

Imagine the invisible

Safety & Security

# Rufus-640-Analog

Ultra-small SWIR camera for extreme day and night vision operations

Identification of threats and danger at all times and long distance now made possible

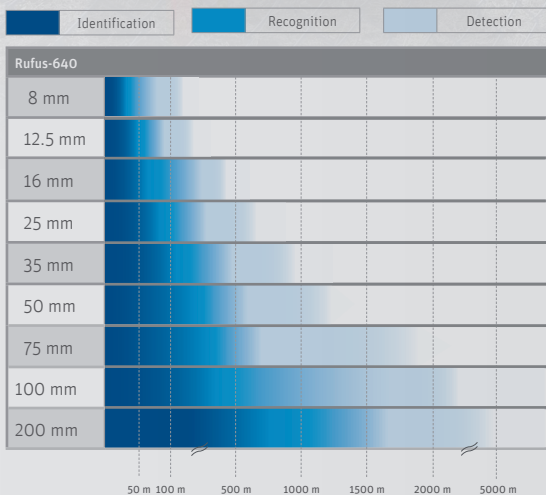


Evolving threats around the world and the imminent danger of public safety calls for state-of-the-art products designed to perform new functions. The Rufus-640 camera tackles the challenge to operate during day and night and in varying conditions.

These advanced features result in superior situational awareness despite fog, haze or high humidity and during bright daylight or moonless nights utilizing the night glow. The SWIR camera is also very well suited for camouflage detection, long range identification, detection of specific lasers or other markers unlike other technologies.

Rufus-640 detects short wave infrared (SWIR) radiation between 0.9 and 1.7  $\mu\text{m}$  with a wide dynamic range and wide operating temperature. The Thermo Electric (TE) stabilization reduces the dark current and noise levels. Together with on-board image processing, such as auto exposure and auto gain, Rufus-640 reaches best contrast and high image quality.

Xenics' Rufus-640 is extremely compact and versatile for easy integration in any configuration. The camera can be easily combined with our thermal cameras "Raven", boosting detection, recognition and identification to unseen levels.



## Designed for use in



Person identification at >450m



Camouflage detection



Vision enhancement: looking through haze with SWIR



### Applications

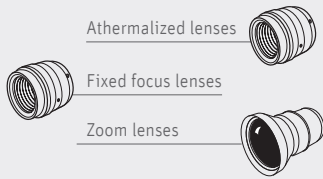
- UAV/UGV
- Imaging through fog and haze
- Enhanced Vision Systems (EVS)
- Laser, LED and flash lights detection
- Day and night vision (passive & active)
- SWIR sights with long range identification

### Benefits & Features

- High resolution in the VisNIR/SWIR range
- Rugged design with industrial components
- Small, low weight and low power consumption (SWAP)
- Lowest noise and high sensitivity powered from Europe
- Easy integration with C-mount and industry standard analog interface
- Advanced on-board image processing for diverse day and night operation

# Broad range of accessories

## ▶ Lens options



▶ Discover our Lens Selector Guide  
[www.xenics.com/LSG](http://www.xenics.com/LSG)

## ▶ Outputs



## ▶ Inputs

## ▶ Software



- Xeneth basic
- Xeneth Advanced (optional)
- Xeneth SDK (optional)
- Xeneth LabVIEW SDK (optional)

## ▶ Specifications

Camera specifications	Rufus-640
<b>Imaging performance</b>	
Maximum frame rate	25 Hz (PAL) 30 Hz (NTSC)
Window of interest	Minimal window: 32 x 4
Exposure time range	1 μs - 40 ms in high gain mode
Readout mode	Snapshot
Noise*	High gain: 120 e- Low gain: 400 e-
Dynamic range*	High gain: 56 dB Low gain: 68 dB
A to D conversion resolution	14-bit
On-board image processing	Image correction (TrueNUC for high gain and low gain), auto gain and offset, auto exposure, histogram equalization, trigger possibilities
<b>Operating mode</b>	
Self-starting	Yes
<b>Interfaces</b>	
Optical interface	C-mount
Camera control	RS232 (Xenics Serial Protocol)
Trigger	Trigger in or trigger out (configurable)
Analog out	PAL or NTSC
<b>Power requirements</b>	
Power consumption	3 W (without TEC)
Power supply	12 V
<b>Physical characteristics</b>	
Shock	40 G, 11 ms halfsine profile, according to MIL-STD810G
Vibration	5 G, (20 Hz to 2000 Hz), according to MIL-STD810G
Ambient operating temperature range	-40 °C to 70 °C (industrial components)
Storage temperature range	-45 °C to 85 °C (industrial components)
Dimensions	55 W x 55 H x 72 L mm (without lens)
Weight camera head	+/- 300 g (lens not included)
* Typical value	

Array specifications	Rufus-640
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% @ 1.6 μm (SWIR) 85% @ 0.9 μm (VisNIR)
Pixel operability	> 99 %
Array size	12.8 mm x 10.24 mm; 16.39 mm diagonal
Array cooling	TE1-stabilized
ROIC noise*	High gain: 60 e-; low gain: 400 e-
Dark current*	0.19 x 10 <sup>6</sup> e-/s/pixel at 200 mV bias at 288K
Full well	High gain: 80x10 <sup>3</sup> electrons; Low gain: 1.1x10 <sup>6</sup> electrons
* Typical value ** Capacitor TransImpedance Amplifier	

## ▶ Product selector guide

Part number	Frame rate (Hz)	Analog out	VisNIR
XEN-000071	25	PAL	No
XEN-000141	30	NTSC	No
XEN-000142	25	PAL	Yes
XEN-000143	30	NTSC	Yes