Si-Avalanche Photodiode module

licel
lidar computing and electronics

Low noise - high speed detector @ 400 nm-1100nm

High NIR Quantum Efficiency

Now you can measure optical signals in the near IR with high quantum efficiency, comparable to UV-Vis detectors. Our Si-APD Module consists of a TE-cooled detector, a high-speed low-noise preamplifier and HV supply.

Integrated focussing optics and alignment mechanics allow easy integration into your optical setup.The increased sensitivity in the near infrared is a major advantage compared to photomultipliers.

Enhanced and standard NIR sensitivity versions available.

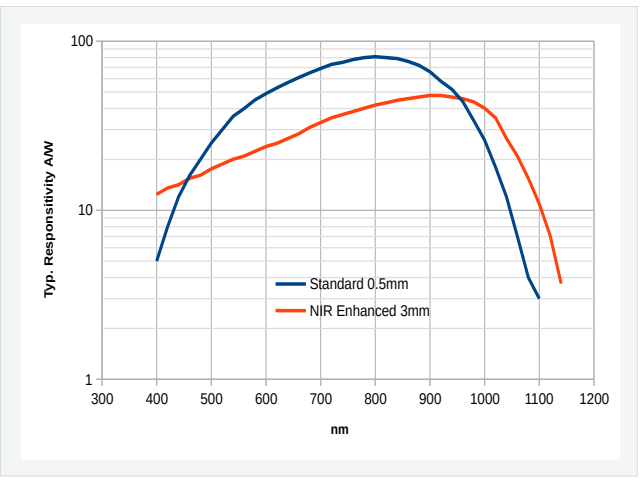
Features:

- 0.5, 1.0 or 3 mm dia. detector size
- thermoelectric cooled
- low noise, high gain preamplifier
- easy system integration with integrated alignment optics and mechanics
- integrated HV- and AC-power supply

Applications:

- LIDAR (Light Detection and Ranging)
- fluorescence detection
- replacement for photomultipliers >800nm

Spectral Sensitivity:



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Specifications

Detector:

detector size:	0.5, 1.0, 3.0 mm dia.
responsivity @650 nm:	>38A/W[1] , 28A/W[2]
responsivity @ 900 nm:	45A/W[2]
responsivity @ 1060 nm:	25 A/W[2] typ., QE=38%[2]
dark current @22°:	100/200 nA typ/max(1mm)[2]
	100/200 nA typ/max(3mm)[2]

[1] standard sensitivity: 0.5mm, [2] NIR enhanced: 1mm, 3mm

Preamplifier for analog detection:

bandwidth:	DC-10 MHz
gain:	11mV/µA into 50 Ω
spectral noise current:	
DC...1MHz	2 pA/√Hz
DC...10 MHz	7.2 pA/√Hz
output polarity:	negative
output signal:	0...-1V (max), 0...-100mV
(typ. operation) into 50 Ω	

HV supply:

voltage range:	0...+450V
max. current:	0.6 mA
voltage ripple:	<0.005%

Integrated TE cooler and temp. controller:

Detector temperature:	+0° C (-20° C for 0.5mm APD)
Temperature stability:	<0.5 K

Power supply:

input:	100V, 110V, 230V, 50/60 Hz
output:	+5V, -5V, +15 V, linear regulated.

Environmental conditions:

Operating temperature:	0°C to 30°C (non condens.)
Storage temperature:	-40°C to 70°C

Mechanics:

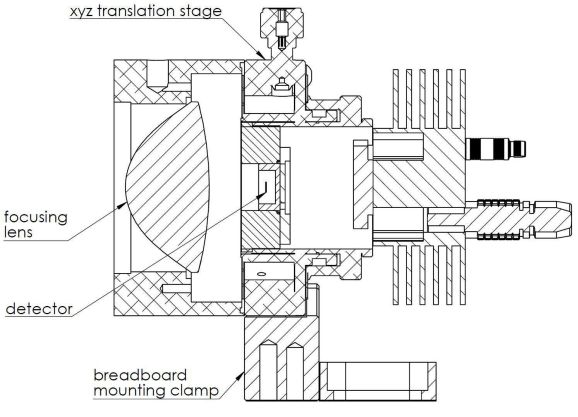
The compact APD/preamp/TEC controller unit is mounted in a XYZ translation stage for easy integration and alignment in detection systems.

XY axis travel:	6 mm
Z-axis travel:	6 mm
precision:	4µm

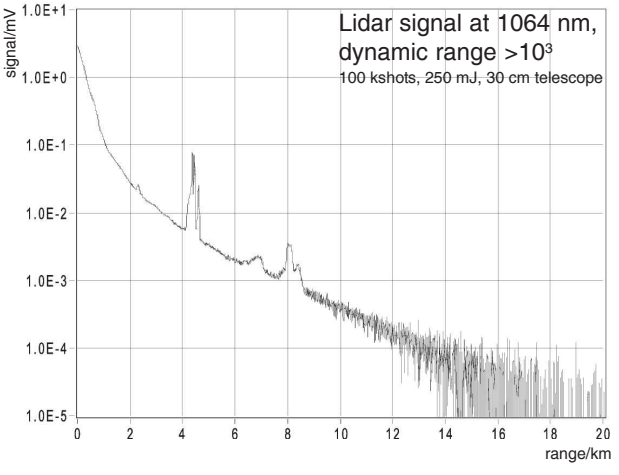
Dimensions and weight

Detector: 92 x 92 x 140mm, Power: 61 x 129 x 220mm
APD detector head: 875 g + cable 350 g
APD HV-Cassette: 1425 g
APD total = 2650 g

Detector head



Signals



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