

Single Photon Detector



Features

High Photon Detection Efficiencies (PDE, 60% @ 650nm)

Ultra-High Count Rate (20MHz)

Low Max Dark Count Rates (100Hz @ Gain Min)

Low Dead Time (30ns)

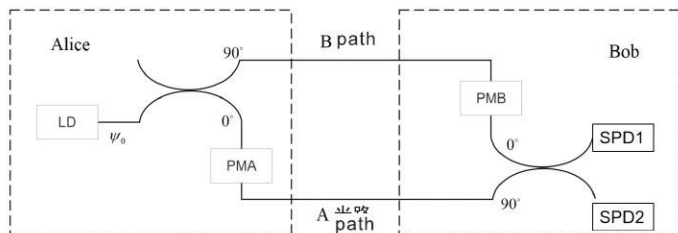
Low Afterpulse Probability (1% @ 650nm)

Overview

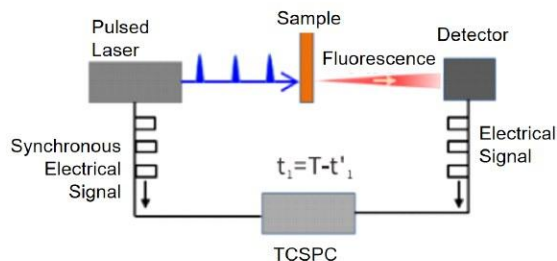
Dimension-Labs offers the DL-SPD series single-photon detectors, which can detect weak light single. Using single-photon avalanche photodiodes (SPADs) operating in Geiger mode, single-photon detectors feature ultra-high sensitivity, with an operating wavelength range covering the visible to near-infrared bands (400-1700nm). Specifically, the detection efficiency reaches 60% at 650nm, dark count is as low as 100Hz, maximum count rate can reach 20MHz, and afterpulse probability is below 1%. Compatible with both free-space and fiber optic inputs, these detectors are compact, flexibly installable, and easy to use, making them suitable for numerous researchers and industrial users.

Applications

Light Detection and Ranging (LiDAR), Single-Photon Imaging, Quantum Key Distribution (QKD), Fluorescence Lifetime Measurement

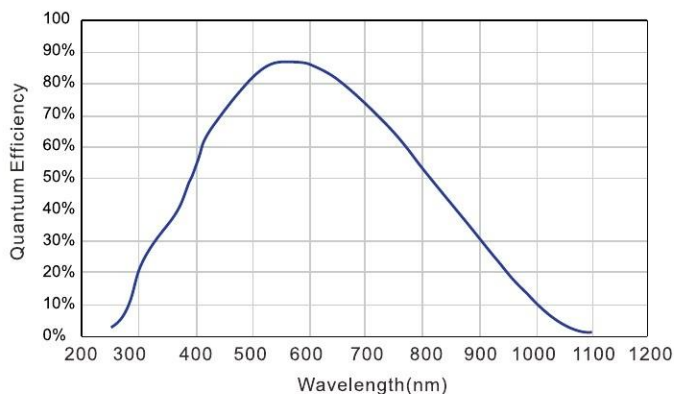


Quantum Key Distribution (QKD) System



Fluorescence Lifetime Measurement System

Photon Detection Efficiency of Si SPAD



Specifications

Item#		DL-SPD-400-1100-20M-100 ^[a]
Detector Type		Si
Optical Inputs		Free Space/Fiber[b]
Wavelength Range		400-1100nm
Active Area		Ø500µm
Photon Detection Efficiency		60%@650nm
PDE Variation at Constant Temperature		5%
Gain Adjustment Factor		4
Maximum Count Rate		20MHz
Dark Count Rate	@Gain Min	100Hz
	@Gain Max	1000Hz
Timing Resolution		1000ps
Afterpulsing Probability@Gain Min		1%
Dead Time		30ns
TTL Output Pulse @50Ω Load	Output Pulse Width	12ns
	Output Pulse Amplitude	3.0V
TTL Gate Trigger Input @50Ω Load	Trigger Input TTL Signal	
	Low(closed)	0.5V
	High(open)	2.5V
	Pulse Width	20ns
	Trigger Input Response Time	
	Opening Signal	20ns
Closing Signal		30ns
Delay between Photon Impact and TTL Pulse		30ns
General		
Power Supply		DC±12V,0.8A
Operating Temperature		0~40℃
Storage Temperature Range		-20~60℃
Dimensions(W*H*D)		86mm×42mm×110mm
Weight		276g

[a]Tested at 650nm

[b]The SM1 fiber optic adapters is compatible but also causes coupling deviations and a decrease in detection efficiency.