Redefining Measurement

ID230 Infrared Single-Photon Detector

Free-Running InGaAs/InP Photon Counter with Extremely Low Dark Count

The ID230 is a major breakthrough for single-photon detection in free-running mode at telecom wavelengths. Based on the existing ID220, this new series offers a significantly decreased dark count rate thanks to an improved cooling system and adapted electronics. The avalanche photodiode working in Geiger mode is cooled down to -100°C. This series has been especially designed for applications in which asynchronous photon detection is essential.

The module can operate at detection probability levels of up to 25% (30% or above on demand), with a deadtime that can be set between 2 µs and 100 µs. The photon arrival time is reflected by a 100 ns LVTTL pulse, with a timing resolution of below 100 ps at 25% efficiency. A simple USB interface allows the user to set all parameters.

Key Features

- 900-1700 nm
- Best-in-class dark count rate
  - < 25 Hz at 10% quantum efficiency
  - < 100 Hz at 20% quantum efficiency
- Adjustable quantum efficiency up to 25%
- <100 ps timing resolution
- Adjustable deadtime from 2 µs to 100 µs
- Adjustable temperature from -50°C to -100°C
- Singlemode or multimode fibre optical input

Applications

- Quantum cryptography
- Fibre optics characterization
- Single-photon source characterization
- Failure analysis of electronic circuits
- Eye-safe laser ranging (LIDAR)
- Spectroscopy, Raman spectroscopy
- Singlet oxygen measurement
- Photoluminescence
- Fluorescence lifetime measurement

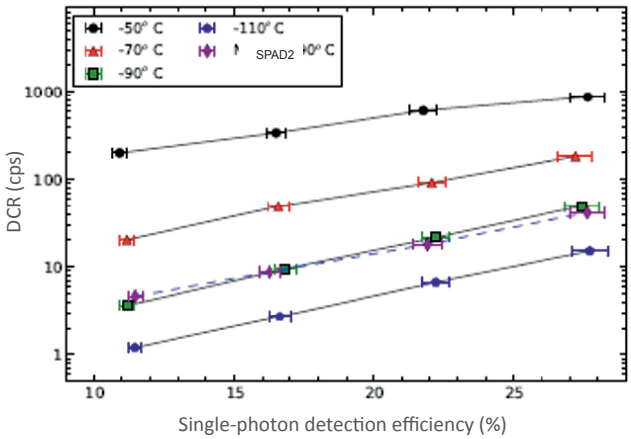
ID QUANTIQUE SA
Chemin de la Marbrerie 3
1227 Carouge/Geneva
Switzerland
T +41 22 301 83 71
F +41 22 301 89 79
info@idquantique.com
www.idquantique.com

INFRARED SINGLE-PHOTON DETECTOR

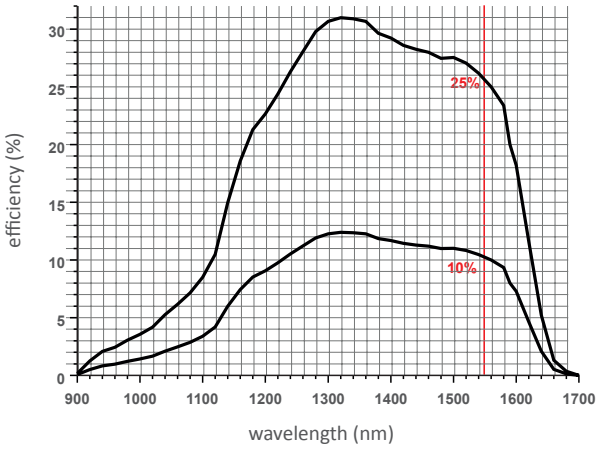
Specifications

Dark count rate @ -90°C		Standard		Ultra-Low Noise	
10%	1	<50		<25	Hz
20%		<200		<100	Hz
Parameter		**Min**	**Typical**	**Max**	**Units**
Wavelength range		900		1700	nm
Optical fibre type	2		SMF or MMF62.5		
Efficiency range at 1550 nm		0		25	%
Calibrated quantum efficiencies			8 values to be defined by the customer		
Afterpulsing probability with 20 µs deadtime (-90°C)				5	%
Timing resolution at 25% quantum efficiency				100	ps
Deadtime range		2		100	µs
Deadtime step			1		µs
Detection output pulse			LVTTL / 100 ns width		
Output connector			SMA		

1 Dark count rate vs efficency



2 Quantum efficiency vs wavelength



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