

# C-RED ONE

Product Datasheet / September 2021

## ULTRA LOW NOISE ULTRA HIGH SPEED SWIR CAMERA



SWIR  
0.8 - 2.43  $\mu\text{m}$



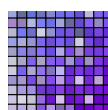
3500 FPS



Subelectron RON + Dark



320 x 256 e-APD MCT,  
24  $\mu\text{m}$  pixel pitch

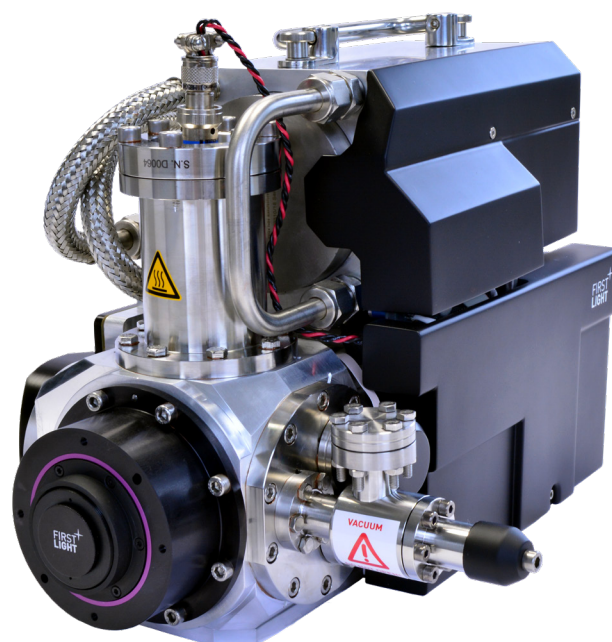


Multiple Readout Modes



SDK compatible with  $\mu$ Manager,  
LabVIEW, MatLab, C++, C#, Python

**FASTEST AND LOWEST NOISE MCT**  
FOR HIGH DEMANDING SCIENTIFIC APPLICATION



### APPLICATIONS

#### ASTRONOMY:

Adaptive Optics for Astronomy  
Astronomical Observations  
with Interferometers  
Space Debris Tracking  
Fringe Tracking

#### LIFE SCIENCES:

Adaptive optics  
Cellular microscopy  
Hyperspectral imaging

#### INDUSTRY:

Semiconductor inspection  
Gas monitoring  
Leak detection

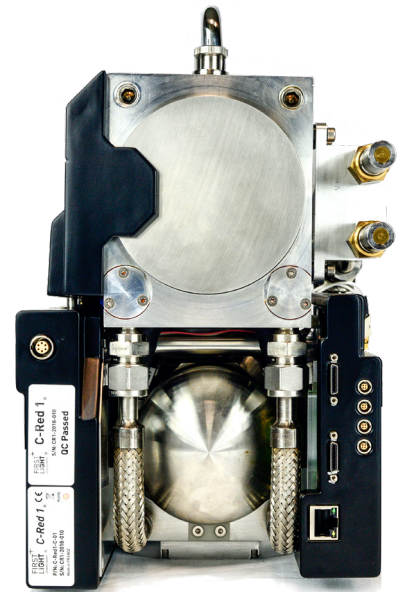
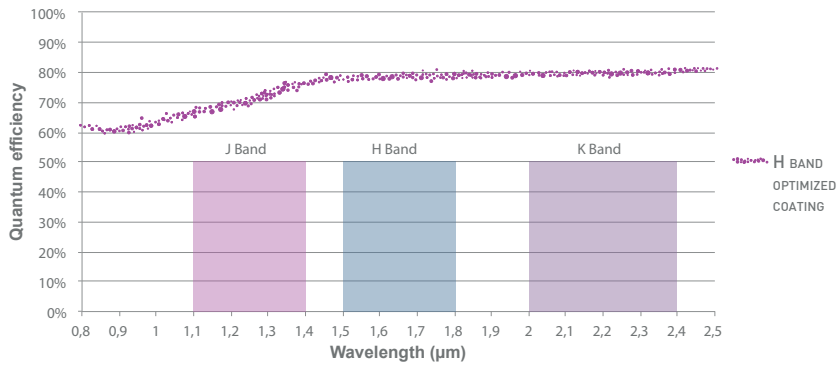
# C-RED ONE PERFORMANCES

TEST MEASUREMENT*	Result	Unit
Maximum speed Full Frame single readout	3500	FPS
Readout Noise at 1720 FPS CDS readout and gain x50, looking at a black body at a temperature of 90K	<1	e-
Dark current looking at a black body at a temperature of 90K and e-APD gain x10	<80	e-/p/s
Quantization	16	bit
Detector Operating Temperature (No LN2)	90	K
Flat Quantum Efficiency from 1.1 μm to 2.4 μm (J, H, K) at 100K	>60	%
Operability due to signal response / pixels with signal <0.8*median at bias of 9V and integration time of 10 ms	<0.1	%
Operability due to CDS noise / pixels with noise <2*median at bias of 9V and integration time of 10 ms	<0.1	%
Excess noise Factor F	<1.25	n/a
Pulse tube cooling, vibration imparted to the detector with respect to the front flange of the camera (RMS along each detector axis)	<1	μm

\*Average values observed

ADDITIONAL FEATURES
Output : Camera Link® Full
Optical Interface : T-Mount
Multiple Readout Modes <ul style="list-style-type: none"> <li>•Global reset</li> <li>•Rolling reset</li> <li>•Single read, CDS or multiple non destructive reads</li> </ul>
ROI
Ultra low latency Camera Link® full interface
Clock & Trigger input/output for synchronous operation
Custom design available upon request
Embedded cold blocking filters
Available in H band configuration (0.8 - 1.75 μm) with f/4 baffle or in K band configuration (0.8 - 2.43 μm) with f/20 baffle

TYPICAL QE OF SAPHIRA E-APD



SWaP : H 238 x W 180 x L 365 mm, 19.4 kg, up to 300 W

## First Light Imaging SAS

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## First Light Imaging Corp.

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