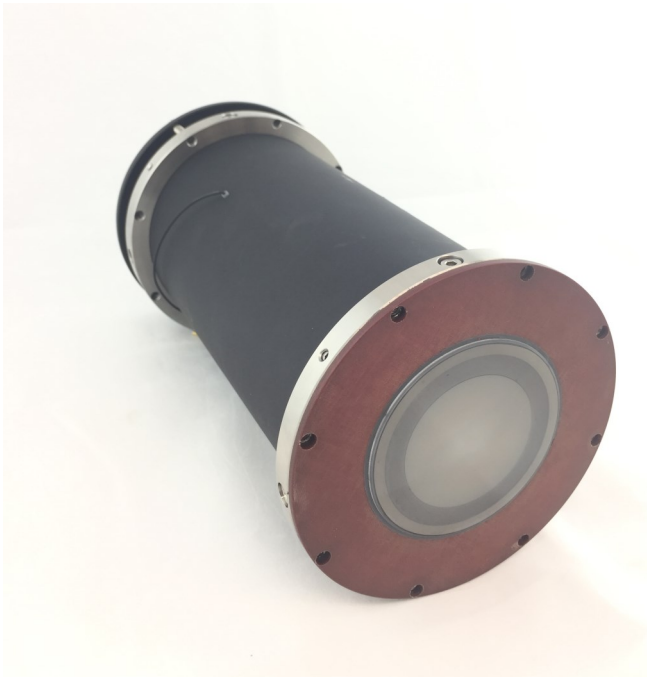




ST-Y Streak Tube

The electron optical design of this tube was adapted from the RCA C 7435 by Ching Lai of Lawrence Livermore National Laboratories in 1986, and was known as the ITT F 4157 tube. More recently, built by Photek as the ST-Y, this tube allows a large number of channels to be imaged onto a 35 mm long slit. A control grid allows the tube to be switched (gated) on/off with relatively low voltage. The tube has three focus electrodes allowing the tube to be optimised for resolution, distortion and time response. The tube is an all-metal-ceramic construction which is robust for extreme environments, and the tube is usually delivered in a mu-metal magnetic shield.



KEY ATTRIBUTES

- ◆ Timing resolution to 10ps
- ◆ 35mm 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
- ◆ LIDAR systems

PRODUCT OVERVIEW

Equivalent to	ITT F4157
Cathode Size	35 x 5 mm
Useful Image input	35 x 5 mm
Time Resolution (typical)	50 ps
Spatial Resolution	50 lp/mm
Magnification (spatial)	0.8-1.3
Magnification (temporal)	0.8-0.6
Deflection Sensitivity@15 kV	250 V/cm

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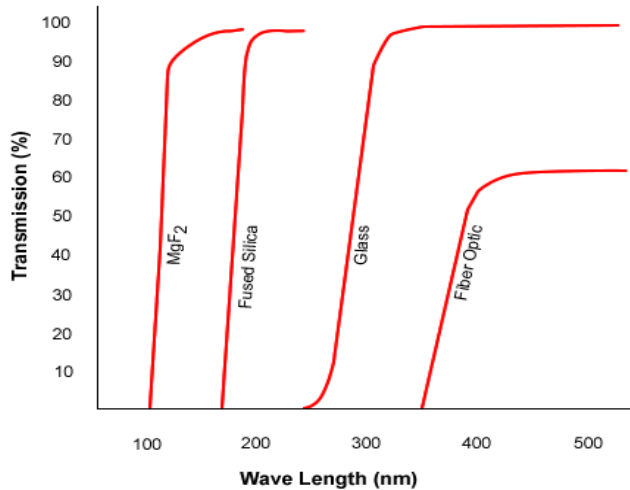
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OPTIONS AVAILABLE

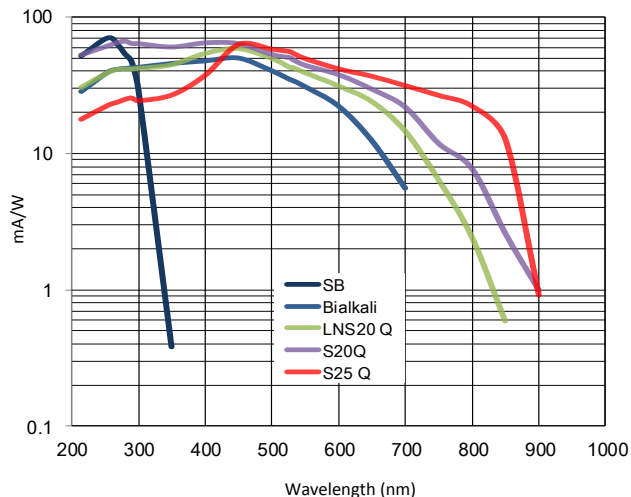
INPUT WINDOW

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, 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.

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 P 510, 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 %

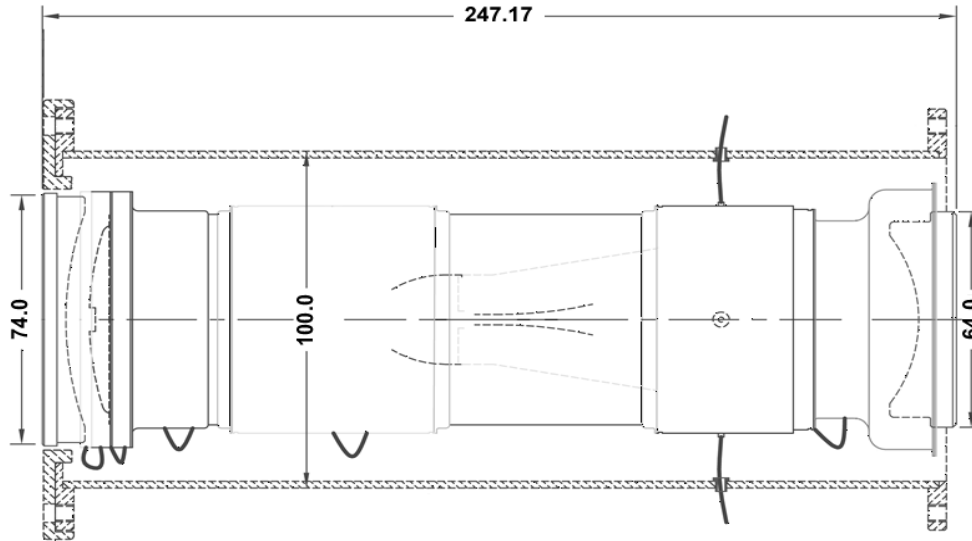
DEFLECTION SENSITIVITY

The deflection sensitivity is proportional to overall voltage, but typically 250 V/cm @ 15 kV. 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 examples of sets of voltages that can be optimised to suit particular needs. The suggested operating voltages by Photek are shown in the 'Test mode' entry for high resolution, and in the 'Fast mode' entry.

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) 35x	Time resolution (ps)
Test mode	15,000	14,850	14,200	13,000	0.8	0.8	14	5	50
	15,000	14,700	13,000	13,700	0.68	0.73	14	5	50
	15,000	14,500	12,000	14,013	0.64	0.82	40	5	30
Fast mode	15,000	14,000	11,000	14,270	0.6	1.0	75	0.6	20
	15,000	13,600	11,000	14,314	0.6	1.3	84	0.4	15

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

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