



The first worldwide all-in-one DUAL single photon counter

The SPD_A is a new generation of all-in-one ultra-low-noise near infrared single photon counting modules ideal for the most demanding scientific and industrial applications. The SPD_A includes a Geiger-mode InGaAs avalanche photodiode (APD) and a thermoelectrically cooler that ensure high detection efficiency up to 25%, very low dark count, and low timing jitter.

Thanks to its outstanding high level detection sensitivity and speed the SPD_A provides superior performances over existing detector technologies, such as NIR Photomultipliers and Micro Channel Plates.

In addition to its ergonomic display, the SPD_A provides plug-and-play Personal Computer connection via its USB interface and easy-to-use Graphical User Interface, which enables you to easily adjust the photon detection efficiency, the dead time and tune the gate width.

The SPD_A is the most sensitive, compact and easy-to-use single photon counting module in today's market.

Features

- High Quantum Efficiency up to 25%
- Peak Detection 1100 to 1600 nm
- All-in-one, compact and easy-to-use
- Adjustable parameters
- USB interface
- 1 or 2 paired channels
- LabVIEW

Applications

- Single Photon Counting
- Quantum Cryptography (QKD)
- Time Correlated Single Photon Counting (TCSPC)
- Fluorescence. fluorescence life time
- Spectroscopy. Raman spectroscopy
- Photo-luminescence
- Eye-safe Laser Ranging LIDAR
- Photon source characterization
- Fiber optics characterization (OTDR)

Options

- Time Correlation (TCSPC) **NEW**

SPECIFICATIONS

Parameter	Typical @ 1550 nm
DETECTION	
Spectral range	900 to 1700 nm
Quantum Efficiency	Adjustable from 5% to 25% [5% increments]
NEW Dead time range	Adjustable from 0.5 μ s to 999 μ s [0.5 μ s increments]
Optical fiber type	SMF or MMF
Dark Count Rate	< 5.0 10^{-6} per ns @10% QE for the Single Mode fiber < 1.0 10^{-5} per ns @10% QE for the Multi Mode fiber
Afterpulsing probability	< 1% at 100 kHz @ 10 ns gate and 10% QE
Timing jitter	< 200 ps @ 20% QE < 500 ps @ 10% QE
Enhanced Detection rate	Variable up to 20 MHz
Cooling time	< 2 min @ 25°C
INPUT SIGNAL	
External trigger	Variable up to 20 MHz, TTL and sinusoidal
Internal trigger generator	Variable up to 20 MHz
Effective Gate width	Adjustable from 1 ns to 100 ns [0.5 ns increments]
Delay control	Variable from 0 to 128 ns [0.5 ns increments]
OUTPUT SIGNAL	
Detection OUT	TTL signal [20 ns width]

INTERFACES

CONTROL	
CTL_USB	Mini USB type B
Graphical User Interface	Provided IHM
DATA	
Opt IN	FC/PC
Detection OUT	SMA female type
TRIGGER	
Clock IN	SMA female type
Clock OUT	SMA female type

ELECTRICAL, MECHANICAL and ENVIRONMENTAL

Power supply	110 – 230 VAC
Power consumption	< 10 Watts @ 5 VDC (1 channel) < 20 Watts @ 5 VDC (2 channels)
Dimension (LxWxH)	286 x 246 x 70 mm
Weight	4 kg
Operating temperature	+ 10°C to + 30°C
Storage temperature	- 40°C to + 65°C

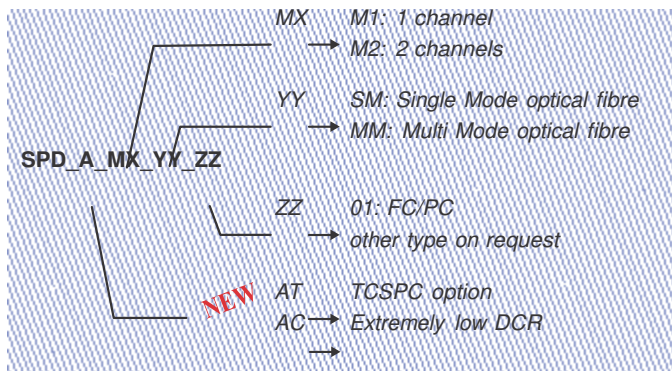
TCSPC and “champion” versions, and custom designs

The SPD_AT serie is also available with time correlation option for TCSPC applications. The Graphical User Interface directly provides fluorescence decay curve, time correlation... This is the most compact NIR-TCSPC solution available in today's market.

Also the SPD_AC “champion” serie performs extremely low DCR down to $1.0 \cdot 10^{-6}$ per ns gate width and QE up to 30%.

For any custom or industrial OEM designs, please contact us to discuss about your technical requirements.

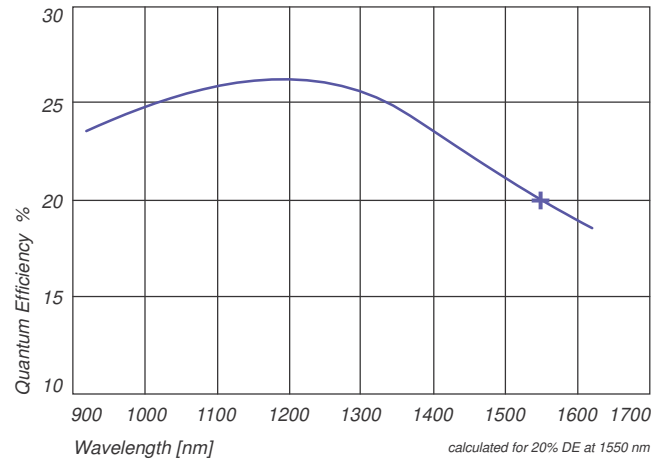
Ordering Information



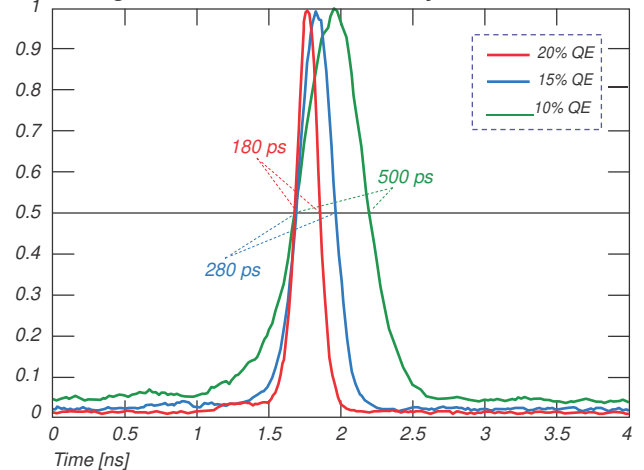
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Typical Photon Detection Efficiency vs Wavelength



Timing Jitter vs Quantum Efficiency



Other available Single Photon Counting modules

