

# Eagle 47-10

Deep Cooled Vacuum CCD • High Resolution Scientific Imaging •  
1056 x 1027 • 75kHz and 2MHz Readout Speeds •



## Key Features and Benefits

*The BEST CCD on the market today!*

- **7 year vacuum guarantee**  
Protection and integrity of the sensor
- **Extremely low dark current**  
-90°C with 10°C coolant / -80°C air cooled with 25°C ambient
- **Back illuminated 1MP sensor from e2v**  
Enables large field of view imaging
- **C-Mount Integrated shutter**  
Closed during readout to avoid vertical smear
- **High QE: >90% @ 525nm and 50% @ 380nm & 720nm**  
Optimum photon collection

Resolution	<b>1056 x 1027</b>
Dark Current	<b>0.0001 e/p/s</b>
Full Well Capacity	<b>100ke-</b>
Readout Noise	<b>2.3e-rms</b>
Camera Link	<b>16 bit</b>

## Specification for Eagle 47-10

Sensor <sup>1</sup>	E2V CCD47-10 Back Illuminated
Active Pixel	1056 × 1027
Pixel Size	13µm × 13µm
Active Area	13.7mm × 13.3mm (19.09mm diagonal)
Binning	Programmable, up to 16×16 pixels
Full Well Capacity	Minimum: 80ke- Typical: 100ke-
Non-Linearity	< 1%
Readout Noise (RMS)	<3.5e- @ 75kHz (2.3e-typical) <12e- @ 2MHz (9.0e-typical)
Binned Readout Noise	@75kHz pixel readout rate, 16×16 binning < 5.0 e- rms
Peak Quantum Efficiency (QE)	> 90% @ 550nm
Spectral Response <sup>2</sup>	300 - 1100nm
Dark Current (e/p/s)	<0.001@ -100°C (0.0001 typical)
Shutter	Mechanical, aperture φ = 25mm
Cooling	-90°C with 10°C coolant / -80°C air cooled with 25°C ambient
Cooling Method	TEC with liquid (utilizing PentaVac™ Technology)
Lens Mount	C mount (others on request)
Synchronization	Trigger IN and OUT – TTL compatible
Digital Output Format	16-bit Camera Link (base)
Power Supply	12V DC ±10%
Total Power Consumption <sup>3</sup>	<100W (TEC ON, Steady State)
Operating Temperature Range	0°C to +55°C
Storage Temperature Range	-30°C to +60°C
Dimensions (L*W*H) <sup>4</sup>	140mm x 126mm x 120mm
Weight (excluding lens)	2.2kg [4.85lb]

Raptor Photonics Limited reserves the right to change this document at any time without notice and disclaims liability for editorial, pictorial or typographical errors.

## Ordering Information

### Camera

Eagle CCD 1MP Deep cooled digital camera Back thinned visible	EA4710V-BV-CS-CL
Eagle Power Brick	EA-BRK-150W

### Optional Accessories

Mini PC with XCAP Std and frame grabber	RPL-PC-EL1
EPIX® EB1 frame grabber	RPL-EPIX-EB1
EPIX® XCAP Std software	RPL-XCAP-STD
Camera Link Cable (2m) <sup>5</sup>	RPL-CL-CBL-2M
Thermoelectric Water Chiller Unit <sup>6</sup>	RPL-CHILLER
Water tubing (3m) <sup>7</sup>	RPL-WTUBE-EAGLE
Optical lenses <sup>8</sup>	RPL-xx-xxxx

Note 1: Optimised for other wavelengths. Contact us.

Note 2: UV window available on request.

Note 3: For more detailed power consumption values, please refer to the user manual.

Note 4: Dimensions include all connector parts on the camera interface.

Note 5: Longer Camera Link cable available.

Note 6: Recommended coolant flow rate >0.5l/min & cooling capacity >100W @ 10°C.

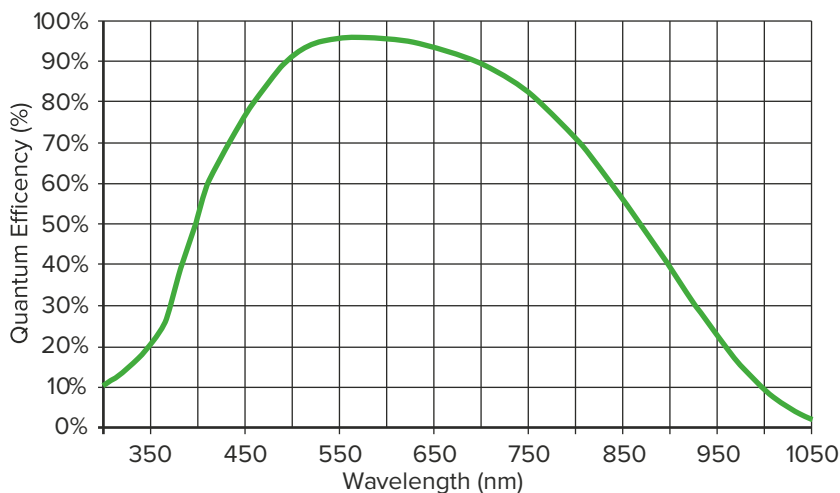
Note 7: Includes tubing and connectors.

Note 8: Please consult us to check our range of lenses.

Demo is available on request.  
Pricing AOR subject to volumes.

Detailed technical drawings  
can be downloaded at  
[www.raptorphotonics.com](http://www.raptorphotonics.com)

## Quantum Efficiency



\*Data supplied by sensor manufacturer

## Applications

### Scientific

- Astronomy
- BioChip reading
- Bio / Chemi luminescence
- Bose Einstein condensate (BFC)
- Calcium signaling
- Fluorescence imaging / Spectroscopy
- Luminescence
- Photovoltaic
- Semiconductor analysis
- X-ray

Document #: INEA47-10-CL 0122



Willowbank Business Park  
Larne, Co Antrim  
BT40 2SF,  
Northern Ireland

Raptor Photonics Ltd. (UK)  
T: +44(0)2828 270 141  
E: sales@raptorphotonics.com  
[www.raptorphotonics.com](http://www.raptorphotonics.com)

Raptor Photonics Inc. (USA)  
T: +1 (877) 230-4836  
E: sales@raptorphotonics.com  
[www.raptorphotonics.com](http://www.raptorphotonics.com)

