100MHz Infrared Single Photon Detector PGA-500

General

This is a single photon level weak signal detecting instrument. It plays an indispensable role in some technology fields such as quantum optics, biological optics, laser ranging, etc. In recent years, the single photon detector is further applied in the field of quantum cryptography, and becomes the core device of quantum signal photoelectric conversion.

100MHz Infrared Single Photon Detector PGA-500 was generated in the process of quantum cryptography communication system research. It enjoys low dark count rate, low-cost and high stability. Series of cutting-edge technologies were used, such as gating control, dead time restrain, noise reduction and afterpulse suppression etc. The instrument use Single Photon InGaAs/InP Avalanche Diode (SPAD) as photosensitive element, our original new scheme of differential filtering technology further reduces the dark count probability while maintaining the high detection efficiency.

Application

- Quantum key distribution
- Laser ranging
- Atmosphere and water environment detection
- Quantum optics, biological optics
- Non-destructive substance analysis
- Fluorescence spectrum

Key Features

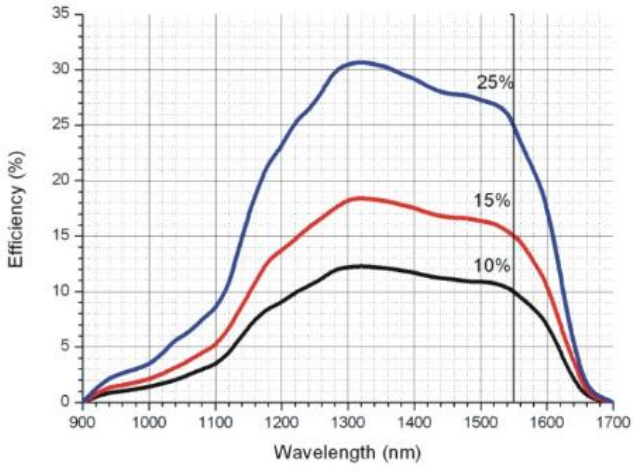
- Ultra-low dark counting probability: $<1.5\times10^{-6}$
- Multi-trigger mode: LVTTL, LVPECL, NECL, CML, LVDS, NIM and self-definition etc.
- High stability design: constant temperature control design eliminates the influence of temperature drift
- Auxiliary counter: support counting of various common level signal

	Specification	Unit
Wavelength Range	1100 ~ 1600	nm
Internal trigger delay time range	0 ~ 20	ns
Max Trigger frequency	100	MHz
Detection Efficiency	10 ~ 25	%
Gate width	1 / 2 / 3	ns
Deadtime range	0 ~ 100	μs
Adjustable Delay Time	0 ~ 20	ns
Afterpulse Probability	< 2	%
Delay time drift (temperature)	< 50	ps
Cooling down time of SPAD	< 6	min
Working temperature range	5 ~ 35	℃
Dimension（W×H×D）	275×138×354	mm
Power Source	100 ~ 240	VAC
Power Consumption	< 75	W

Specification of Dark Count Probability

Part Number	10% Detection Efficiency	15% Detection Efficiency	20% Detection Efficiency	25% Detection Efficiency
PGA-500	$<4\times10^{-7}$	$<8\times10^{-7}$	$<1.5\times10^{-6}$	$<4\times10^{-6}$

Note: λ=1550nm, Trigger frequency=100MHz, Gate width=1ns, Deadtime=0



Curve of Wavelength – Photon Detection Efficiency

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