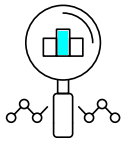


Singular[™]
Photonics

Company overview

Singular Photonics, a company with deep roots from the world leading University of Edinburgh CMOS Sensors and Systems group, are bringing to market the next generation of sensors based on single photon avalanche diodes (SPADs). These sensors can detect and time single photons (light quanta) enabling simultaneous capture of depth and temporal dimensions generating 4D images.

Why choose us



Deep industry experience

Our founding team have over 60 years combined industry and academic expertise in the design of SPAD sensors.



Innovation

We are committed to providing innovative solutions that will help create a better tomorrow for everyone.



Integration

Our solutions are designed to seamlessly integrate into your solution.

Overview

Sirona

- 512 Channels
- Multiplexed readout

Why SPAD arrays?

- CMOS integration
- Low DCR
- Time Resolved Capabilities
- Single Photon Sensitive
- Room Temperature Operation

Applications

- Raman Spectroscopy
- FLIM
- Microscopy

Modes

- Single Photon Counting
- TCSPC
- Histogramming

Software & Firmware

- Universal API
- Integration with LabView, Matlab, Python and other languages

Sirona

Technical Specifications



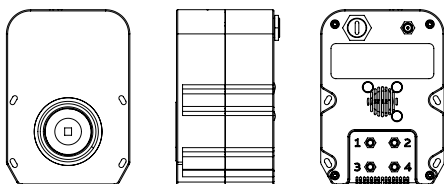
Sirona Sensor

Detector Type	CMOS SPAD Technology 130nm
Sensor Dimension	12.648 mm x 1.99 mm
Photon Detection Probability (PDP)	40% @ 480 nm (Blue SPADs) 40% @ 620 nm (Red SPADs)
Fill Factor	49.31% (Blue), 28.20% (Red)
Median Dark Count Rate	400 cps (Blue SPAD) Excess bias = 50 cps (Red SPAD) 1.5V @ 25 Degree C
Dead Time	10 ns
Pixel Array	512 x 16 (Blue), 512 x 16 (Red)
Pixel Pitch	23.78 μ m



Dimensions and Mounting

Camera Unit W x H x D:	102 mm x 145 mm x 85.25 mm
Clear Aperture:	32 mm diameter
Mounting Options:	<ul style="list-style-type: none">· 4x M4 screws in through holes· 1x 1/4"-20 (M6) bottom thread
Optional Accessory:	<ul style="list-style-type: none">· 20 mm diameter protective window



Data Handling

Data Compression:	Yes (Histograms)
Data Rate:	2.5 Gbps (At 40 MHz IO rate)
Readout (klines/s) Rate:	SPC: 454/227 (11/22 bit) TCSPC: 454/312 (11/22 bit) Histogramming: 14.2 (16/32 bin)
Event Rate:	SPC: 102 Giga events /s TCSPC: 192 Million events /s Histogram Mode: 16 Giga events /s

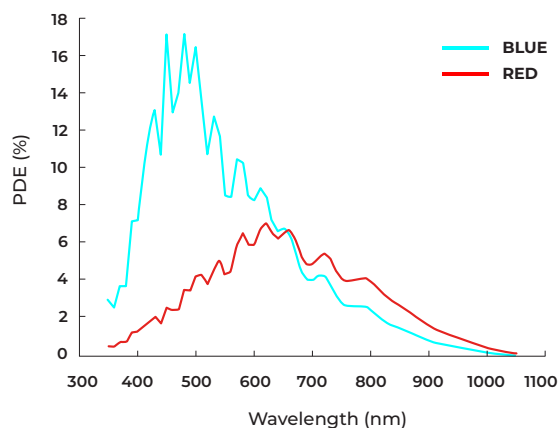


Timing and Control

On-chip TDC	1 per channel
Mean FWHM of IRF	164 ps (Blue SPADs) 139 ps (Red SPADs)
Time-resolved Detection	Yes
Time Resolution	51.2 ps (minimum) 6.55 ns (maximum)
Timing / Spectral Channels	512
TDC Range	3,355 ns (TCSPC mode) 209 ns (Histogram mode)
On-chip Delay Generator	Yes
Delay Range	0 to 516 ns (programmable in steps of 63 ps)
Counting	Unchained : 11 bit Chained : 22 bit



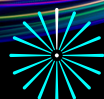
Photon Detection Efficiency



Interfaces

Power:	12 V AC / DC brick provided
Data Connection:	USB-C
Synchronisation ports:	4 (Factory configurable TTL/NIM)

Datasheets are subject to change



Singular™
Photonics

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We recognise the importance of our **PEOPLE**

We strive for **EXCELLENCE**

We operate with **INTEGRITY**

We deliver **RESULTS**