

**Technical specification for Single Photon Counting Camera – Electron Multiplier Charge-Coupled Device**

<b>Single Photon Counting Camera</b>		
	<b>Specification</b>	<b>Value</b>
1	Technology	Electron Multiplier Charge-Coupled Device
2	Image sensor size / active pixels	at least 512 x 512 pixels
3	Pixel size	16 x 16 $\mu\text{m}$ or larger for good dynamic range
4	Image area	8 x 8 mm or larger, with 100% fill factor minimum
5	Cooling	Air-cooled with option to add water cooling at a later date with addition of a chiller (no hardware changes to the camera head should be required)
6	Detector type	Back-illuminated with standard AR coating
7	Peak Quantum Efficiency	> 95% with fringe suppression
8	Triggering	Internal, External, External start, External Exposure, Software trigger
9	Digitization	16-bit or better (at all speeds)
10	PC interface	USB 2.0 (or higher) or Gig E
11	Lens mount	C-Mount
12	Dark current (e-/pixel/sec) @ max cooling	<b>0.00020</b> or better  (This specification has to be guaranteed and detector has to be tested at deepest cooling and shown to meet this specification. Test report has to be submitted prior to shipping.)
13	Pixel readout rates	EM Mode:  <ul style="list-style-type: none"> <li>- Flexible readout rates with highest frame rate of 50 frames per second at full resolution or higher; and</li> <li>- Max. read out noise of 15 electrons when EM gain is OFF.</li> </ul>

		<p>Conventional mode:</p> <ul style="list-style-type: none"> <li>- Flexible readout rates with minimum read noise of 3 electrons</li> <li>- Minimum Read noise: &lt; 1 with EM multiplication</li> </ul>
14	Linear absolute Electron Multiplier gain	<p>1 - 1000 times or better with calibration stable at all cooling temperatures (Temperature-compensated EM gain)</p> <p>EM calibration via software routine is essential.</p>
15	Linearity	Better than 99.5%
16	Vertical clock speed	0.3 to 3 $\mu$ s selectable by software
17	Time stamp accuracy	10 ns or better.
18	Vacuum warranty :	Minimum 7 years (please submit certificate from OEM stating that any repairs to warranty in this period will be without any cost to user, all charges of freight, clearance, customs and taxes will have to be borne by the OEM.)

**Accessories which need to be included in the quote/bid for price comparison**

- All electronics and cables required up to transferring data to computer
- Software drivers, SDKs and programmes with User-interface should be provided
- Drivers/DLLs for LabView and/or Matlab should included
- Warranty for 1 year, minimum.

**Optional Accessories (please quote for these in addition)**

- Any other relevant optional accessories.