



# Xeva-1.7-320

Advanced research  
in SWIR imaging

Imagine the invisible

# Cooled and stable Xeva-1.7-320 for excellent image quality research

In one compact housing, the Xeva-1.7-320 digital camera combines a thermo-electrically cooled InGaAs detector head and the control and communication electronics.

## High quality, high flexibility

The Xeva-1.7-320 unit is available with standard (up to 1.7  $\mu\text{m}$ ) InGaAs detector arrays and comes in various speed versions: 60 Hz, 100 Hz and 350 Hz. It allows you to choose the most suitable detector-camera configuration for your specific application. The camera head interfaces to a PC via standard USB 2.0 or CameraLink. Each camera is delivered with a graphical user interface X-Control, which offers direct access to various camera settings such as exposure time and operating temperature. The software tools include two-point uniformity correction and bad pixel replacement.

## Advantages

- Extended coverage from SWIR into the visible range
- High sensitivity for low-light conditions
- Flexible and easy-to-use
- Spectrograph compatible

## Designed for use in

- R&D (SWIR range)
- High temperature thermography (300°C to 1200°C range)
- Hyperspectral imaging
- Semiconductor inspection

## Benefits & Features

### CameraLink and triggering for high speed imaging

Export real time up to 330 fps. Synchronization with external sources is straightforward in triggered applications.

### TrueNUC image correction

State-of-the-art image processing power offering corrected images while continuously changing the integration time.

### Flexible programming in an open architecture

Software Development Kit (SDK) supporting C++, Visual Basic, Labview or Linux.

### Cooled operation for low light-level imaging

Achieve long integration times with Xeva-1.7-320-TE3 resulting in reduction of noise and dark current.

### Extending SWIR imaging to the visible

Further extended spectral response into the visible by building an optional VISNIR sensor into the camera.

### Window of Interest

Increase frame rate and reduce overhead for high speed process monitoring. Tracking moving objects becomes feasible.

### Thermal imaging of hot objects

Radiometric calibrations are available to measure temperature of hot objects with utmost accuracy.

### Comprehensive thermal analysis

Interface with Thermography Studio, most popular recording and analysis tool for dynamic events.

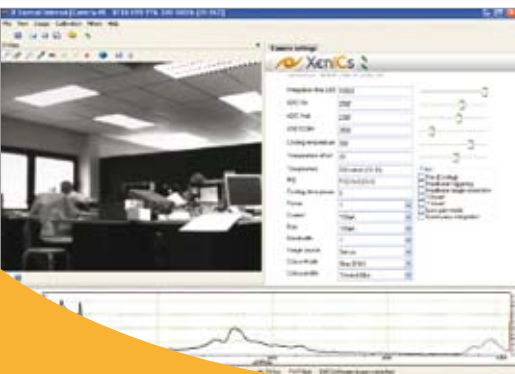




Top: art inspection infrared  
Bottom: art inspection visual



Top: fruit inspection infrared  
Bottom: fruit inspection visual



Array Specifications	
Array Type	InGaAs
Spectral band	Standard: 0.9 to 1.7 $\mu\text{m}$ ; Optional: 0.4 to 1.7 $\mu\text{m}$
# Pixels	320 x 256
Array operability	30 $\mu\text{m}$
Array Cooling	TE1-cooled down to 263K / TE3-cooled down to 223K
Pixel operability	> 99%
Full well capacity	3,750,000 e- low gain 187,500 high gain

Camera Specifications	Xeva 60 Hz	Xeva 100 Hz	Xeva 350 Hz
<b>Lens (included)</b>			
Focal length	16 mm f/1.4		
Optical interface	C-Mount spectrograph fixation holes (Broad selection of lenses are available)		
<b>Imaging performance</b>			
Frame rate (full frame; uncorrected images)	60 Hz	100 Hz	350 Hz
Window of interest	Smallest window 8 x 32	Smallest window 8 x 64	Smallest window 8 x 128 Max 15 kHz
Integration type	Snapshot		
Exposure time range	1 $\mu\text{s}$ up to 400 seconds (TE3; Low gain)		
Noise level: Low gain High gain	6 AD counts 15 AD counts		
S/N ratio: Low gain High gain	68 dB 60 dB		
A to D conversion resolution	12 bit or 14 bit		
<b>Interfaces</b>			
Camera control	USB 2.0		
Image acquisition	USB 2.0 / CameraLink		
Trigger	TTL levels		
Graphical User Interface (GUI)	X-control Advanced		
<b>Power requirements</b>			
Power consumption	< 4 Watt, cooler: 30 Watt max		
Power supply	12 V - 5 A		
<b>Physical characteristics</b>			
Camera cooling	Forced convection cooling		
Ambient operating temperature	0 to 50 $^{\circ}\text{C}$		
Dimensions	100 x 100 x 100 mm <sup>3</sup>		
Weight camera head	App. 1.8 kg		
Weight power supply	300 g		

### Applicable OS: Windows 2000 (SP4), XP Pro (SP2), VISTA (SP1)

X-Control Advanced	Xeneth radiometric
<ul style="list-style-type: none"> <li>Image live view</li> <li>Store digital Pictures / Movies</li> <li>Image histogram</li> <li>Line profiles, Spot meters, Time profiles</li> </ul>	X-control advanced features + thermography
<ul style="list-style-type: none"> <li>Black hot / White hot</li> <li>False color mode with various color palettes</li> </ul>	Thermography studio
<ul style="list-style-type: none"> <li>Video output format selection: PAL (CCIR) or NTSC (RS 170)</li> </ul>	Analysis and report-generating software of real-time and static images

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, as well as a Linux SDK. Labview device drivers and a sample program (executable) are also available.



Top: night vision VISNIR  
Bottom: night vision visual

## Product Selector Guide

Xeva-1.7-320 Part number	Digital output Interface	Cooling	Frame Rate	Analog Interface	ADC	VISNIR option**	TrueNUC range [integration time up to]
XC130	USB 2.0	TE1	100 Hz	-	12 bit	Yes	HG 5 msec, LG 100 msec
XC131	USB 2.0	TE3	100 Hz	-	12 bit	-	HG 100 msec, LG 500 msec
XC132-PAL	USB 2.0	TE1	100 Hz	PAL	12 bit	Yes	HG 5 msec, LG 100 msec
XC132-NTSC				NTSC			
XC133-PAL	USB 2.0	TE3	100 Hz	PAL	12 bit	-	HG 100 msec, LG 500 msec
XC133-NTSC				NTSC			
XC134-060Hz	CL	TE1	60 Hz	-	14 bit	Yes	HG 5 msec, LG 100 msec
XC134-100Hz	CL	TE1	100 Hz	-	14 bit	Yes	HG 5 msec, LG 100 msec
XC134-350Hz	CL	TE1	350 Hz	-	14 bit	Yes	HG 5 msec, LG 100 msec
XC135-060Hz	CL	TE3	60 Hz	-	14 bit	-	HG 100 msec, LG 500 msec
XC135-100Hz	CL	TE3	100 Hz	-	14 bit	-	HG 100 msec, LG 500 msec
XC135-350Hz	CL	TE3	350 Hz	-	14 bit	-	HG 100 msec, LG 500 msec

\* Selfstarting option: available on XC132-PAL, XC132-NTSC, XC133-PAL and XC133-NTSC with fixed integration time and no window of interest capability

\*\* Visual near infrared (VISNIR) part numbers: XC130V, XC132V-PAL, XC132V-NTSC, XC134V-060Hz, XC134V-100Hz, XC134V-350Hz

## Inputs



## Outputs

## Accessories

Part number	Type	Description	Available on following cameras
XC603	Analog video	Analog out triad to coax	XC132, XC132-V, XC133
XC602	Trigger	Triad to BNC for	All
XC606-5	CameraLink	MDR-26	All CameraLink cameras
XC503-201	Frame grabber	Xenics PCI-CL	All CameraLink cameras

Thermography Part number	Description	Available on following cameras
TH0800	Temperature calibration from 300°C to 800°C	XC130, XC131
TH1200	Temperature calibration from 300°C to 1200°C	XC130, XC131

Software Part number	Description	Available on following cameras
XERAD	Xeneth Radiometric	XC130, XC131
TST08	Thermography Studio	XC130, XC131



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#### ▣ About Xenics

Xenics is a leading developer of innovative infrared detection solutions. We design, manufacture and sell infrared detectors and cameras, both linescan and 2-D, covering the infrared wavelength ranges from 0.4 to 14 micrometers. In addition, Xenics delivers tailor-made solutions produced according to customer-agreed specifications and planning. As a European vendor with a worldwide service and distributor network, we are strategically placed to serve global markets with highly innovative products drawing on a strong science and technology background.

**Xenics Headquarters**

Sales department  
Ambachtenlaan 44  
BE-3001 Leuven  
Belgium  
T +32 16 38 99 00  
sales@xenics.com

**sInfraRed**

Asian sales, manufacturing  
and custom solutions office  
221 Queensway #12-10  
Viz Holland  
Singapore 276750  
T +65 6 47 666 48  
sales@sinfrared.com

**Xenics North America**

130 Grove Street  
Lexington · MA 02420  
USA  
T +1 781 274 98 93  
luc.debrouckere@xenics.com

**Xenics South America**

Rue Alvaro Rodrigues 182 SL 44  
Cep: 04582-000  
São Paulo · SP, Brasil  
T +55 11 5561 0778  
paul.verminnen@xenics.com

