Cardinal 640 Low Noise (LOON)

640x512, 15µm, InGaAs Detector
with digital ROIC

Commercial Applications

General Description

The "Loon" sensor consists of a digital Low Noise ROIC and state-of-the-art planar InGaAs P-I-N diode array.

The detector can be supplied in two types of package:

- Metal package which includes a Thermo-Electric Cooler (TEC)
- Ceramic TEC-less package

A low power proximity board (can be supplied with metal package) provides:

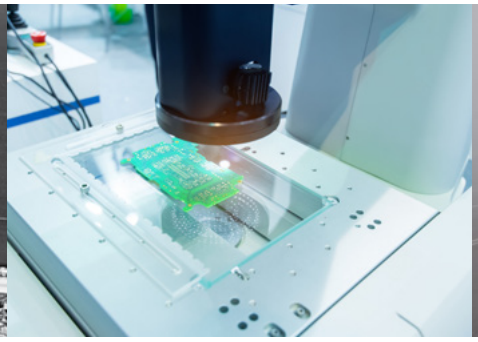
- Timing and sensitive power supplies to the ROIC
- Camera Link Interface (similar to the Cardinal 640)
- TEC control electronics

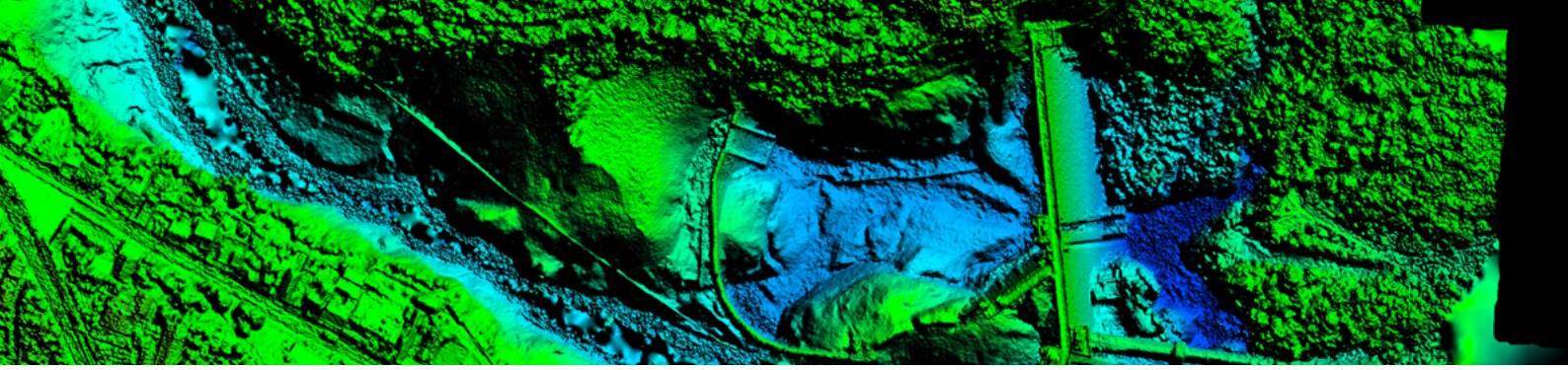
Main Features

- Very low floor noise mode (15e)
- Active imaging oriented
- Gated imaging provision (100ns time constant @ 64x64 ROI)
- High frame rate with global shutter
- Digital interface (as Cardinal 640)
- Low power Camera Link interface

Applications

- Spectroscopy
- Hyper/Multi Spectral Imaging
- Scientific Research
- Industrial Inspection
- Low light level imaging
- Gated imaging
- High quality daylight SWIR imaging
- LIDAR





Typical Performance

Parameter	Value
Format & Pitch	640x512, 15µm
Spectral Range	0.6-1.7 (VIS-SWIR)
Quantum Efficiency	>80% at 1550nm
Dark current	< 1 fA @ 283K (Typical)
Pixel Operability	> 99.5%
Operating Modes and well capacity	High gain (for Low Light Level imaging) – 15Ke Low gain (for high quality daylight imaging) – 0.3Me
Maximum FR at full window (low gain mode)	360 fps @ 13 bit resolution Global Shutter
ROIC Noise (typical)	High gain 15e (with CDS) Low gain 170e
Windowing	Flexible, 2 rows step
Active Imaging time constant	600nsec @ full frame 100nsec @ 64x64 block
FPA power dissipation	~ 100mW @ 60 fps
Ambient operating temperature	-40c to 71c
Package	Metallic (vacuum tight), 30x30 mm^2 Ceramic TEC-less (Inert gas) low SWaP, 25x20mm^2
Cooling capability in (metallic package only)	Down to -10C @ 30C environment
Proximity electronics (optional for metallic package)	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

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