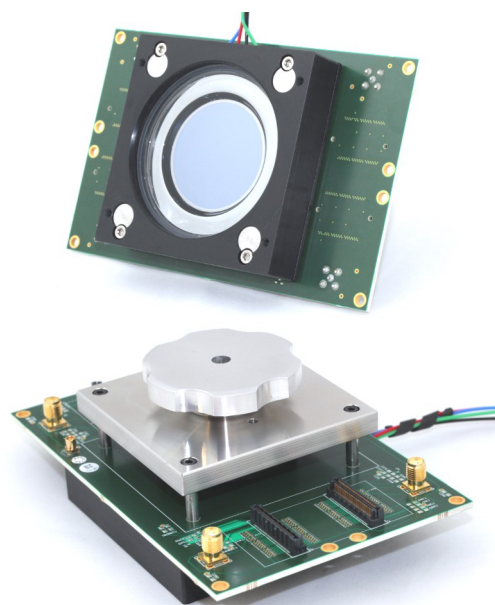




# MAPMT228 *Multi-Anode MCP-PMT*



The AuraTek MAPMT228 is a next generation Multi-Anode Micro-Channel Plate Photo-Multiplier Tube (MCP-PMT). It can be configured as a multi-channel single photon counter or analog photon pulse analyzer. The 1024 individual anodes are arranged in a 32 x 32 pattern with 0.828 mm pitch, resulting in a 26.5 mm square active area. Connection of the high density anode output is made using Photek's proprietary interconnect process based on an Anisotropic Conductive Film (ACF). Customers can request custom configurations of the full 1024 anodes via high density connectors, or group the anodes to form unique readout geometries. The timing performance is state-of-the-art, with pulse rise-time of <175 ps and single photon transit time spread of < 40 ps rms per channel. Ask our experts to help you select the best readout electronics for your application.



## KEY ATTRIBUTES

- ◆ True noiseless photon counting
- ◆ 430 ps FWHM pulse width
- ◆ Transit time spread of < 40 ps rms
- ◆ Extremely low dark counts
- ◆ High density anode having 1024 pixels on 0.828mm pitch
- ◆ Customer configurable anode readout and interconnect via proprietary ACF technology
- ◆ Variety of high QE, low noise photocathodes covering full UV to visible wavelengths
- ◆ Immunity to magnetic fields
- ◆ Assistance with selection of optimal readout electronics

## APPLICATIONS

- ◆ High Content Screening
- ◆ Time Resolved Spectroscopy
- ◆ Wide Field Time Correlated Single Photon Counting
- ◆ Fluorescence Lifetime Imaging Microscopy (FLIM)
- ◆ Forster Resonance Energy Transfer (FRET)
- ◆ LIDAR
- ◆ Wavelength Shifting Fibre Readout
- ◆ Scintillating/Cherenkov Fibre Readout
- ◆ Microplate Readout
- ◆ Beam Monitor

## PRODUCT OVERVIEW

### General Characteristics

Window	Fused Silica (Optional Fibre Optic)
Active Area	26.5 x 26.5 mm
Electron Multiplier	Dual MCP
Anode Format	32 x 32 (Reconfigurable)
Anode Pitch	0.828 mm
Photocathode	Solar Blind, Bi-Alkali, S20, S25

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## SPECIFICATIONS

### Analog Response

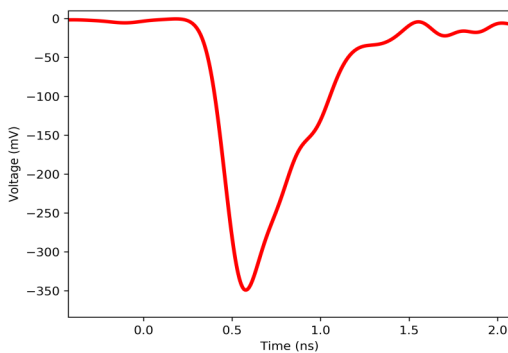
Voltage for  $10^6$  Gain < 2700 V

### Single Photon Response

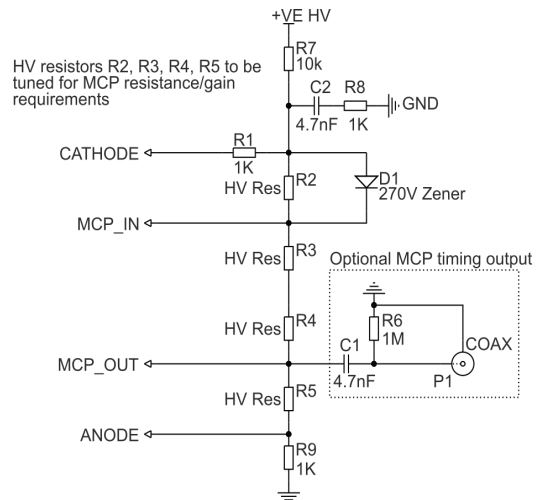
Dark Counts per Anode < 2.25 cps  
 Pulse Risetime (10% to 90%) < 175 ps  
 Pulse Width < 430 ps FWHM  
 Transit Time Spread < 40 ps RMS  
 Pulse Height Distribution 100% FWHM  
 Linear Total Count Rate Up to 10 MHz

### Maximum Ratings

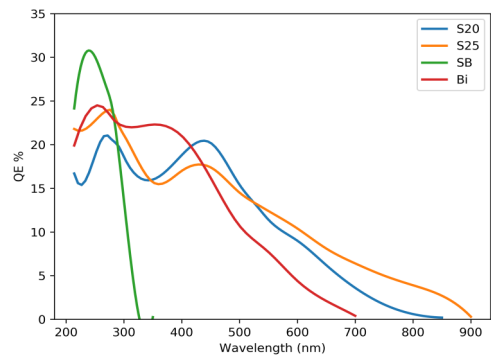
Overall Voltage < 3000 V  
 Operating Temperature -50 to +50°C  
 Storage Temperature -50 to +50°C



Average of 50 single photon pulses measured on 5 GHz, 20 GS/s LeCroy oscilloscope, using  $\sin(x)/x$  interpolation and illuminated using a Photek LPG-405 pulsed laser.

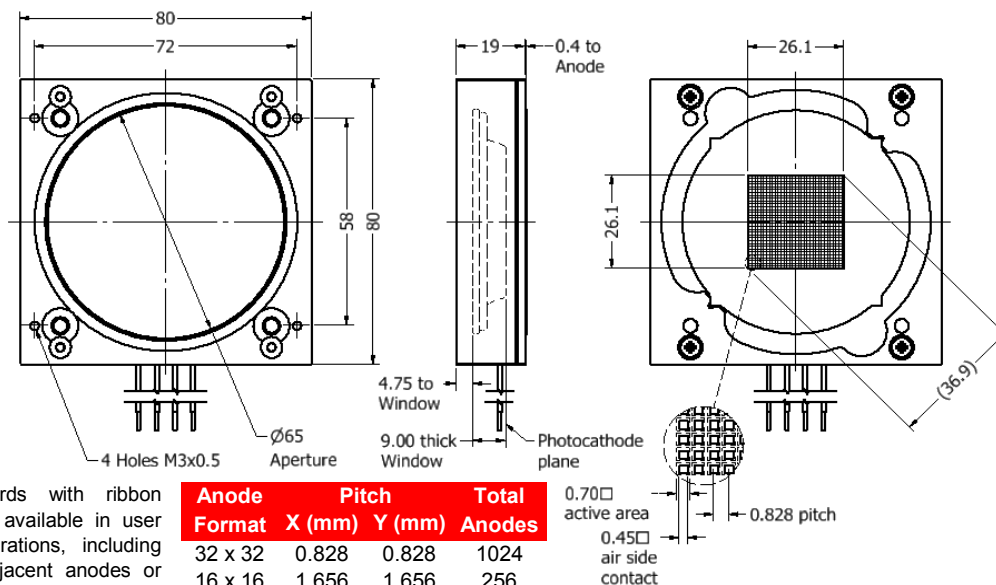


Typical dropper chain example



Available photocathodes on fused silica window. Optional fibre optic window will reduce sensitivity and no response below 300 nm.

## OUTLINE DRAWING



Interposer boards with ribbon connectors are available in user defined configurations, including summing of adjacent anodes or reduced area coverage. Examples include:

Anode Format	Pitch X (mm)	Pitch Y (mm)	Total Anodes
32 x 32	0.828	0.828	1024
16 x 16	1.656	1.656	256
32 x 8	0.828	3.312	256
8 x 8	3.312	3.312	64

Photek Ltd reserves the right to update and improve this specification without prior notice