Imagine the invisible

Xenics
Infrared Solutions

Cheetah-640-CL

World's fastest InGaAs camera

New!
800 Hz version

Ultra high speed Cheetah-640-CL for real-time motion analysis
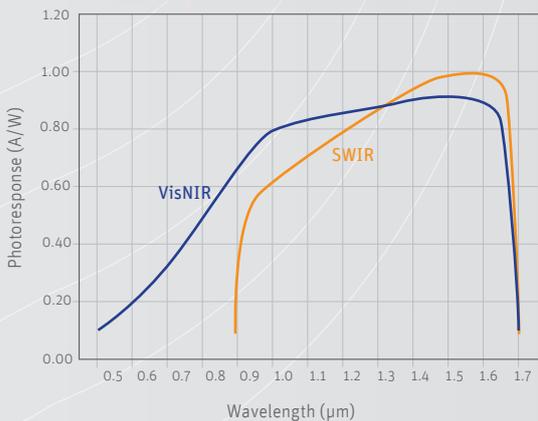
The Cheetah-640-CL camera is the fastest InGaAs infrared camera in the world. The camera has been designed for applications where high speed imaging matters. Whether for adaptive optics, spectral analysis in the SWIR band, tracking of fast and hot objects, electro-coalescence, etc.

This unit is equipped with a dedicated high speed InGaAs detector array working up to 1.7 μm and comes in three speed versions: 444, 865 and 1730 Hz. It allows you to visualize the ultra high-speed features of your specific research application.

The TE1-cooling reduces dark current and improves signal to noise ratios for contrast-rich and stable imaging performance.

The camera head interfaces to your frame grabbing system via CameraLink (base, full or dual medium – depending on the version).
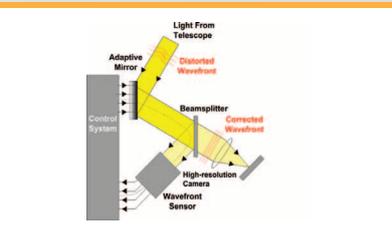
The Cheetah- 640-CL is delivered with a software development kit which offers direct access to various camera settings and allows easy integration with your own high speed image grabbing system.

Photoresponse (A/W) vs Wavelength (μm) — VisNIR and SWIR curves.

Designed for use in
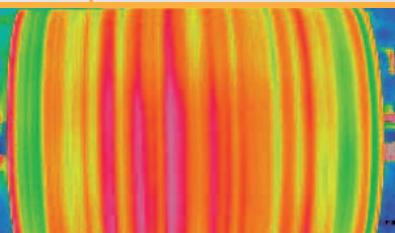
⊪ High-speed imaging   ⊪ Wavefront sensing   ⊪ Covert illumination with Cheetah-640CL compared with visual imaging

Applications

- R&D (SWIR range)
- High speed tracking
- Thermal imaging of fast hot objects
- Hyperspectral imaging (signature analysis)
- Adaptive optics for astronomy or free space communication
- Oil electro-coalescence research for crude oil purification

Benefits & Features

- Crisp motion analysis
- Mounts easily to various spectrometers
- Windowing to further increase frame rate
- Reliable data transfer over dual CameraLink
- Extended coverage from SWIR into the visible range
- TE1-cooled for low dark current and contrast-rich imaging
- World's fastest InGaAs camera with unseen 400 Hz, 800 Hz or 1730 Hz version

▷ Lens & filter options

Removable one inch filter

25 mm (included)

Various focal lengths available

> **Discover our Lens Selector Guide**
> **www.xenics.com/LSG**

▷ Inputs

Power 12 V

Trigger in/out

CameraLink Port 2 Base

CameraLink Port 2 Med/Full

CameraLink Port 1 Base

CameraLink Port 1 Med/Full

▷ Outputs

▷ Software

- Xeneth Advanced
- Xeneth SDK
- Xeneth LabVIEW SDK (optional)
- Cheetah-640CL configurator

▷ Specifications

Camera Specifications	Cheetah-640-CL 400 Hz	Cheetah-640-CL 800 Hz	Cheetah-640-CL 1730 Hz
Lens (standard)			
Focal length	25 mm f/2.1 (SWIR)		
Optical interface	C-Mount, spectrometer holes		
Imaging performance			
Frame rate (full frame)	444 Hz	865 Hz	1730 Hz
Integration type	Snapshot		
Window of Interest	Yes Minimum size 32 x 4 pixels		
Exposure time range	1 µs up to 40 ms @ 25°C sensor temperature (high gain mode); or up to 100 ms @ 268K sensor temperature (high gain mode)		
Readout mode	Integrate Then Read (ITR) Integrate While Read (IWR)		
Gain modes	High gain and low gain		
On-board image processing	1 Non-Uniformity Correction (NUC) can be uploaded		
A to D conversion resolution	14 bit		
Interfaces			
Camera control	CameraLink (serial LVDS line on CameraLink port 1)		
Image acquisition	Base CL (12 bit)	Medium CL (12 bit)	Full CL (8 bit) 2 x medium CL (12 bit)
Trigger	3.3 V CMOS logic level triggered (input/output)		
Power requirements			
Power consumption	< 4 W without TEC operation; Max. 25 W with TE-cooling		
Power supply	12 V		
Physical characteristics			
Camera cooling	Forced air cooling		
Ambient operating temperature	0 °C to 50°C		
Dimensions	140 W x 135 H x 90 L mm		
Weight camera head	2 kg		

Array Specifications

Array type	InGaAs Focal Plane Array (FPA) ROIC with CTIA* topology
Resolution	640 x 512
Pixel size	20 µm x 20 µm
Spectral band	0.9 to 1.7 µm Optional 0.4 to 1.7 µm (VisNIR)
Peak quantum efficiency	80 %
Pixel operability	> 99 %
Array size	12.8 mm x 10.2 mm; 16.4 mm diagonal
Array cooling	TE1 (optional TE3 **)
ROIC noise	High gain: 60 e-; low gain: 400 e-
Dark current	0.19×10^6 e-/s/pixel or 30 fA @ 200 mV bias at 288 K
Full well	High gain: 80×10^3 e-; low gain: 1.1×10^6 e-
Gain	High gain: 20 µV/e-; low gain: 1.6 µV/e-

▷ Product selector guide

Part number	TE Cooling	Digital output interface	Frame rate (Hz)	VisNIR option
XEN-000175			400	No
XEN-000045				Yes
XEN-000577	TE1	CameraLink	800	No
XEN-000578				Yes
XEN-000176			1730	No
XEN-000046				Yes

* Capacitor TransImpedance Amplifier
** For more product information you can consult the Cheetah-640CL TE3 brochure

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ISO 9001:2008 certified