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

<table>
<thead>
<tr>
<th>General Characteristics</th>
<th>Fused Silica (Optional Fibre Optic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window</td>
<td>26.5 x 26.5 mm</td>
</tr>
<tr>
<td>Active Area</td>
<td>Dual MCP</td>
</tr>
<tr>
<td>Electron Multiplier</td>
<td></td>
</tr>
<tr>
<td>Anode Format</td>
<td>32 x 32 (Reconfigurable)</td>
</tr>
<tr>
<td>Anode Pitch</td>
<td>0.828 mm</td>
</tr>
<tr>
<td>Photocathode</td>
<td>Solar Blind, Bi-Alkali, S20, S25</td>
</tr>
</tbody>
</table>
**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.

**OUTLINE DRAWING**

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

<table>
<thead>
<tr>
<th>Anode Format</th>
<th>Pitch X (mm)</th>
<th>Pitch Y (mm)</th>
<th>Total Anodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 x 32</td>
<td>0.828</td>
<td>0.828</td>
<td>1024</td>
</tr>
<tr>
<td>16 x 16</td>
<td>1.656</td>
<td>1.656</td>
<td>256</td>
</tr>
<tr>
<td>32 x 8</td>
<td>0.828</td>
<td>3.312</td>
<td>256</td>
</tr>
<tr>
<td>8 x 8</td>
<td>3.312</td>
<td>3.312</td>
<td>64</td>
</tr>
</tbody>
</table>

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