines max)
• Calibration:	pixel to wavelength calibration 2 point intensity correction bad pixel replacement
• Signal acquisition:	Signal line intensity pattern Line scan image (256 lines max.) Calibration data

The XenICs software driver is fully compatible with Windows 2000 Workstation SP4 and Windows XP Pro SP2. A dynamic link library (DLL) to communicate with the driver has been designed for flexible software development. A well-documented API with sample code in C, Visual Basic and Delphi is supplied on request. The camera firmware can be upgraded in the field.



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XenICs is the leading developer of innovative infrared detection solutions for a wide range of applications. XenICs designs, manufactures and sells infrared detectors and cameras, both for linescan and imaging applications, covering the infrared wavelength ranges from 1 up to 14 micrometer. In addition, XenICs delivers custom products according to the agreed specification and planning.