

STM1 NIRDAPD series

Stabilized Temperature Module

with Discrete Amplification Photon Detector



Amplification Technologies Inc.'s STM1DAPD10 series photodetector module is a wide spectral response high-speed module designed for the analog detection of extremely low light level signals, from one photon to several thousand photons.

The Stabilized Temperature Modules (STM) consists of a patented multichannel Discrete Amplification Photo Detector (NIRDAPD series) packaged in a hermetically sealed TO-8 package with a built-in thermoelectric cooler, a thermistor and a temperature controller circuit for stabilizing the temperature of the module. The module has an integrated power supply for biasing the photodetector and amplifier circuits. The design of the NIRDAPD series photodetector offer wide spectral wavelength sensitivity from 950nm to 1650nm, high dynamic range and high voltage and thermal stability.

The internal amplifier used is a wide-bandwidth amplifier (14dB, 4GHz). The module includes a power supply circuit for biasing the photodetector and electronic circuits from a single 5V power supply. The photodetector is kept at a constant temperature by monitoring the output of a thermistor mounted next to the photodiode and automatically regulating the current through the thermoelectric cooler. The STMNIRDAPD NIR series module is available in two different active areas: 85 μm and 210 μm diameters.

Key Features

Electro-optical

- Wide and flat spectral response from 950nm to 1650nm (Short Wave IR)
- High PDE at wide dynamic range
- Fast response (< 0.5 ns rise time and < 0.6 ns SER pulse width)

Applications

- Fluorescence detection
- Spectroscopy and Instrumentation
- LIDAR and environmental monitoring
- High energy physics
- Biological Sensors
- Confocal microscopy

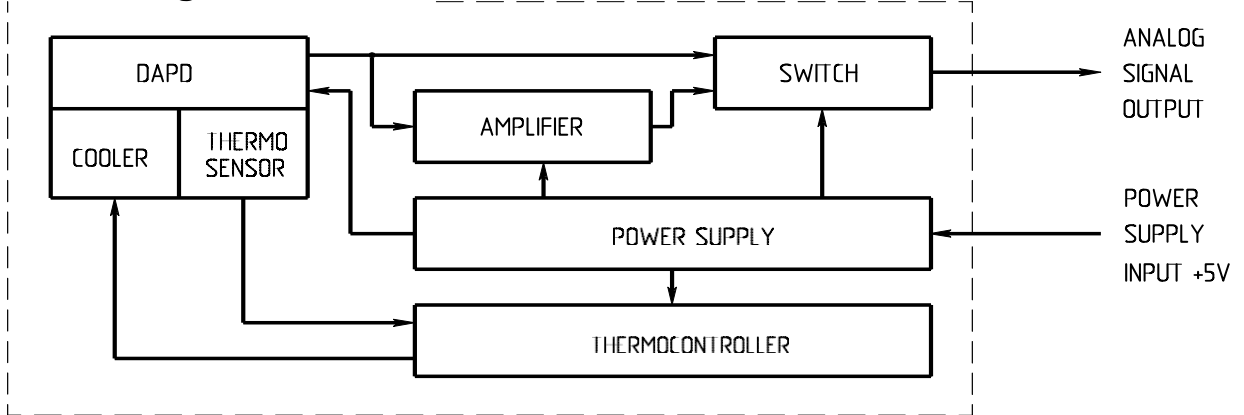
Specifications (at temperature of -15°C)

Parameter	STM1NIRDAPD	Unit
General parameters		
Active area diameter	210	μm
Number of pixels	199	-
Photon Detection Efficiency (PDE) ¹ at 1060 nm	8	%
Spectral response range (λ)	900 - 1650	nm
Peak sensitivity	1600	nm
Analog output (analog² + photon counting modes)		
Single Electron Response output amplitude	14 - 16	mV
Single Electron Response Pulse Width (FWHM)	0.6	ns
Rise/Fall time	<0.5	ns
Typical dark count rate	2.5×10⁷	cps
Maximal count rate (constant illumination)	10⁸	cps
Excess Noise Factor	<1.05	
Other parameters		
Supply voltage	+5	V
Supply current	0.2 - 0.4	A
Output impedance	50	Ω
Max Output voltage	0.2 - 0.5	V
Analog output connector	SMA	
Power supply connector	NP-118A Barrel type power connector	
Dimensions	110 × 50 × 44	mm

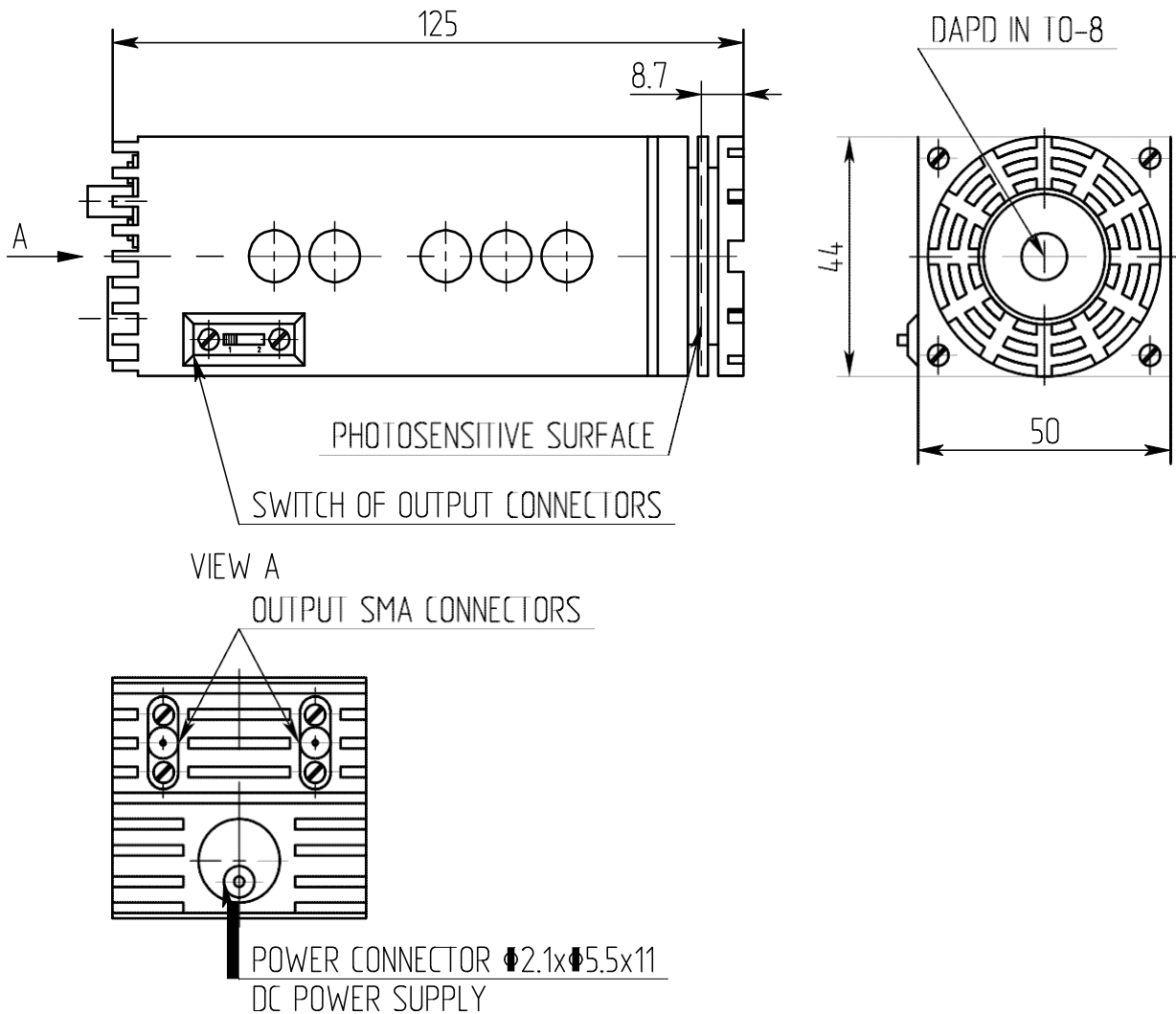
(1) Photon detection efficiency includes crosstalk and after pulsing.

(2) Microwave Corporation HMC479MP86 (14dB, 4GHz, max output voltage 1.5V).

Block Diagram



Module Dimensions (unit: mm)



Precautions for Use

Use of grounding straps, anti-static mats and other standard electrostatic discharge protective equipment and methods are recommended when handling or testing these devices.

Quality Vision

Amplification Technologies Inc is committed to providing products with the highest levels of quality and reliability using best available manufacturing processes. Our top priority is total customer satisfaction. Amplification Technologies Inc maintains a strict quality control program to ensure that all products meet or surpass published specifications.

Ordering Information

When ordering, please specify the module with the following information: STM1PD10C-XXXTO8 where XXX corresponds to the photodetector chip active area. Example: STM1PD10C-018 corresponds to 0.18 mm diameter active area.

Please call for other custom options such as fiber coupling, custom chip active areas, custom optical windows, etc.

Contact Information

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