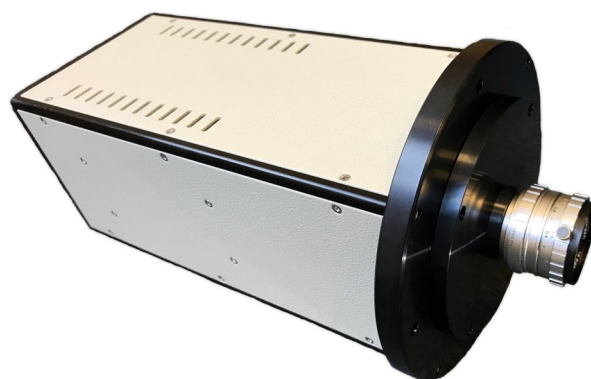




# IPD3

## Imaging Photon Detector

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  $\mu\text{m}$  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.



### 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 interface
- ◆ Easy to use 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

## SPECIFICATIONS

### CAMERA

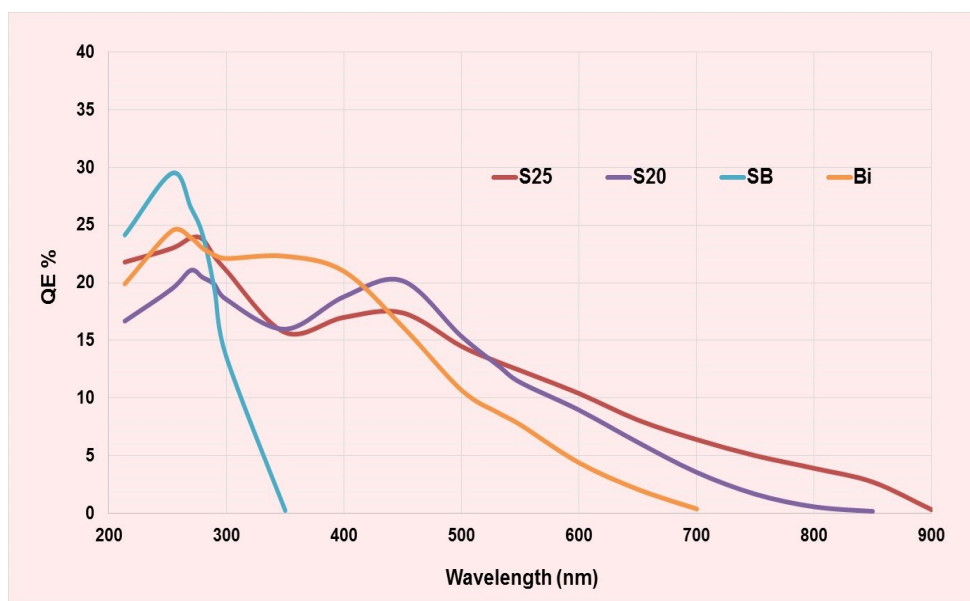
|                  |  |
|------------------|--|
| Readout Mode     | Real time image integration and X, Y, T list |
| Integration time | Unlimited                                    |
| Input Window     | Fused Silica (Fibre Optic optional)          |
| Photocathode     | SB, Bi, S20, S25                             |
| High Voltage     | Integrated                                   |
| Interface        | USB 2.0                                      |

| RESOLUTION   | IPD318           | IPD325           | IPD340           |
|--|------------------|------------------|------------------|
| Input diameter   | 18 mm            | 25 mm            | 40 mm            |
| Typical Image Format<br>(software scalable to 2k x 2k) | 512 x 512        | 512 x 512        | 512 x 512        |
| Pixel Size at Image Plane                              | 35 $\mu\text{m}$ | 50 $\mu\text{m}$ | 80 $\mu\text{m}$ |
| 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 <sup>2</sup> ) | 50,000 cps        |
| Event Deadtime                        | 1.3 $\mu\text{s}$ |

## QUANTUM EFFICIENCY CURVES



### DARK COUNT RATE (cps/cm<sup>2</sup>)

|     | At 20°C | At -30°C |
|-----|---------|----------|
| SB  | <2      | -        |
| Bi  | <50     | -        |
| S20 | <2000   | <20      |
| S25 | <20,000 | <200     |

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

## FEATURES

- Noiseless single photon readout
- No integration time
- Simultaneous spatial and temporal resolution
- Optional Fibre Optic Input
- USB Interface
- Image 32 Software
- Fully integrated power supply
- High QE Image Intensifiers
- Highly customizable

## BENEFITS

- Confidently detect the weakest light emission processes
- You are in control of how to integrate your data during and after the experiment
- Continuous time resolved imaging of the full field-of-view to optimise observational efficiency
- Enhance signal collection by placing your sample directly on the detector
- Plug-n-play operation
- Easy to use software specifically designed for intensified cameras
- No troublesome high voltage cabling
- Best-in-class QE throughout the UV ensuring best overall signal-to-noise
- 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

- | 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  |

## 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 customization of Image32 for your application.

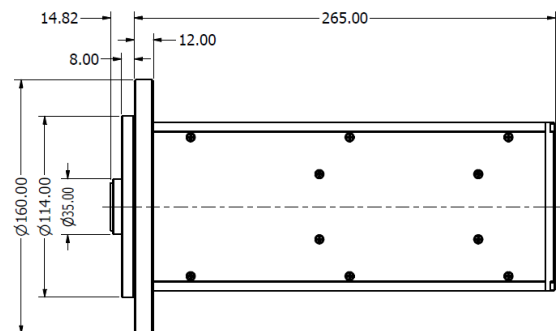
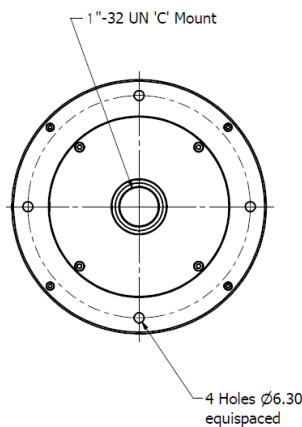
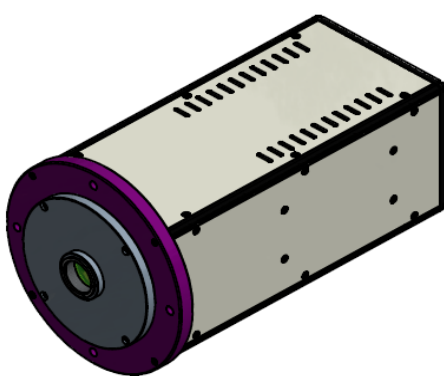
**Included with the IPD3 Camera:** AC Power Brick and mains cable, USB 2.0 Camera Cable, Image32 Software, User Manual



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

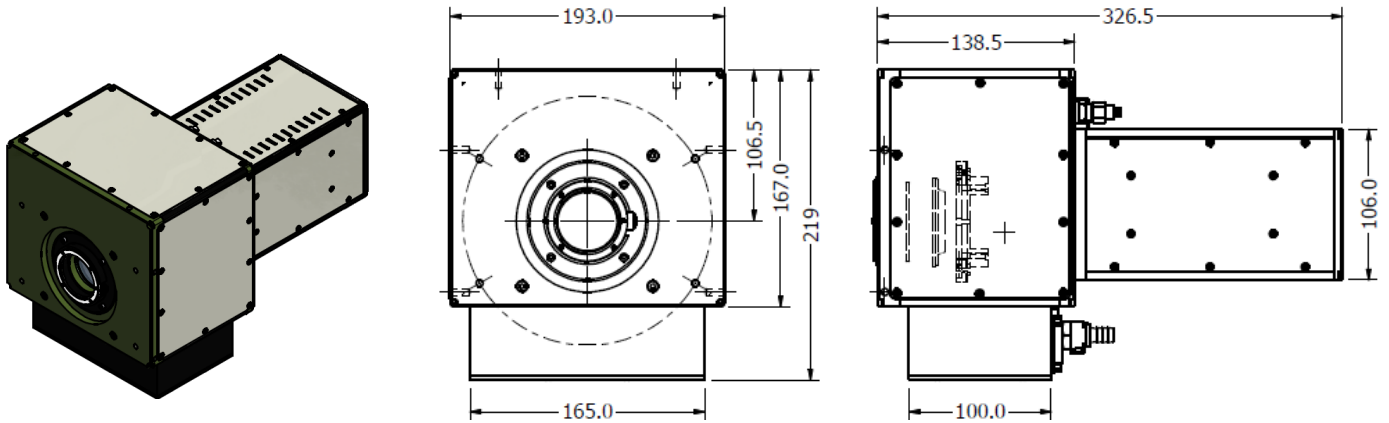
## VERSIONS AVAILABLE

### IPD325\*—standard housing option

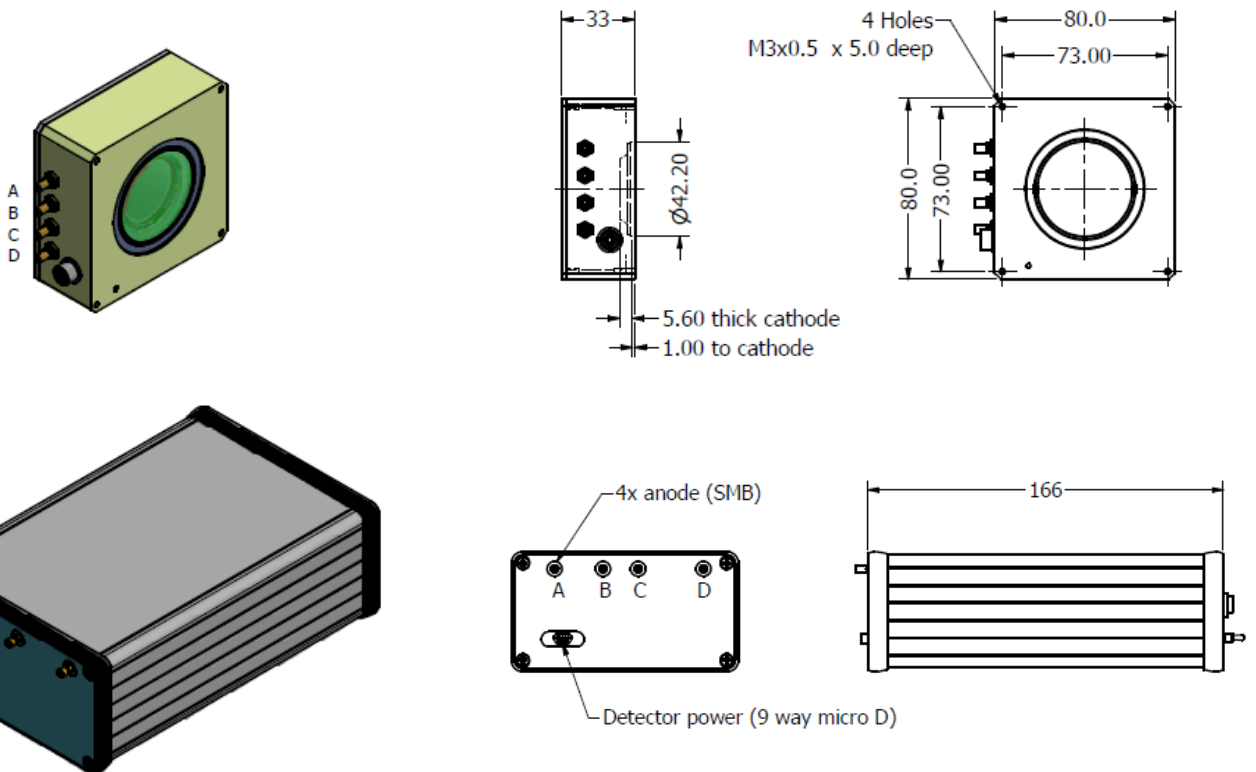


## Cooled IPD340\*

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