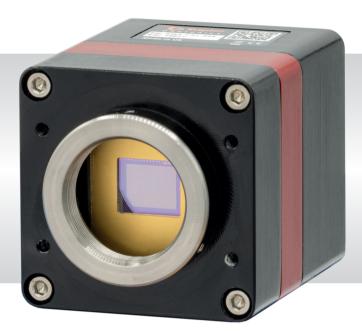




# **Owl 640 S**

High Speed, low noise, digital SWIR camera 640 x 512  $\cdot$  15µm x 15µm Pixel Pitch  $\cdot$  Frame rate up to 30.2kHz  $\cdot$ 



# CAMERA

# **Key Features and Benefits**

The best performing SWIR camera in the World!

- High Speed up to 30.2kHz @ 32 x 4 Perfect for high speed imaging applications
- SWIR technology Enables imaging from 0.9μm to 1.7μm
- **15µm x 15µm pixel pitch** Enables highest resolution SWIR image
- Ultra high intrascene dynamic range Enables similtaneous capture of bright & dark portions of a scene
- On-board Automated Gain Control (AGC) Enables clear video in all light conditions
- Ultra compact, Low power Ideal for hand-held, mobile or airborne systems

Resolution	640 x 512
Frame rate	Up to 30.2kHz
Readout noise	<50e-
Wavelength Ran	ge SWIR







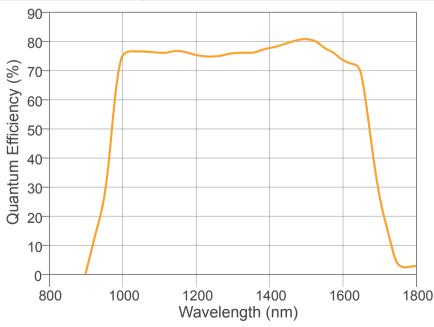
Instrument Expert Original factory packaging www.dorgean.com

## Specification for Owl 640 S

Active Pixel640 x 512Pixel Pixeh15µm x 15µmActive Area9.6mm x 7.68mmSpectral response10.9µm to 1.7µmReadout Noise (RMS) on camera LG = Low Gain HG = High GainHG: <56e. (Typical <50e-) LG : <98e. (Typical <85e-)Readout Noise (RMS) on ROICHG: <30e-Peak Quantum Efficiency80% @ 1.5µmFull Well CapacityLow Gain: >110ke-, High Gain: >35ke-Pixel Operability99%Dark Current300k e/p/s @15°C (130k typical)Digital Output Format12 bit Camera Link (Medium Configuration)Exposure time215µs to frame period in IWRShutter modeGlobal shutterFrame Rate300Hz in full resolution. 30.2kHz with 32x4 binningOptical InterfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE CoolingActiveFunctions controlled by serial Camera Power Consumption3Exposure, intelligent AGC, Non Uniformity Correction, TEC, frame rateCamera Power Consumption38W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CStorage Temperature-30°C to +60°CStorage Temperature74.2mm x 50.00mm x 50.00mm		
Number 1881ConstraintPixel Pitch15µm x 15µmActive Area9.6mm x 7.68mmSpectral response10.9µm to 1.7µmReadout Noise (RMS) on camera LG = Low Gain HG = High GainHG: <56e. (Typical <50e-) LG : <98e. (Typical <85e-)	Sensor Type	InGaAs PIN-Photodiode
Active Area9.6mm x 7.68mmSpectral response10.9µm to 1.7µmReadout Noise (RMS) on camera LG = Low Gain HG = High Gain LG: <98e. (Typical <50e-) LG = Low Gain HG = High GainReadout Noise (RMS) on ROICHG: <30e- See. (Typical <50e-)	Active Pixel	640 x 512
Spectral response10.9µm to 1.7µmReadout Noise (RMS) on camera LG = Low Gain HG = High GainHG: <5Ge- (Typical <5Oe-) LG = Cow Gain HG = High GainReadout Noise (RMS) on ROICHG: <30e-	Pixel Pitch	15μm x 15μm
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LG = Low Gain HG = High GainLG: <98e- (Typical <85e-)Readout Noise (RMS) on ROICHG: <30e-	Spectral response <sup>1</sup>	0.9µm to 1.7µm
Peak Quantum Efficiency80% @ 1.5µmFull Well CapacityLow Gain: >110ke-, High Gain: >35ke-Pixel Operability99%Dark Current300k e/p/s @15°C (130k typical)Digital Output Format12 bit Camera Link (Medium Configuration)Exposure time²15µs to frame period in IWRShutter modeGlobal shutterFrame Rate300Hz in full resolution. 30.2kHz with 32x4 binningOptical InterfaceC mountTrigger interfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE CoolingActiveImage Correction3 point NUC (offset, Gain & Dark Current) + pixel correction, TEC, frame rateCamera Power Consumption³SW (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L*W*H)574.2mm x 50.00mm x 50.00mm		
Full Well CapacityLow Gain: >110ke-, High Gain: >35ke-Pixel Operability99%Dark Current300k e/p/s @15°C (130k typical)Digital Output Format12 bit Camera Link (Medium Configuration)Exposure time²15µs to frame period in IWRShutter modeGlobal shutterFrame Rate300Hz in full resolution. 30.2kHz with 32x4 binningOptical InterfaceC mountTrigger interfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE CoolingActiveImage Correction3 point NUC (offset, Gain & Dark Current) + pixel correction, TEC, frame rateCamera Power Consumption³8W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L'W'H)574.2mm x 50.00mm x 50.00mm	Readout Noise (RMS) on ROIC	HG: <30e-
Pixel Operability99%Pixel Operability99%Dark Current300k e/p/s @15°C (130k typical)Digital Output Format12 bit Camera Link (Medium Configuration)Exposure time²15µs to frame period in IWRShutter modeGlobal shutterFrame Rate300Hz in full resolution. 30.2kHz with 32x4 binningOptical InterfaceC mountTrigger interfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE Cooling3 point NUC (offset, Gain & Dark Current) + pixel correctionFunctions controlled by serial communicationExposure, intelligent AGC, Non Uniformity Correction, TEC, frame rateCamera Power Consumption³8W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L'W'H)574.2mm x 50.00mm x 50.00mmWeight260g	Peak Quantum Efficiency	80% @ 1.5μm
Dark Current300k e/p/s @15°C (130k typical)Digital Output Format12 bit Camera Link (Medium Configuration)Exposure time²15µs to frame period in IWRShutter modeGlobal shutterFrame Rate300Hz in full resolution. 30.2kHz with 32x4 binningOptical InterfaceC mountTrigger interfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE CoolingActiveImage Correction3 point NUC (offset, Gain & Dark Current) + pixel correction, TEC, frame rateCamera Power Consumption³8W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L*W*H)574.2mm x 50.00mm x 50.00mm	Full Well Capacity	Low Gain: >110ke-, High Gain: >35ke-
Digital Output Format12 bit Camera Link (Medium Configuration)Exposure time215 us to frame period in IWRShutter modeGlobal shutterFrame Rate300Hz in full resolution. 30.2kHz with 32x4 binningOptical InterfaceC mountTrigger interfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE Cooling3 point NUC (offset, Gain & Dark Current) + pixel correctionFunctions controlled by serial communicationExposure, intelligent AGC, Non Uniformity Correction, TEC, frame rateCamera Power Consumption38W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L*W*H)574.2mm x 50.00mm x 50.00mm	Pixel Operability	99%
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Shutter modeGlobal shutterFrame Rate300Hz in full resolution. 30.2kHz with 32x4 binningOptical InterfaceC mountTrigger interfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE CoolingActiveImage Correction3 point NUC (offset, Gain & Dark Current) + pixel correctionFunctions controlled by serial communicationExposure, intelligent AGC, Non Uniformity Correction, TEC, frame rateCamera Power Consumption38W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature74.2mm x 50.00mm x 50.00mmWeight260g	Digital Output Format	12 bit Camera Link (Medium Configuration)
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Optical InterfaceC mountTrigger interfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE CoolingActiveImage Correction3 point NUC (offset, Gain & Dark Current) + pixel correctionFunctions controlled by serial communicationExposure, intelligent AGC, Non Uniformity Correction, TEC, frame rateCamera Power Consumption38W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L*W*H)574.2mm x 50.00mm x 50.00mm	Shutter mode	Global shutter
Trigger interfaceTrigger IN and OUT - TTL compatiblePower supply12V DC ±0.5VTE CoolingActiveImage Correction3 point NUC (offset, Gain & Dark Current) + pixel correctionFunctions controlled by serial communicationExposure, intelligent AGC, Non Uniformity Correction, TEC, frame rateCamera Power Consumption38W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L*W*H)574.2mm x 50.00mm x 50.00mm	Frame Rate	300Hz in full resolution. 30.2kHz with 32x4 binning
Power supply12V DC ±0.5VTE CoolingActiveImage Correction3 point NUC (offset, Gain & Dark Current) + pixel correctionFunctions controlled by serial communicationExposure, intelligent AGC, Non Uniformity Correction, TEC, frame rateCamera Power Consumption38W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L*W*H)574.2mm × 50.00mm × 50.00mmWeight260g	Optical Interface	C mount
TE Cooling Active   Image Correction 3 point NUC (offset, Gain & Dark Current) + pixel correction   Functions controlled by serial communication Exposure, intelligent AGC, Non Uniformity Correction, TEC, frame rate   Camera Power Consumption <sup>3</sup> 8W (TEC ON, NUC ON)   Operating Case Temperature <sup>4</sup> -20°C to +55°C   Storage Temperature -30°C to +60°C   Dimensions (L*W*H) <sup>5</sup> 74.2mm × 50.00mm × 50.00mm	Trigger interface	Trigger IN and OUT - TTL compatible
Image Correction   3 point NUC (offset, Gain & Dark Current) + pixel correction     Functions controlled by serial communication   Exposure, intelligent AGC, Non Uniformity Correction, TEC, frame rate     Camera Power Consumption <sup>3</sup> 8W (TEC ON, NUC ON)     Operating Case Temperature <sup>4</sup> -20°C to +55°C     Storage Temperature   -30°C to +60°C     Dimensions (L*W*H) <sup>5</sup> 74.2mm x 50.00mm x 50.00mm     Weight   260g	Power supply	12V DC ±0.5V
Functions controlled by serial communication   Exposure, intelligent AGC, Non Uniformity Correction, TEC, frame rate     Camera Power Consumption <sup>3</sup> 8W (TEC ON, NUC ON)     Operating Case Temperature <sup>4</sup> -20°C to +55°C     Storage Temperature   -30°C to +60°C     Dimensions (L*W*H) <sup>5</sup> 74.2mm x 50.00mm x 50.00mm     Weight   260g	TE Cooling	Active
communicationTEC, frame rateCamera Power Consumption38W (TEC ON, NUC ON)Operating Case Temperature4-20°C to +55°CStorage Temperature-30°C to +60°CDimensions (L*W*H)574.2mm x 50.00mm x 50.00mmWeight260g	Image Correction	3 point NUC (offset, Gain & Dark Current) + pixel correction
Operating Case Temperature <sup>4</sup> -20°C to +55°C       Storage Temperature     -30°C to +60°C       Dimensions (L*W*H) <sup>5</sup> 74.2mm x 50.00mm x 50.00mm       Weight     260g	,	
Storage Temperature     -30°C to +60°C       Dimensions (L*W*H) <sup>5</sup> 74.2mm x 50.00mm x 50.00mm       Weight     260g	Camera Power Consumption <sup>3</sup>	8W (TEC ON, NUC ON)
Dimensions (L*W*H) <sup>5</sup> 74.2mm x 50.00mm x 50.00mm       Weight     260g	Operating Case Temperature <sup>4</sup>	-20°C to +55°C
Weight 260g	Storage Temperature	-30°C to +60°C
	Dimensions (L*W*H) <sup>5</sup>	74.2mm x 50.00mm x 50.00mm
Raptor Photonics Limited reserves the right to change this document at any time without notice and	Weight	260g
	Raptor Photonics Limited reserves	the right to change this document at any time without notice and

disclaims liability for editorial, pictorial or typographical errors.

## **Quantum Efficiency**



#### **Ordering Information**

•	
Camera	
Owl 640 S Digital Camera	OW1.7-CL-640
Owl Power Supply Cable	RPL-HR4-K
Optional Accessories	
Mini PC with XCAP STD and frame grabber	RPL-PC-mf2280
Thunderbolt frame grabber	RPL-mf2280
EPIX® E8 Frame Grabber	RPL-EPIX-E8
EPIX® XCAP Std software	RPL-XCAP-STD
MDR-SDR CameraLink Cable (2m) <sup>6</sup>	RPL-MCL-CBL-2M
Optical SWIR lenses <sup>7</sup>	RPL-xx-xxxx
Note 1: Optional filters available. Note 2: Maximum exposure time wil Note 3: Measured in an ambient of 2 sinking.	
Note 4: Extended operating tempera Note 5: Dimensions include all conn interface. Note 6: Two cables required.	

Note 7: Please consult us to check our range of lenses. Note 8: The following speeds can be achieved by using ROI.

Resolution	Speed (Hz)
640 x 512	300
320 x 256	903
32 x 32	10,489
32 x 4	30,200

Demo is available on request. Pricing AOR subject to volumes.

Detailed technical drawings can be downloaded at www.raptorphotonics.com

## **Applications**

#### Surveillance

- Active Imaging
- Airborne Payload
- Hand Held Systems
- Imaging through Fog
- Range Finding
- Vision enhancement

#### Scientific

- Astronomy
- Beam Profiling
- Hyperspectral Imaging
- Semiconductor Inspection
- Solar Cell Inspection
- Thermography



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