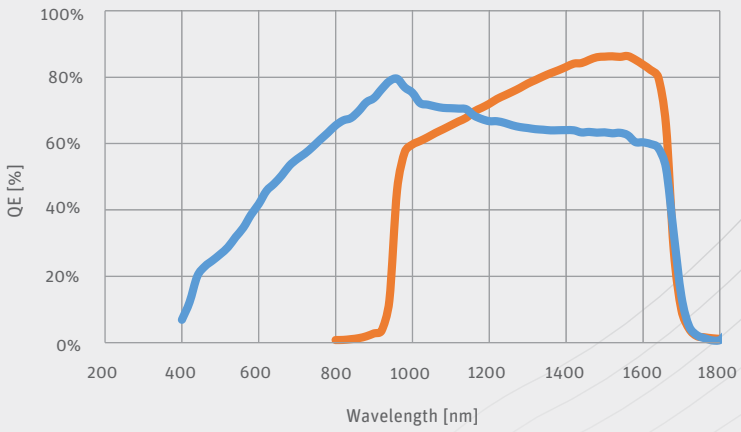
Cheetah 640 Series

Areascan SWIR Camera

- SWIR cooled camera with 640 x 512 resolution
- In-house developed InGaAs sensor



World's fastest InGaAs areascan camera with high image resolution

The Cheetah 640 series is based on a cooled, in-house developed InGaAs detector with a 640 x 512 pixel resolution.

The Cheetah 640 camera with single-stage TE-cooled detector offers high frame rates of either 400 Hz, 800 Hz or 1700 Hz while the version with three-stage TE-cooled detector offers a frame rate of up to 110 Hz.

The camera comes with a CameraLink interface.

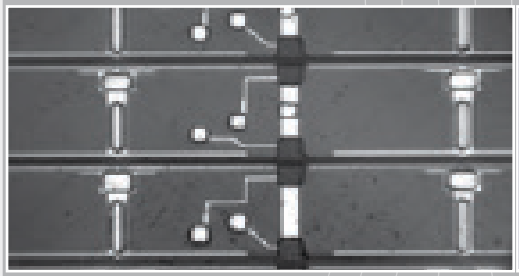
A visible short-wave infrared (vSWIR) option is available for extension into the visible wavelength band.

Designed for use in

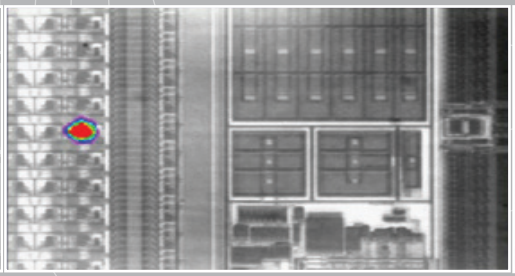
- Safety & Security
- Scientific & Advanced research
- Medical

Advantages

- World's fastest SWIR areascan imaging up to 1700 Hz
- vSWIR optional
- Low dark current
- Reliable data transfer via CameraLink



Semiconductor analysis



Semiconductor inspection

Art inspection

Camera Specifications

Camera Specifications	Cheetah 640 TE1 400 Cheetah 640 TE1 400 vSWIR	Cheetah 640 TE1 800 Cheetah 640 TE1 800 vSWIR	Cheetah 640 TE1 1700 Cheetah 640 TE1 1700 vSWIR	Cheetah 640 TE3
Mechanical specifications				
Approximate dimensions - excluding lens [width x height x length] [mm]	143 x 137 x 95			
Weight [gr] - excluding lens	2000			
Camera cooling	Forced convection [fan]	Forced convection [fan]	Forced convection [fan]	Water cooling
Optical interface	C-mount			
Connector CameraLink	Standard SDR connectors			
Connector power	LEMO ECG 1B-1K302			
Connector trigger	LEMO ECG 1B-1K302			
Water connector	-	-	-	Push-in fitting for 6 mm diameter tube
Environmental & power specifications				
Ambient operating temperature range [°C]	From 0 to +50			
Storage temperature [°C]	From -45 to +60			
Power consumption [W]	Up to 25	Up to 25	Up to 25	Up to 60
Power supply voltage	DC 12 V			
Shock	MIL-STD810G method 516.6; half sine; 40 g [11 ms]			
Vibration	Random: MIL-STD810G method 514.6; 4.01 g [15 - 2000 Hz]. Sine: MIL-STD883J method 2007; 5 g [20 - 2000 Hz]			
Regulatory compliance	CE, RoHS			
Electro-optical specifications				
Image format [pixels]	640 x 512			
Pixel pitch [µm]	20			
Detector type	InGaAs photodiode array with CTIA ROIC			
Sensor cooling	TE cooler	TE cooler	TE cooler	3-stage TE cooler
Integration type	Snapshot - global shutter			
Active area and diagonal [mm]	12.8 x 10.24 [diagonal 16.4]			
Optical fill factor	100%			
Spectral range [nm]	900 - 1700 [SWIR], 500 - 1700 [vSWIR]	900 - 1700 [SWIR], 500 - 1700 [vSWIR]	900 - 1700 [SWIR], 500 - 1700 [vSWIR]	900 - 1700 [SWIR]
Quantum efficiency	~80% [typical peak value]			
Gain modes	High Gain [HG] & High Dynamic Range [HDR]			
Full well capacities [electrons]	45k [HG] & 500k [HDR]			
Read noise [electrons]	120 [HG] & 500 [HDR]			
Dark current [electrons/second]	<100k [at 288K sensor temp and 150 mV reverse bias]; <200k for vSWIR	<100k [at 288K sensor temp and 150 mV reverse bias]; <200k for vSWIR	<100k [at 288K sensor temp and 150 mV reverse bias]; <200k for vSWIR	<1000 [at 233K sensor temp and 150 mV reverse bias]
Read out mode	ITR & IWR			
Pixel operability	>99%			
Preconfigured exposure time range [ms]	0.1 to 40 in HG, 0.1 to 20 in HDR	0.1 to 40 in HG, 0.1 to 20 in HDR	0.1 to 40 in HG, 0.1 to 20 in HDR	Maximum exposure time is up to 20s in HG
Max frame rate [Hz] [full frame]	444	865	1730	111
Region of interest	Yes			
Min region size [pixels]	32 x 4 [step 16 x 4]			
Max frame rate [Hz] [min region size]	>100000			
Analog-to-Digital [ADC] [bits]	14			
Command and control	CameraLink			
Digital output format	CameraLink [12 bit base] - 1 cable	CameraLink [12 bit medium] - 2 cables	CameraLink [12 bit dual medium] - 4 cables CameraLink [8 bit full] - 2 cables	CameraLink [14 bit base] - 1 cable
Trigger	In or out via trigger connector [configurable]			
Product selector guide				
Part number	XEN-000175 [SWIR]	XEN-000577 [SWIR]	XEN-000176 [SWIR]	XEN-000271 [SWIR]
	XEN-000045 [vSWIR]	XEN-000578 [vSWIR]	XEN-000046 [vSWIR]	-