

## Advanced Performance Detectors



**PHOTONIS** offers hundreds of standard and custom APD designs to detect and amplify charged particles and electromagnetic radiation.

Scientific instrument applications include mass spectrometry, SIMS, SEM, FIB, leak detectors, VUV spectrometers, and RGA.

**PHOTONIS** Advanced Performance Detectors are also used in high energy physics and space exploration.

# PHOTONIS



## PHOTONIS Advanced Performance Detector Assemblies

### Superior Sensitivity and Unsurpassed Dynamic Range

Advanced Performance Detectors are available with Photonis' full performance range of micro-channel plates. PHOTONIS' 2  $\mu\text{m}$  and 5  $\mu\text{m}$  pore Long-Life™ MCPs, available singly, as a two-piece matched chevron or a 3-piece matched z-stack, provide superior detection sensitivity. The Extended Dynamic Range™ option will typically increase the detection limit by a factor of ten.

### Wide Range of Performance and Configurations

Advanced Performance Detectors range from 3.9 mm to 120 mm diameter and up to 100 mm x 80 mm rectangular designs. User selections to optimize performance include pore size and pitch, bias angle, image grade, aspect ratio, bias current, high temperature, additional coatings, mounting options and readouts. PHOTONIS also offers the world's largest selection of Time-of-Flight (TOF) detectors.

### Designed for Easy Integration and Long-Life

The detectors are packaged in a variety of standard, custom and low profile housings for easy system integration. Mounting options include conflat and metric flanges, front, rear or side mountable, additional feed-throughs, keyed hardware and SMA connectors. The new patented Mounting-Pad™ MCP option virtually eliminates MCP warping and cracking that can occur with moisture absorption.

### Advanced Performance MCP Detectors

PHOTONIS USA offers over 200 types of standard and custom Advanced Performance Detectors. These fully inspected and tested MCP assemblies are manufactured in Class 1000 clean rooms with Class 100 flow benches, to ensure superior performance.

Advanced Performance Detectors are available with cartridge-mounted microchannel plates for easy and cost-effective replacement. Spare cartridges can be easily stored, with no degradation of MCP performance.



### Sub-Miniature Advanced Performance Detectors

QUANTUM™ and MICROTRON™ Sub-Miniature Advanced Performance Detectors offer previously unobtainable levels of amplification, dynamic range, and detection sensitivity in an ultra compact, easy to use package. They are specifically designed for miniature sensors and hand held analytical instruments, such as mass spectrometers, Residual Gas Analyzers, VUV spectrometers, and leak detectors.





## Performance Options for PHOTONIS Advanced Performance Detector Products

- Center Hole**  
 Enables the unobstructed passage of a primary beam through the channel plate.
- Center Tab**  
 Enables independent biasing of two or more MCPs.
- Grid**  
 Used as a charged particle discriminator; can also be used to improve detection efficiency by reflecting secondary electrons back into the microchannel plate.
- Flange Mount**  
 Bakeable vacuum flanges are available for easy installation onto instrument chambers.
- Metal Anode**  
 A simple, electrically conductive readout device.
- Multi Metal Anode**  
 Multiple, electrically isolated conductive readouts.
- Resistive Anode Encoder**  
 A 1-D position sensor with a 25  $\mu\text{m}$  resolution, can count at 20,000 cps.
- Phosphor Screen**  
 A phosphor-coated fiber-optic substrate for a 2-D image of the output signal.
- CCD**  
 A solid state camera for high resolution 2-D video images.

This table will help you select the right APD configuration for your specific application.

APD		2		MA		18/12/10/12		D		60:1		6.4CH		EDR		MGO		P20	
<b>MCP Count</b>		<b>Quality Diameter (mm)</b>		<b>Pitch / Pore Size (microns)</b>		<b>MCP Grade</b>		<b>Added MCP options</b>		<b>Aspect Ratio (thickness / pore size)</b>		<b>Detector Options (For deviations from the normal for a given detector type)</b>							
1 - Individual Plate (CEMA)		18		3/2		D - Detection				40:1		(Blank) - Standard Model							
2 - Chevron™		25		6/5		I - Image				46:1		#ANODE - Multi metal anode							
3 - Z-Stack		40		10/8		P - Premium				60:1		#"FM - Conflat Flange Mount size, in inches							
		75		12/10								FFM - Front Flange Mountable							
		120		32/25								RFM - Rear Flange Mountable							
		79x97										SFM - Side Flange Mountable							
		97x79										CRT - Cartridge							
<b>Detector type</b>						<b>Bias Angle (degrees)</b>				<b>MCP Coatings</b>									
(Blank) – Metal assembly without anode						0				(Blank) - Standard NiChrome									
APTOF – Advanced Performance Time-Of-Flight detector						5				AU - Gold									
BPOTOF – BiPolar Time-Of-Flight detector						8				CSI - Cesium Iodide									
CRT – Cartridge for another detector						12				MGF2 - Magnesium Fluoride									
LPD – Low Profile detector						19				MGO - Magnesium Oxide									
MA – Metal Anode										KBR - Potassium Bromide									
MICROTRON – Microtron brand detector										CUI - Copper Iodide									
MINITOF – Miniature Time-Of-Flight detector												KEYED - The hardware is keyed to eliminate one rotational degree of freedom							
PS – Phosphor Screen												P## - Type of phosphor screen							
RAE – Resistive Anode Encoder												GRID - Grid							
TOF – Time-Of-Flight detector												NOGRID - No Grid							
												NW100FM - Metric NW100 flange							
												SMA - SubMiniature version A Connectors							



New 25 mm UltraFast BiPolar TOF detector



Square APD



Imaging APD with Integrated CCD camera

# PHOTONIS

For more information, please visit [www.photonis.com](http://www.photonis.com)

## PHOTONIS USA Inc.

### Visit address

660 Main Street  
Sturbridge, MA  
United States of America

### Mail address

P.O. Box 1159  
Sturbridge, MA 01566 - 1159  
United States of America

T +1 800 648 1800 (US & Can)

T +1 508 347 4000 (Int. calls)

F +1 508 347 3849

Email: [sales@usa.photonis.com](mailto:sales@usa.photonis.com)

The information furnished is believed to be accurate and reliable, but is not guaranteed and is subject to change without notice. No liability is assumed by PHOTONIS for its use. Performance data represents typical characteristics as individual product performance may vary. Customers should verify that they have the most current PHOTONIS product information before placing orders. No claims or warranties are made as to the application of PHOTONIS products. Pictures may not be considered as contractually binding. This document may not be reproduced, in whole or in part, without the prior written consent of PHOTONIS.