



ST-HDR Streak Tube

ST-HDR is a version of ST-Y optimised for high dynamic range and improved time resolution. This is achieved by reducing slit-photocathode separation and increasing the field between these components. This results in higher image magnification in the spatial dimension than the temporal axis, which enables a wider entrance slit to be used without a corresponding loss of time resolution.

The tube is an all-metal-ceramic construction which is robust for extreme environments.



KEY ATTRIBUTES

- ◆ Timing resolution to 10 ps
- ◆ 35 mm photocathode size
- ◆ UV, solar blind, visible and NIR responses
- ◆ Can be supplied with a mu-metal shield for high magnetic field environments

APPLICATIONS

- ◆ Streak cameras
- ◆ Fusion Research
- ◆ VISAR Diagnostics
- ◆ Detonics and Ballistics

PRODUCT OVERVIEW

Equivalent to	Photonis P510
Cathode Size (mm)	35 x 4
Useful Image input (mm)	30 x 0.4
Time Resolution (typical)*	10 ps
Spatial Resolution	20 lp/mm
Magnification (spatial)	1.3
Magnification (temporal)	0.4
Deflection Sensitivity@15 kV	500 V/cm

*Time resolution stated is applicable when using the streak tube with increased operating voltages. Under this mode spatial resolution will decrease.

Photek Limited

26 Castleham Road, St Leonards on Sea,
East Sussex, TN38 9NS, United Kingdom.

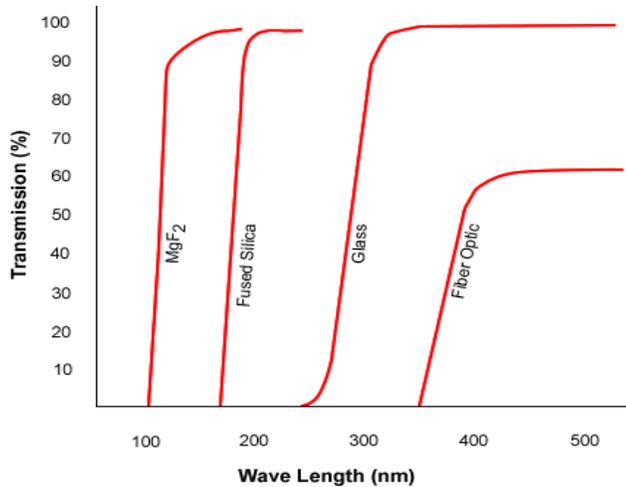
T +44 (0)1424 850555 F +44 (0)1424 850051
E sales@photek.co.uk W www.photek.co.uk

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OPTIONS AVAILABLE

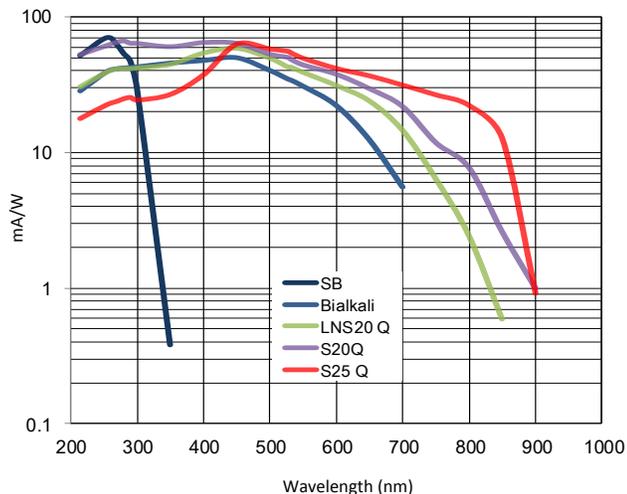
INPUT WINDOW

Photek streak tubes are available with a choice of input window materials. These include MgF₂, fused silica and fibre optic.



SPECTRAL RESPONSE

Photek offer a full range of Gen II photocathodes, these include CsI, Solar Blind, Bi-alkali, 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.

PHOSPHOR SCREEN

The Phosphor screen is 64 mm OD, and has an active diameter of 50mm. The internal surface can be flat to retrofit the Photonis P510, or concave on the inner surface to reduce distortion, and improve spatial resolution.

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 % (Optical Watts / Electrical Watt)	Photons/ Electron at 5 kV	Decay Characteristic
P20 (540)	12	320	Fast initial decay with long decay at low level. 1 ms to 1%
P43 (548)	8.7	240	1.2 ms/decade, true exponential
P46 (530)	1.8	55	300 ns
P47 (410)	3	64	80 ns
FS (513, 668, 768)	4.2	96	12 μs to 10 %

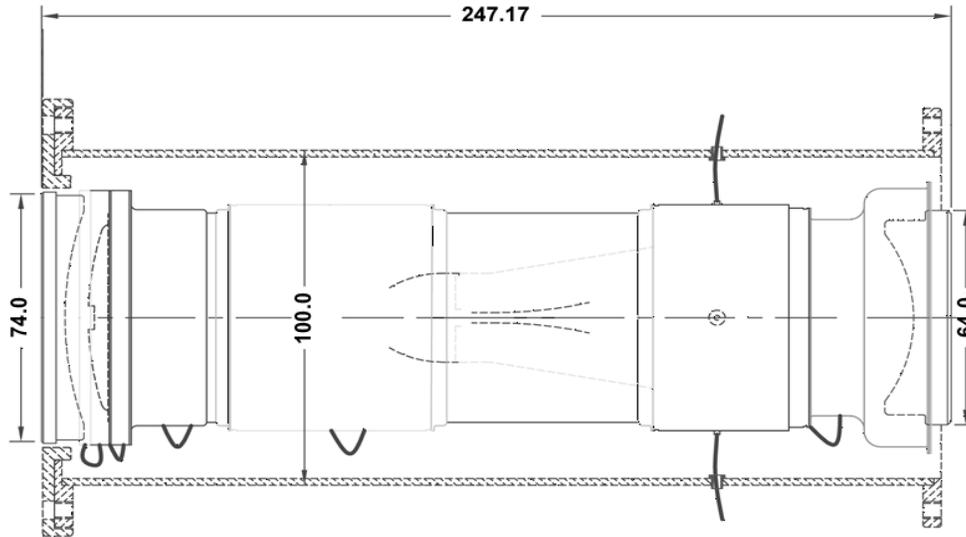
DEFLECTION SENSITIVITY

The deflection sensitivity is proportional to operating voltages. Exact deflection sensitivity is part of the test data provided with each tube.

ENVIRONMENTAL

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

MECHANICAL



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

OPTIMISATION AND OPERATING VOLTAGES

Below are Photek's suggested operating voltages to run the streak tube in 'Test mode' for high resolution, or in 'HDR mode'.

These voltages should only be used as a guide when operating the streak tube as fine tuning of these values is required specific to each tube.

	Voltages (V)				Magnification				
	Cathode	Grid	Focus 1	Focus 2	Time	Spatial	Resolution Spatial Micron	Working Area (mm) 20x	Time resolution (ps)
Test mode	10,113	9,904	9,050	8,860	0.61	0.61	46	0.5	10
HDR mode	15,000	12,500	12,500	14,538	0.61	0.61	25	0.5	10

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

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