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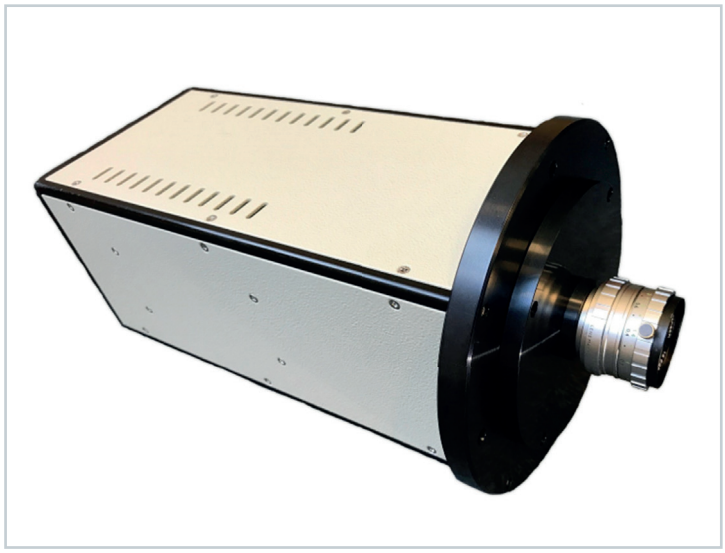
IPD3 Photon Counting

Imaging Photon Detector



Key Attributes

- Noiseless photon counting
- High resolution position and time stamp for each photon
- Continuous data acquisition
- Variety of high QE, low noise photocathodes covering full UV to visible wavelengths
- Fully integrated high voltage power supply
- USB 3.0 interface
- Easy to use software

The Photek IPD3 is based on a true single photon counting sensor that uniquely provides simultaneous position and timing information for each detected photon.

The camera outputs a continuous stream of photon detection location and time (x, y, t), with a spatial resolution of 100 mm and a timing resolution of 10 ns. The IPD3 is perfect for continuous imaging of processes with very low light levels over wide fields. The high resolution time tagging enables 100% duty cycle imaging of time resolved events.

The IPD3 is highly customisable, with multiple options of image plane formats, high sensitivity photocathodes and accessories that can be combined into complete turn-key systems. Operation has never been easier thanks to the plug-n-play USB interface, fully integrated power supply and intuitive Image32 software.

Applications

- Wide Field Time Correlated Single Photon Counting
- Bioluminescence Imaging of Luciferase and Aequorin
- Chemiluminescence Imaging
- ATP-Bioluminescence Studies
- Time resolved spectroscopy
- Fluorescence Lifetime Imaging
- Missile Warning
- Astronomy
- LiDAR
- Microtitre plate readers
- Autoradiography

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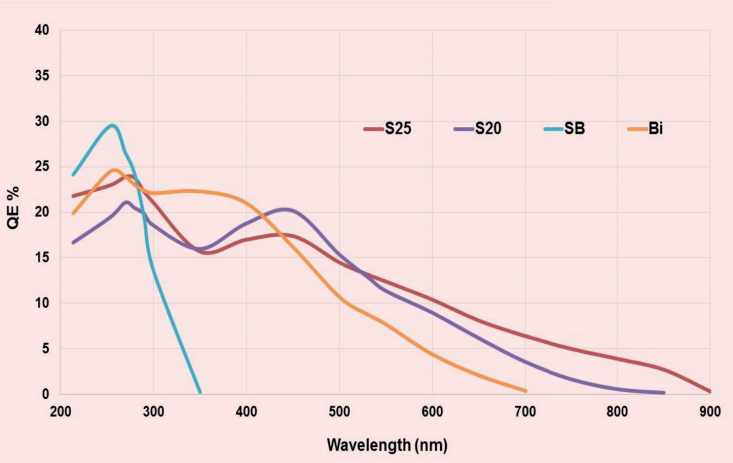
Specifications

Camera			
Readout Mode	Real time image integration and X, Y, T list		
Integration time	Unlimited		
Input Window	Fused Silica (Fibre Optic optional)		
Photocathode	SB, Bi, S20, S25		
High Voltage	Integrated		
Interface	USB 2.0		
Resolution	**IPD318**	**IPD325**	**IPD340**
Input Diameter	18 mm	25 mm	40 mm
Typical Image Format (software scalable to 2k x 2k)	512 x 512	512 x 512	512 x 512
Pixel Size at Image Plane	35 µm	50 µm	80 µm
Limiting Resolution	18 lp/mm	15 lp/mm	12 lp/mm
Timing			
Time Resolution	10 ns		
Maximum Count Rate	300,000 cps		
Recommended Count Rate	< 100,000 cps		
Local Count Rate (1 mm^2)	50,000 cps		
Event Deadtime	1.3 µs		

Quantum Efficiency Curves



Dark Count Rate (cps/cm^2)			
		At 20°C	**At -30°C**
	SB	<2	-
	Bi	<50	-
	S20	<2000	<20
	S25	<20,000	<200

Note: The spectral graphs shown opposite are for indication only. Detectors with Fibre Optic input windows will have no response below 300 nm. Please contact the Sales Office to discuss your exact requirements.

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DATASHEET
IPD3 Photon Counting

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Features and Benefits

Features	Benefits
Noiseless single photon readout	Confidently detect the weakest light emission processes
No integration time	You are in control of how to integrate your data during and after the experiment
Simultaneous spatial and temporal resolution	Continuous time resolved imaging of the full fieldofview to optimise observational efficiency
Optional Fibre Optic Input	Enhance signal collection by placing your sample directly on the detector
USB Interface	Plug-n-play operation
Image32 Software	Easy to use software specifically designed for intensified cameras
Fully integrated power supply	No troublesome high voltage cabling
High QE Image Intensifiers	Best-in-class QE throughout the UV ensuring best overall signal-to-noise
Highly customizable	Options include three sensor sizes, custom anode configuration, gating and a wide variety of accessories

Accessories

Photek has a full range of accessories, enabling our customers to design a complete experimental set-up that works as a system straight out of the box. Contact our experts to help you design the perfect solution for your application

Component	Function
Cooled Detector Head	Provides reduced dark counts
Dark Box	Light tight box with 500 mm x 500 mm working area, focus adjustment and reagent capillary tubes
Sample Stage	Image samples on a temperature controlled stage
Temperature Controller	Control cooled detector heads and sample stages
LED Light Box	Selectable LEDs to provide uniform sample illumination

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Software

To harness the power of the IPD3 Camera, Photek provides its unique and easy to use imaging software. The **Image32** image processing software provides a wide range of tools for manipulating images and analyzing data.

A simple to use dialog box for controlling the camera is provided for camera setup. A live display shows integrated data in real-time. A count rate trend graph shows how the count rate changes over time.

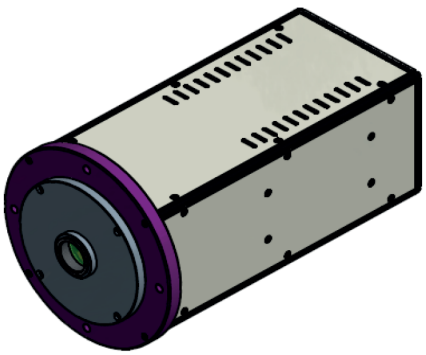
Contact Photek for customisation of **Image32** for your application.

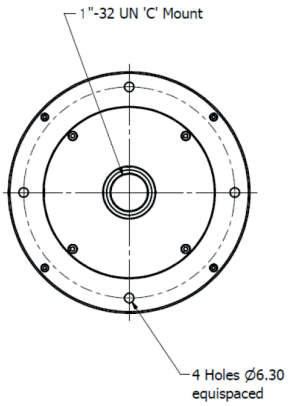
Included with the IPD3 Camera:
AC Power Brick and mains cable, USB 2.0 Camera Cable, Image32 Software, User Manual.

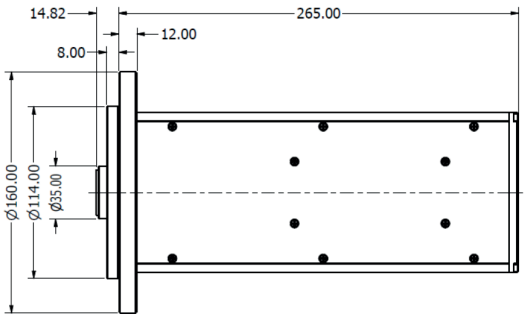
Computer Requirements		Operating Conditions	
Processor:	i5 CPU, 2 GHz minimum	Operating Temperature:	10°C to 40°C
RAM:	4 GB minimum	Relative Humidity:	<70% (non-condensing)
Operating System:	Windows 7,8,10	Storage Temperature:	0°C to 55°C
USB:	USB 2.0 port available	**Power Requirements**	
Min Monitor Resolution:	1024 x 768	12 V Power brick supplied, 100-240 VAC, 50-60 Hz	

Versions Available

IPD325* - Standard housing option







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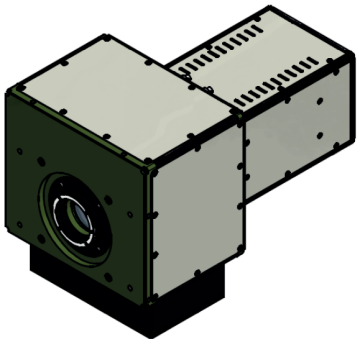
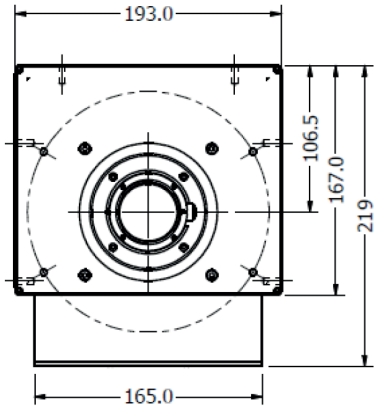
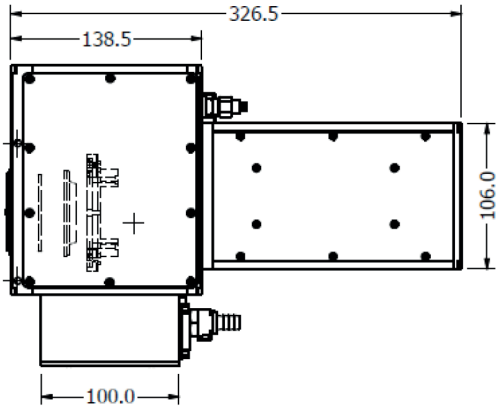
IPD340*

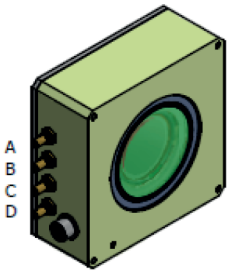
Mechanical housing is the same for all sizes (18mm and 25mm diameter sizes)

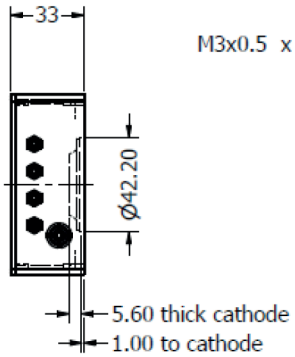


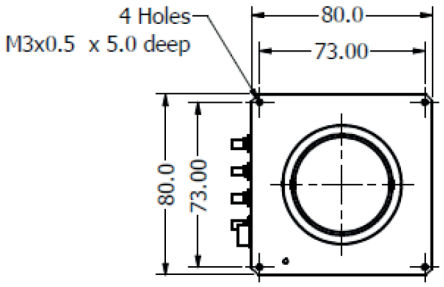


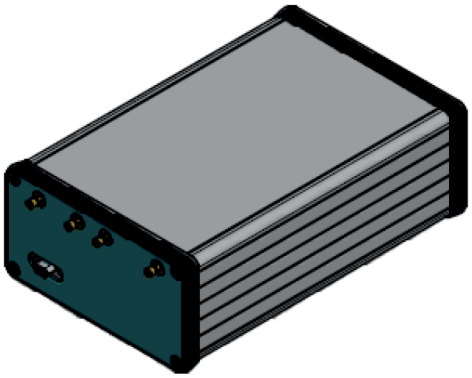


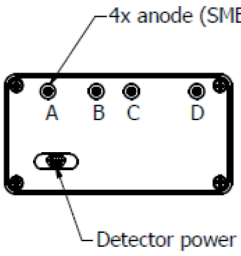
IPD325* - Detector and Controller

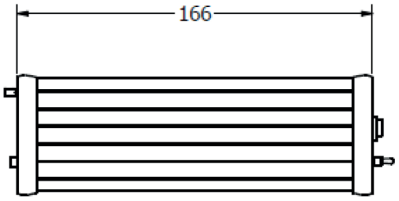












***Note:** Specific spectroscopy mounts are available on request

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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.

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