

# SPD\_OEM\_NIR

## COMPACT NIR SINGLE PHOTON COUNTER

**NEW in 2017**  
Gated and free-running



### Features

- 100 MHz gated and free-running
- Adjustable QE up to 30%
- < 1.000 cps Dark Count Rate
- < 200 ps timing resolution
- < 1% afterpulsing rate
- User-friendly GUI software
- USB 2.0 remote control
- LabVIEW and C++ DLL libraries

### Applications

- Quantum Cryptography (QKD)
- Geiger-mode LIDAR
- Time-Correlated Single Photon Counting (TCSPC)
- Fluorescence Lifetime (FLIM)
- Spectroscopy, Raman Spectroscopy
- Photo-luminescence
- Photon source characterization
- IC failure analysis
- Optical fiber test (OTDR)
- Oxygen Singulet measurements

Recently redesigned, the single photon counter SPD\_OEM\_NIR provides the latest generation of compact and high-performance single photon detection module based on cooled InGaAs/InP Geiger-mode Single Photon Avalanche photodiode. The compact SPD\_OEM\_NIR brings a major breakthrough for the single photon detection in the 900 nm to 1,700 nm near infrared range. It is self-contained and doesn't require any additional bulky cooling systems and control units.

Thanks to its smart electronics, the **SPD\_OEM\_NIR is the first compact NIR single photon counter, which performs both synchronous 'gated' and asynchronous 'free-running' detection modes.** This dual modes capability is particularly useful for detection of unpredictable arrival of photons, such as found in space or biology. For example, free-running mode can be first used for coarse measurements, and then easily switched to gated-mode for more accuracy.

Two grades are available: the 'Standard' and the 'Champion'. The Champion offers very-low-noise DCR < 1.000 cps and high Quantum Efficiency up to 30%. Moreover, it performs up to 100 MHz external trigger rate with fast timing resolution 150 psec, and low afterpulsing rates < 0.1%.

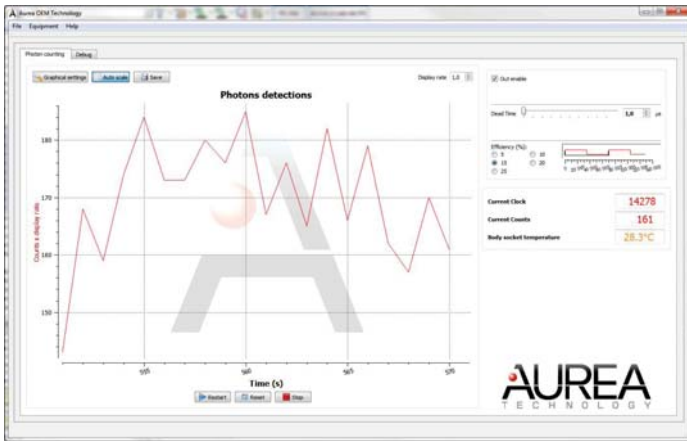
In addition, it offers a PC connection via its USB interfaces. Its ergonomic Graphical User Interface allows the user to set up the Quantum Efficiency and the deadtime, and also display the measured data. DLL compatible to the most well-known programming languages, such as LabVIEW and C++ are also provided.

Very well-designed, the compactness and the modern interfaces make the SPD\_OEM\_NIR very easy to integrate in the most demanding analytical instruments and industrial control processes.

### SPECIFICATIONS

Parameter	Typical values measured @1,550 nm	
<b>DETECTION</b>		
Spectral range	900 nm to 1,700 nm	
Optical fiber type	MMF (FC/PC fiber connector)	
<b>Grade</b>	<b>Standard</b>	<b>Champion</b>
Dark Count Rate @10% QE	< 5,000 cps	<1,000 cps
Detection Efficiency	10%, 15%, 20% , or 25%	10%, 20%, or 30%
Max. trigger	from CW to 20 MHz	from CW to 100 MHz
Timing jitter at Max. QE	200 psec	150 psec
Deadtime range @10% QE	from 1 µs to 1 ms	from 100 ns to 1 ms
Afterpulsing probability @ 10 ns gate and 10% QE	< 1%	< 0.1%
<b>Input/Output, mechanical and environmental</b>		
Input Gate signal	TTL - SMA connector	
Output photon detection	TTL / 50 ns pulse duration - SMA connector	
Data interface	Mini-B USB 2.0 connector	
Power supply	5 VDC / 5 W	
Dimensions	143 x 68 x 50 mm <sup>3</sup> (without fan) 143 x 68 x 80 mm <sup>3</sup> (with fan)	
Weight	800 g	
Operating temperature	+ 10 °C to 30 °C	
Cooling time	< 1 min @ 25 °C	

## Graphical User Interfaces.



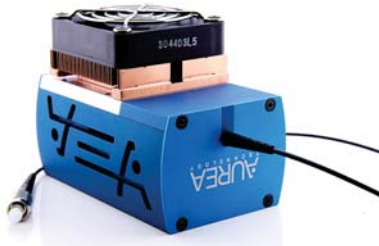
A user-friendly Graphical User Interface is provided. It allows the set-up of the Quantum Efficiency and deadtime, and also the display of the photon count, the clock, the temperature, and the alarm to protect against accidental overload.

## Module installation set-ups

The modules fully integrates Peltier Temperature Control technologies for operation between + 10 °C and + 30 °C .

For optimum cooling of the detection module simple set-ups are suggested:

- . use of the optional fan, which is easily fixed on the bottom of the module,
- . or position the bottom of the module directly on the optical table by using the provided mounts.



SPD\_OEM module with fan option

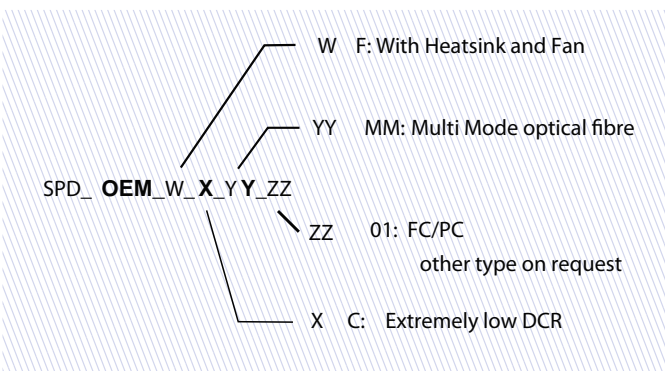


SPD\_OEM fixed directly on optical table

## Other available photon detection, timing, and laser products

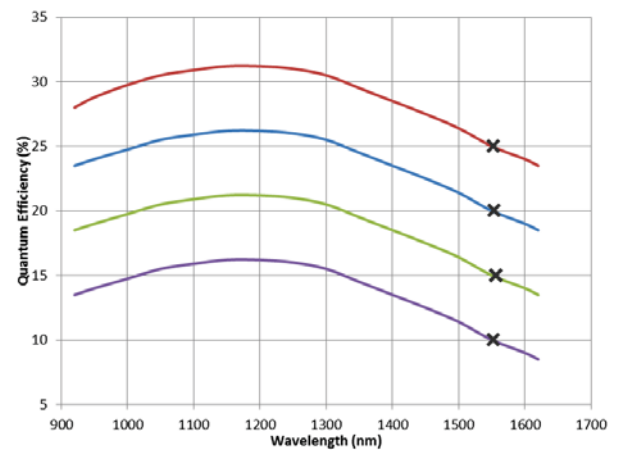
AUREA Technology provides a portfolio of high-performance VIS & NIR Single Photon Counting, TCSPC , and picosecond Laser, and FLIM confocal microscope solutions from 400 nm to 1,700 nm.

## Ordering Information



Compact 3D mapping FLIM confocal microscope by TCSPC

## Typical Photon Detection Efficiency vs Wavelength



## Options

- . DCR < 500 cps,
- . Free-space optical input,
- . Analog output,
- . Selection of optical fiber types, core sizes and connectors,
- . Adaptor to commercial spectrometers, fluorometers.

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