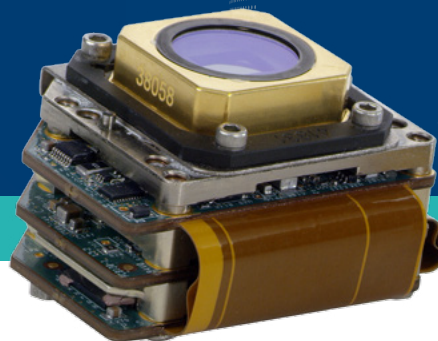




# Cardinal 640

640x512, 15 $\mu$ m, InGaAs Detector  
with digital SNIR ROIC

*Defense Applications*

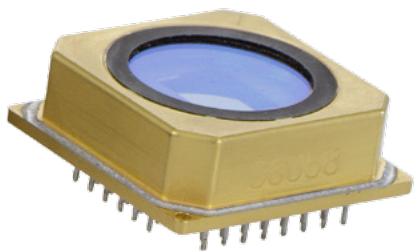


## General Description

The FPA consists of the all-digital SNIR ROIC (based on the 0.18 $\mu$ m CMOS process) and state-of-the-art planar InGaAs P-I-N diode array.

The package includes a Thermo Electric Cooler (TEC) that can be utilized for cooling the FPA for low light level scenario.

The low power proximity board provides the FPA timing and sensitive power supplies. It has a Camera Link Interface similar to the Pelican-D. TEC control electronics are incorporated as well.



## Applications

- High Quality Daylight SWIR Imaging
- Low light level imaging
- Active Imaging
- Hand Held Goggles
- Airborne EVS
- Payloads
- Driving systems
- Non-Destructive Testing

## Main Features

- High frame rate, Global Shutter
- Low power Camera Link interface
- Low floor noise mode with CTIA stage
- Special features:
  - Two dimensional Laser Range Finder (TLRF)
  - Asynchronous Laser Pulse Detection (ALPD)



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# Preliminary Datasheet

Parameter	Value
Format & Pitch	640x512, 15µm
Spectral Range	0.6-1.7 (VIS-SWIR)
Quantum Efficiency	>80% at 1550nm See graph below for typical spectral response
Dark current density (Jd)	< 1.5 nA/cm2 @ 280K
Pixel Operability	> 99.5%
Operating Modes and well capacity	High gain (for Low Light Level imaging) – 12Ke Low gain (for high quality daylight imaging) – 0.6Me
Maximum FR at full window (low gain mode)	350 F/s @ 13 bit resolution (80MHz clock rate) Global Shutter
Windowing	Flexible, 2 rows step
ROIC Noise (typical)	High gain 45e (with CDS) Low gain 180e
FPA Power Dissipation	< 100mW @ 60 F/s
Ambient operating temperature	-40c to 71c
Package	Metallic (vacuum tight) low SWaP, 30x30 mm <sup>2</sup>
Cooling capability	Down to -10C @ 30C environment
Proximity electronics (optional)	Camera Link interface Power dissipation: < 1.7W @ 60Hz, 25c environment temperature (without TEC) TEC control circuitry Frame CDS support EMC compatibility to MIL-STD-461C

Specifications are subject to changes without further notice

