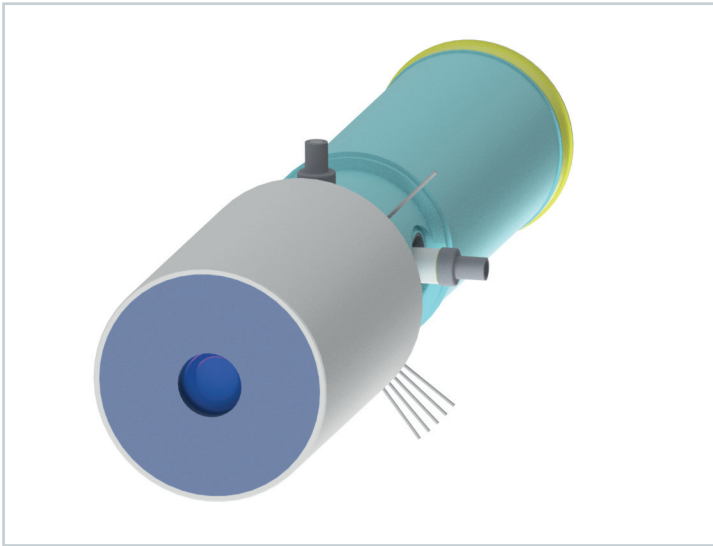


# Photochron 5

For Synchroscan cameras



**Streak tubes are used for the study of ultra fast optical phenomena and specifically measure the variation in light intensity as a function of time.**

Installed in some of the world's best streak cameras the Photek streak tubes are proven in performance and reliability. Photochron 5 was developed in collaboration with St Andrews University for use in Synchroscan cameras, and can achieve better than 2 ps time resolution in both single shot and synchroscan modes.

## Key Attributes

- > Timing resolution to 400 fs
- > 8 mm photocathode size
- > Synchroscan up to 250 MHz
- > UV, solar blind, visible and NIR response
- > Can be supplied with a mu-metal shield for high magnetic field environments

## Applications

- > Streak cameras
- > Fusion Research
- > Optical oscilloscope
- > LiDAR systems
- > FLIM
- > Real time imaging of beam-profiles in Synchrotrons

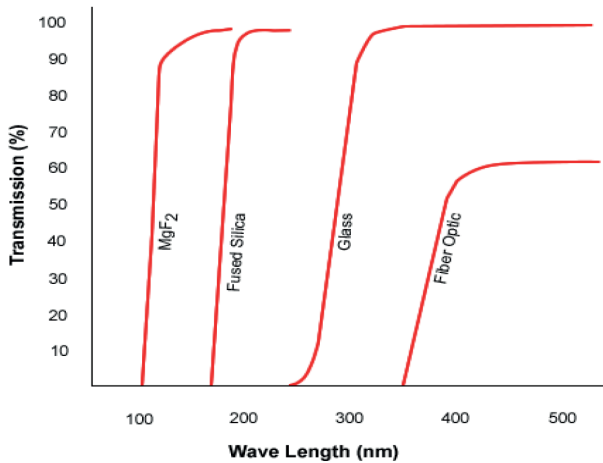
## Product Overview

Cathode Size	8 mm slit
Synchroscan	> 200 MHz
Time Resolution (typical)	2 ps
Time Resolution (maximum)	400 fs (1)
Spatial Resolution (typical)	50 lp/mm
Magnification (spatial)	2 - 4
Deflection Sensitivity: Time axis	75 V/cm
Deflection Sensitivity: Spatial axis	250 V/cm

**Options Available**

**INPUT WINDOW**

Photek streak tubes are available with a choice of input window materials. These include MgF<sub>2</sub>, fused silica, glass and fibre optic, among others.



**PHOSPHOR SCREENS**

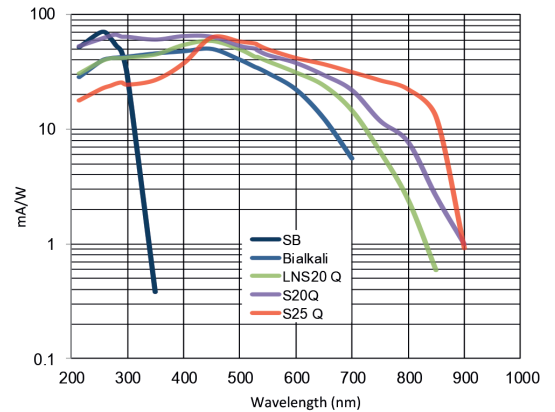
Photek can offer two types of phosphor screen substrates; glass or fibre optic. Our standard phosphors include P20, P43, P46, P47, & FS depending on the brightness and decay time required. Other phosphors are available on request.

Type Wavelength (nm)	Anode Efficiency % *	Photons/ Electron @ 5kV	Decay Characteristic
<b>P20 (540)</b>	12	320	Fast initial decay with long decay at low level. 1ms to 1%
<b>P43 (548)</b>	8.7	240	1.2 ms/decade, true exponential
<b>P46 (530)</b>	1.8	55	300 ns
<b>P47 (410)</b>	3	64	80 ns
<b>FS (513, 668, 768)</b>	4.2	96	12 μs to 10%

\* Optical Watts / Electrical Watt

**SPECTRAL RESPONSE**

Photek offer a full range of Gen II photocathodes, these include CsI, Solar Blind, Bialkali, Low Noise S20, S20 and S25.

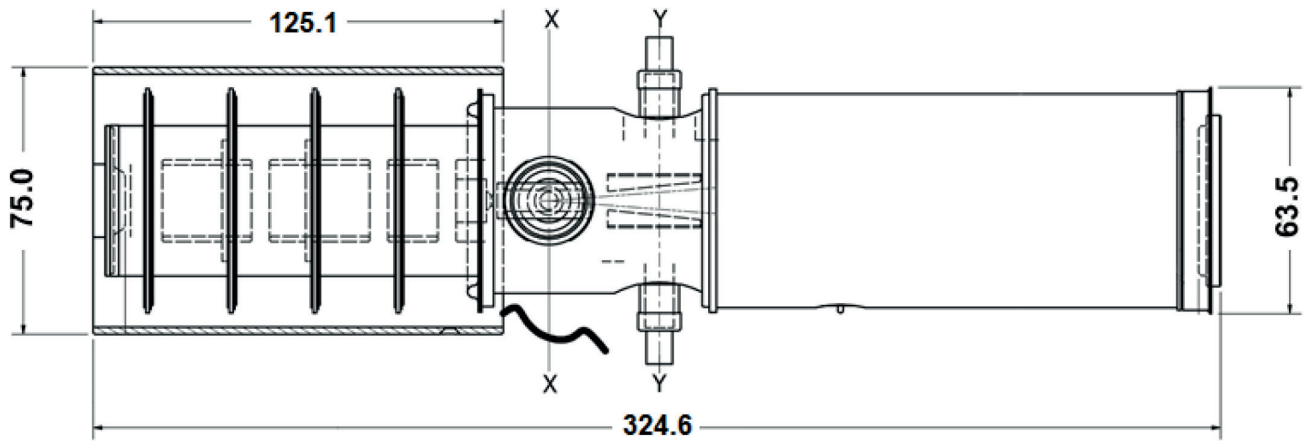


Above is the broad spectral response that you would expect to achieve with Photek’s range of Gen II photocathodes. Please note that input window material will affect overall sensitivity.

**Environmental**

Operational Limits: -40°C to +45°C  
Storage: -40°C to +60°C

**Mechanical**



Dimensions (mm) are indicative and may vary depending on the optics and housing required.

**Optimisation and Operating Voltage**

These tubes have an accelerator mesh and three focus electrodes. The tube can be operated over a range of voltages to change electron optical magnification while maintaining minimum beam size within the deflector region to suit user requirements, which may be influenced by choice of solid state camera chosen.

Voltages in the table below are given as percentages of overall voltage applied to the cathode with screen and deflector region at ground. Typical overall voltage is 7000 V.

Mode	Voltages (V)				Magnification		
	Cathode	Grid	Focus 1	Focus 2	Time	Spatial	Resolution Spatial Micron
Mode 1	-100	-75	-82	-78	-74.6	1.8	1.8
Mode 2	-100	-50	-65	-66	-76.6	1.8	2.1
Mode 3	-100	0	-29	-40	-76	2.6	2.6
Mode 4	-100	0	-44	-90	-71	3.9	3.9

### About Photek

**Photek is a specialist manufacturer of vacuum based tubes and camera systems for photon detection.**

Our product range includes; Camera Systems, Image Intensifiers, Photomultiplier Tubes, Streak Tubes plus a range of associated electronics.

We are experts in large area and ultra-high speed imaging and advanced photon counting camera systems.

Our continuing success is built upon continuous innovation and product development, and by harnessing and applying knowledge to find solutions for all of our customers' applications.

**Photek is accredited to ISO 9001 and ISO 14001.**



### Contact Us

**Our team of specialist engineers and scientists are ready to discuss your application requirements in depth.**

**T:** +44 (0)1424 850 555

**E:** [sales@photek.co.uk](mailto:sales@photek.co.uk)

**Photek Ltd** reserves the right to update and improve this document without prior notice.