

Avalanche Photodiode Detector Heads

The FMB Oxford APD (Avalanche Photodiode) system is an ultra-fast detector suitable for experiments up to 20 KeV with large dynamic ranges time resolved measurements and where fast photon counting are required.

Specifications

Maximum count rate	100 MHz *
Window	120 μ m Beryllium
Photon efficiency	50% that of NaI up to 10keV *
Noise	below 1Hz *
Diode gain	200x at 370 V bias
Preamplifier gain	60 dB per stage at 100 MHz
Rise time 10%-90%	<2 ns *
Pulse width (at half maximum)	<4 ns *

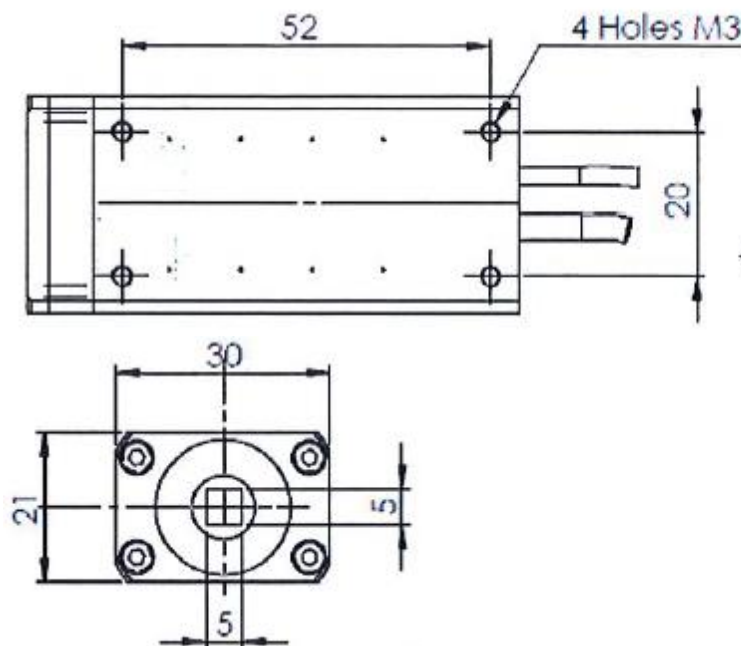
Features*

- excellent pulse pair time resolution - 5.6 ns
- very low noise
- wide dynamic range and linearity - seven decades
- rapid recovery from pulses
- high photon efficiency - 95% at 6 keV; 45% at 12 keV

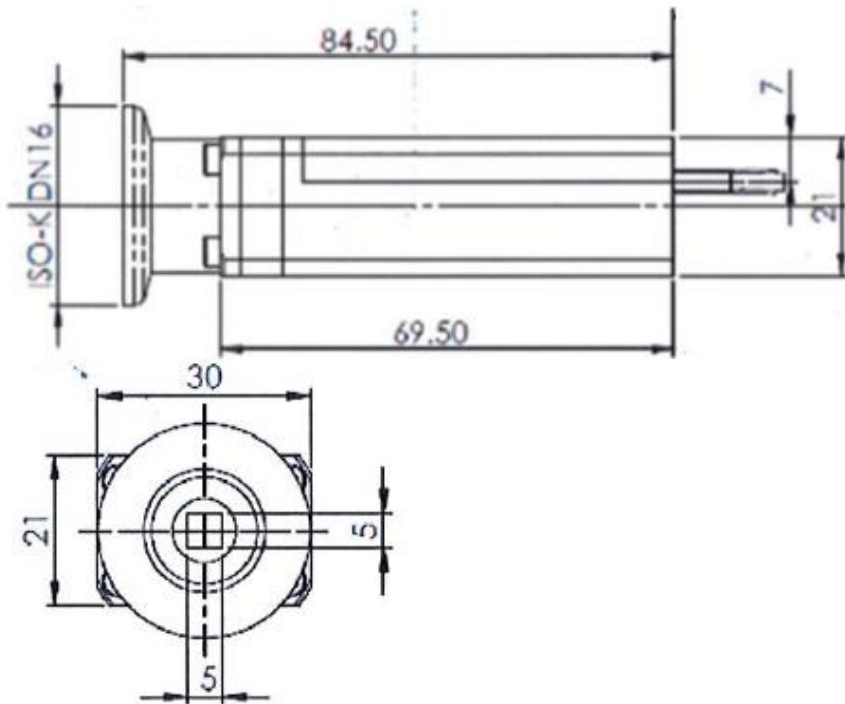
*Indicative performance figures obtained at the National Synchrotron Light Source, Brookhaven National Laboratory.

APD Bodies

APD0010 (APD in air)



APD0011 (APD in vacuum)



APD ACE

The ACE electronics package, built to a design developed at the European Synchrotron Radiation Facility offers the user maximum flexibility; it supplies the bias voltage to the detector head, and has an integrated counter/timer which can be operated in local (front panel) or remote (computer controlled) mode.

Features

- front panel operation through a user-friendly LCD graphic display with touch panel
- easy user interface for remote operation mode
- up to 600 V diode bias
- very low noise
- rugged, reliable package
- wide dynamic range and linearity - seven decades
- Labview software is provided and can be utilised with the rs232 communication port for remote configuration and data retrieval

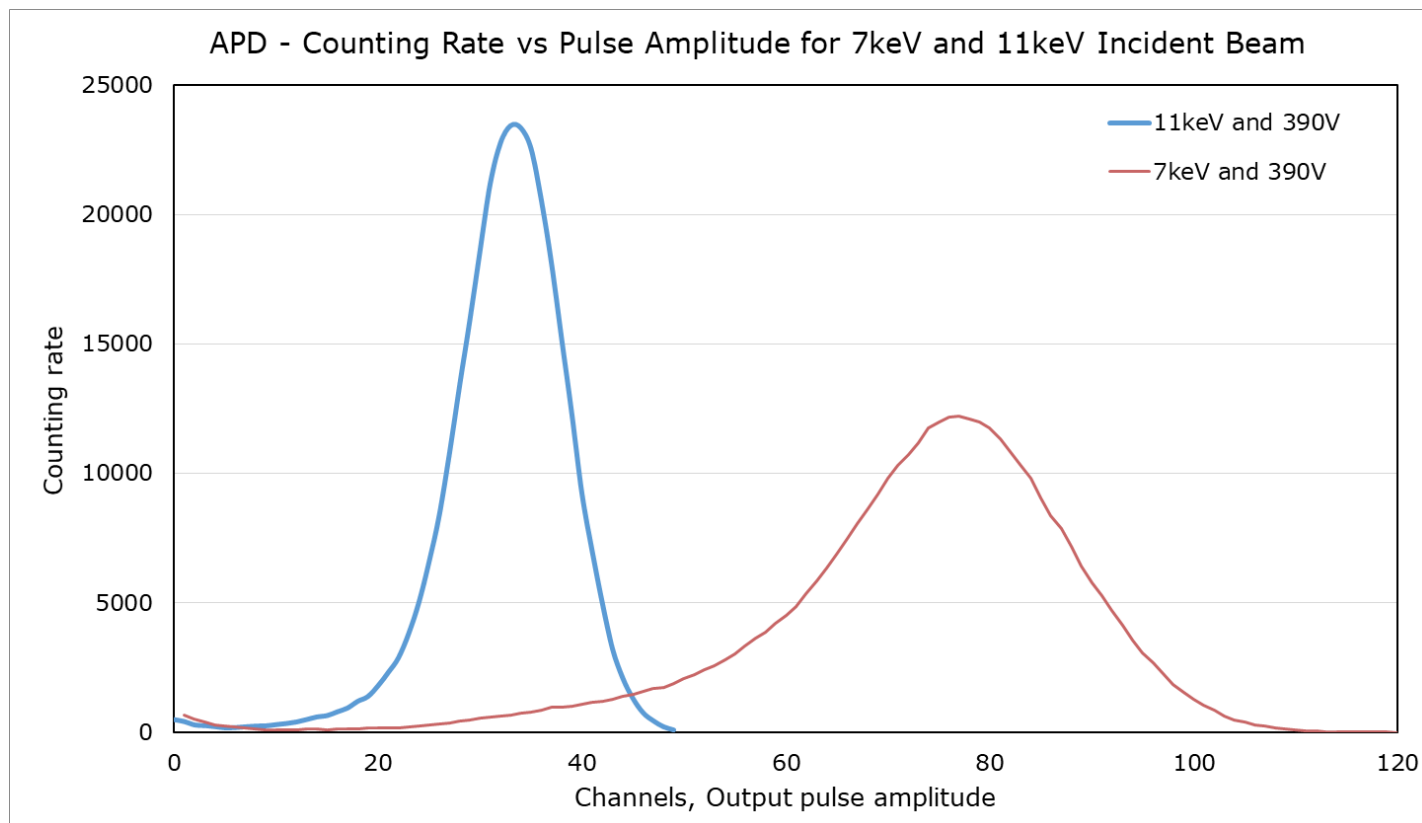
Specifications

NIM module	two units wide
Selectable modes	local (front panel,) remote
Remote connection	serial or parallel
Maximum count rate	up to 100 MHz
HV APD bias	up to 600 V
Remote mode	software included
Energy resolution	20% to 35% at 25 keV



APD Performance

The graph below shows the pulse height distribution for energies 7keV and 11keV recorded using the APD ACE electronics. The performance of the APD0010 and APD0011 are identical, except that the APD0011 has a KF16 adaptor flange for vacuum compatibility.



*Data from graph above obtained from PETRA III, DESY (Hamburg, Germany).

APD Ordering Information

APD Detector Heads

5x5 mm 110µm sensor, in air

APD0010

5x5 mm 110µm sensor, with KF DN16 flange, in vacuum

APD0011

APD Electronics

APD pulse processing unit ACE, NIM 1 channel

APD0002

APD to ACE cables

APD to ACE PPU cable, 5m

CBY01501

APD to ACE PPU cable, 10m

CBY01502

APD to ACE PPU cable, 15m

CBY01503

APD to ACE PPU cable, 20m

CBY01504

APD to ACE PPU cable, 30m

CBY01505