



DATASHEET
CAMERA SYSTEMS
iCMOS 160



iCMOS 160

Ultra-Fast Intensified CMOS Camera



The Photek iCMOS 160 represents the latest advance in high speed intensified imaging.

Its market leading speed of 160 frames per second at full resolution, coupled with optional ultra-fast gating, enables higher sensitivity measurements in a wide range of time resolved applications, including plasma physics, fluorescence lifetime imaging and combustion diagnostics.

Frame rates in excess of 1000 fps are possible at reduced frame size. Bespoke versions of the iCMOS 160 can be delivered with any of the wide range of Photek's image intensifiers, including intensifiers with market-leading UV sensitivity and size.

Operation has never been easier thanks to the plug-n-play USB 3.0 interface, fully integrated gate unit and intuitive Image32 software.

Key Attributes

- > 160 full frames per second
- > 2.2 megapixel readout
- > Variety of high QE, low noise photocathodes covering full UV to visible wavelengths
- > Gating to <3 ns
- > Fully integrated gating control
- > Fibre optic coupling for maximum efficiency
- > USB 3.0 interface
- > Easy to use software

Applications

- > Time resolved fluorescence imaging
- > Time resolved spectroscopy
- > Combustion diagnostics
- > Plasma physics
- > Laser Induced Fluorescence (LIF)
- > Fluorescence Lifetime Imaging Microscopy (FLIM)
- > Raman spectroscopy
- > Bio and chemiluminescence imaging

Specifications

Camera		Readout Size	Frame Rate
Image Format	Sony IMX174 Sensor, 1920 x 1200 pixels	1920 x 1200	160
Pixel Size	5.86 microns	1536 x 1080	180
Region of Interest	Up to 16 independently selectable ROIs	512 x 512	368
Exposure Time	18 μs to 1 s (30 s Long exposure mode)	256 x 256	689
Pixel Clock	30 MHz to 480 MHz	128 x 128	1210
ADC	8 / 10 / 12 bits	1920 x 32	2896
Interface	USB 3.0		
Gating	Standard	High Speed Option	
Min Gate Width	50 ns	3 ns	
Max Repetition Rate	10 kHz	300 kHz	
Gating Control			
Gate Controller	Integrated GIC3 controller		
Delay/Width Increment	1 ns steps		
Trigger Mode	External / Camera / Time base		
Camera Trigger	Synchronous (1 gate trigger per camera frame)	or	Asynchronous (multiplegate triggers per camera frame)
Internal Time Base	Programmable in range 1 Hz to 300 kHz		
Intensifer	MCP118	MCP125	
Active Window Size	18 mm diameter	25 mm diameter	
Input Window Material	Fused Silica or Fibre Optic	Fused Silica or Fibre Optic	
Pixel Size	9.1 microns	13.3 microns	
Photocathode	S20, SB, S20B, Bialkali, S25	S20, SB, S20B, Bialkali, S25	
Coupling Method	Fibre Optic Taper	Fibre Optic Taper	
Resolution	45 lp/mm	40 lp/mm	
Uniformity	10% SD/mean	10% SD/mean	
Phosphor (Decay time)	P43 (1 ms to 10%) or P46 (200 ns to 10%)	P43 (1 ms to 10%) or P46 (200 ns to 10%)	
HV Power Supply	Integrated WP610 PSU	Integrated WP610 PSU	
Window Readout			
Image Window	Programmable window size and position		
Sub Sampling	x1, x2, x4		

1936 x 1216

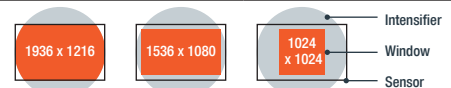
1536 x 1080

1024 x 1024

Intensifier

Window

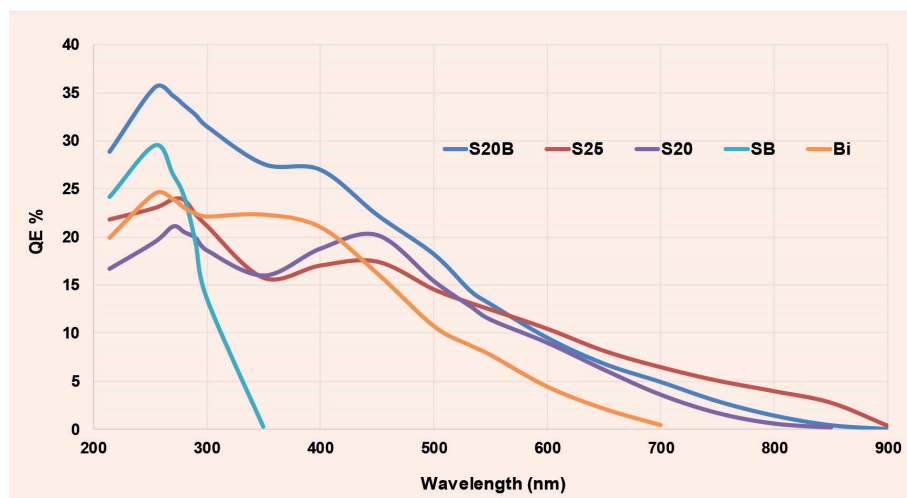
Sensor



Features and Benefits

Features	Benefits
High speed full frame imaging of 160 fps	Faster image acquisition and higher sensitivity images
Gating to < 3 ns	Accurately capture fast transient events while reducing unwanted background
Gating repetition rate up to 300 kHz	Greater signal-to-noise using high repetition rate lasers
Fibre optic coupling	Optimum coupling of the Image Intensifier to the CMOS sensor, boosting gain and reducing vignetting
16 independent Regions of Interest	Significantly higher readout rates for smaller regions of interest
USB interface	Plug-n-play operation
Image32 software	Easy to use software specifically designed for intensified cameras
Fully integrated gating control and 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 alternative sensors, 40 mm intensifiers and multi-MCP configurations for higher gain

Quantum Efficiency Curves



Note: The spectral graphs shown opposite are representative of standard 50 ns gated cameras and are for indication only.

Detectors with Fibre Optic input windows will have no response below 300 nm. If high UV response and fast gating is required, a mesh substrate is recommended.

Software

To harness the power of the iCMOS 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 including: region of interest, sub sampling, exposure time, gain and recording options.

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

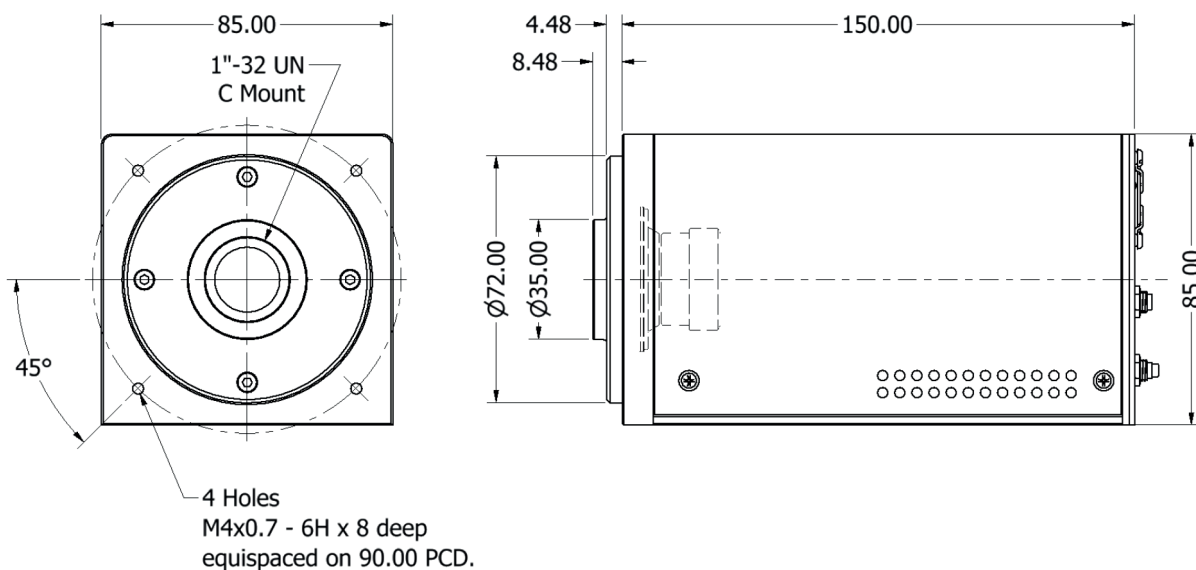


Included with the iCMOS 160 Camera:

AC Power Brick and mains cable, USB 3.0 Camera Cable, USB 2.0 Control 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 3.0 port available	Power Requirements	
Min Monitor Resolution:	1024 x 768	12 V Power brick supplied, 100-240 VAC, 50-60 Hz	

Mechanical



**DATASHEET**
iCMOS 160**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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