

OEM Options

Our camera platforms provide our customers with a flexible / modular solution that meet their exact requirements. We build what you need and we also offer high quality, reliability, a very competitive price performance metric and fast delivery, making Raptor a very attractive solution for OEMs.

Sensor options:

- CMOS, CCD, EMCCD, InGaAS or scientific CMOS
- Monochrome, Colour
- Interline, Progressive scan, Mega Pixel, Full HD

Communication options:

- RS232
- RS485



Video output options:

- PAL
- NTSC,
- ITU-R BT.656-4

Digital output options:

- CameraLink
- GigE
- LVDS (RS644)
- USB 2.0/3.0
- Custom

Camera options:

- With or without camera housing (Mechanical re-design to customer specification)
- Remote heads
- Electronic re-design to customer specifications
- Flexible voltage supply
- Increased resistance to shock, vibrations and temperature (according to the housing specification)

Whatever your imaging requirements Raptor offers the best combination of:

- Speed
- Resolution
- Size
- Ruggedness
- Sensitivity
- Range
- Cost
- Reliability

Understanding your instrumentation solutions, your product roadmap and your business model will enable us to offer you the best camera solution. So we would be delighted to hear from you.

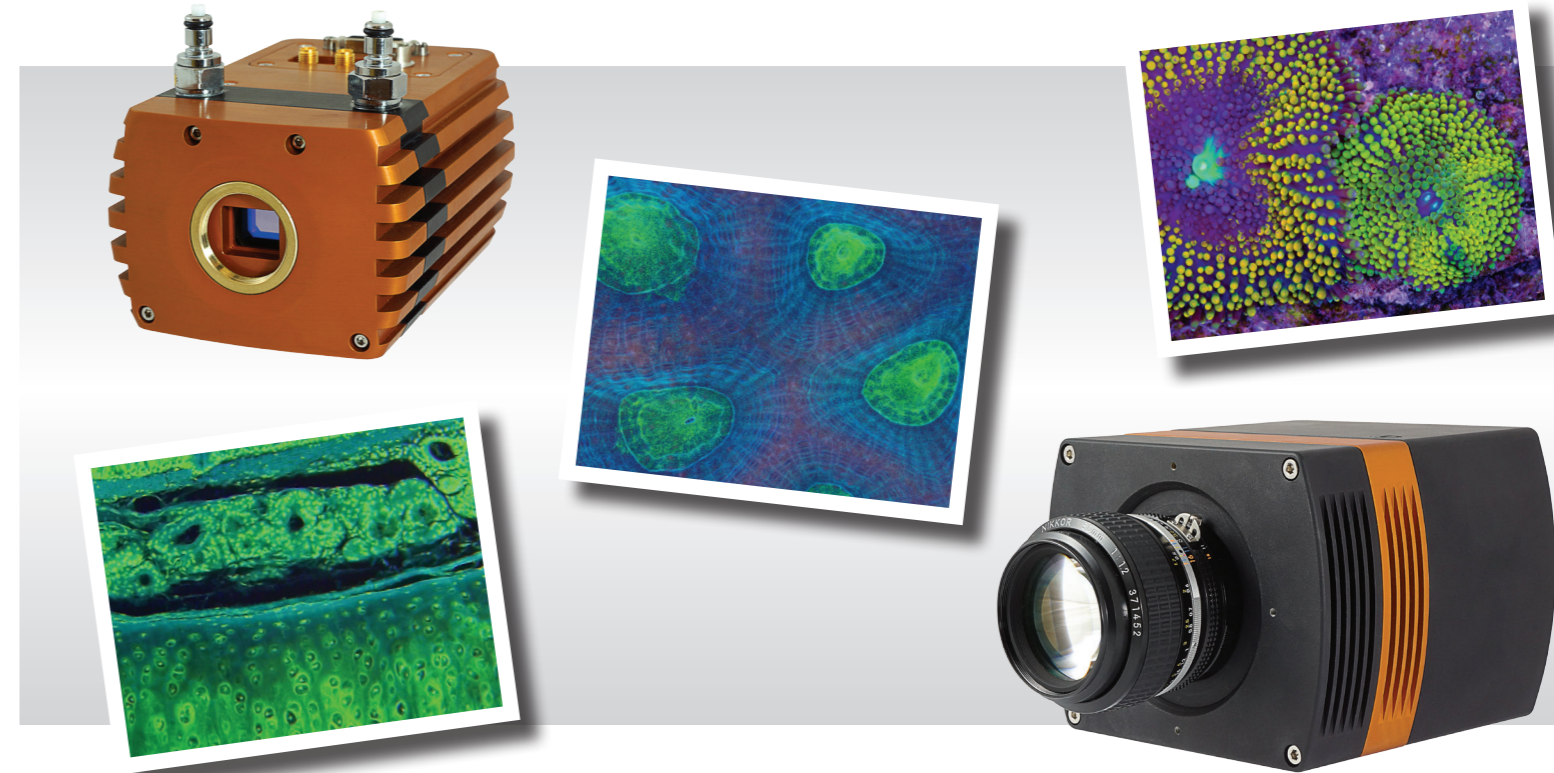
For further information, datasheets or to schedule a demo of any of our cameras please contact:

www.gmp.ch

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Raptor Photonics is a leader in innovative, ultra-compact and price performance camera solutions.

We develop, manufacture and market a range of high quality CCD, EMCCD, SWIR, CMOS and sCMOS cameras targeting the global Scientific and Industrial Imaging markets, specifically for OEMs and instrumentation manufacturers.

SCIENTIFIC 2016



Range of Scientific and Industrial camera solutions

	Owl High Speed	Owl 640	Owl 'Mini'	Ninox	Osprey	Kite	Falcon	Kingfisher	Eagle	Eagle XO		
												
Technology	VIS-SWIR	VIS-SWIR	VIS-SWIR	VIS-SWIR	sCMOS	EMCCD	EMCCD	CCD		CCD	CCD	
Sensor	InGaAs	InGaAs	InGaAs	InGaAs	CMOSIS CMV4000	Texas Instruments TC247-SPD	Texas Instruments TC285	Sony ICX674	Sony ICX694	E2V 42-40	E2V 42-40	E2V 42-10
Sensor Type	2/3" InGaAs	2/3" InGaAs	2/3" InGaAs	2/3" InGaAs	1" Scientific CMOS	1/2" Interline Frame Transfer EMCCD	2/3" full frame transfer EMCCD	2/3" Interline CCD	1" Interline CCD	Back Illuminated CCD	Back Illuminated CCD	Back Illuminated CCD
Output format	Mono	Mono	Mono	Mono	Mono / RGB	Mono	Mono	Mono / RGB	Mono / RGB	Mono	Mono	Mono
Sensor size	0.08MP	0.32MP	0.32MP	0.32MP	4.2MP	0.33MP	1MP	2.8MP	6MP	4.2MP	4.2MP	1MP
Active Pixels	320 x 256	640 x 512	640 x 512	640 x 512	2048 x 2048	658 x 496	1004 x 1002	1940 x 1460	2750 x 2220	2048 x 2048	2048 x 2048	2048 x 512
Pixel Size (µm)	30 x 30	15 x 15	15 x 15	15 x 15	5.5 x 5.5	10 x 10	8 x 8	4.54 x 4.54	4.54 x 4.54	13.5 x 13.5	13.5 x 13.5	13.5 x 13.5
Active Area (mm)	9.6 x 7.68	9.6 x 7.68	9.6 x 7.68	9.6 x 7.68	11.26 x 11.26	6.58 x 4.96	8 x 8	8.81 x 6.63	12.49 x 9.99	27.65 x 27.65	27.65 x 27.65	27.65 x 6.9
Pixel Full Well Capacity (electrons)	HG: 170Ke ⁻ LG: 3.5Me ⁻	HG: 12Ke ⁻ LG: 650Ke ⁻	LG: 600ke ⁻	HG: 12Ke ⁻ LG: 650ke ⁻	12000	24000	30000	12000		100,000	100,000	140,000
Shift Register Well Depth	N/A	N/A	N/A	N/A	N/A	100000	80000	12000		150,000	150,000	
Digitization (bit)	14	14	14	14	12	16	16	16		16	16	
Readout noise (Electrons)	< 150 in high gain	< 50 electrons with high gain	< 195 electrons	< 50 electrons with high gain	<7 (global shutter)	<1 electron with EM gain ON	<1 electron with EM gain ON	< 7		2.3 @ 75kHz 9 @ 2MHz	2.3 @ 75kHz 9 @ 2MHz	
Full resolution Frame Rate (Hz)	Up to 346	Up to 120	Up to 120Hz	Up to 120Hz	37.5	50	30	6.2		0.4	0.4	1.7
Peak Quantum Efficiency	70% @ 1.5 µm	78% @ 1.55 µm	78% @ 1.55 µm	78% @ 1.55 µm	64% @ 600nm	52% @ 530nm	65% @ 600nm	77% @ 525nm		90% @ 550nm	>90% 1.2ev to 20Kev	
Spectral response	0.4 µm - 1.7 µm	0.4µm - 1.7µm	0.4 µm - 1.7 µm	0.4 µm - 1.7 µm	350-1100nm	350-1100nm	350-1100nm	350-1100nm		300-1050nm	300-1050nm	
Cooling	Yes	Yes	TEC-less	Yes	yes	yes	yes	yes		PentaVac™	PentaVac™	
Dark Current (e/p/s)	<0.5pA @ +10°C	10fA @ +10°C	10fA @ +10°C	~1,500 @ -20°C	<9 @ +5°C	<1 @ -20°C	<1 @ -20°C	<0.08 @ +25°C		<0.0001 @ Δ-116°C	<0.005 @ -60°C	
Dynamic range (dB)	60dB-LG 74dB-HG	47dB-LG 70dB-HG	70dB-LG	48dB-LG 70dB-HG	65	87	89	65		72	72	
Digital output	CameraLink	CameraLink	CameraLink	CameraLink	CameraLink	CameraLink	CameraLink	CameraLink		CameraLink	CameraLink	
Lens Mount	C mount	C mount	C mount	C mount	C mount	C mount	C mount	C mount		Nikon F mount	CF152 (6") Flange	
Dimensions (mm)	50 x 50 x 69	50 x 50 x 72	42 x 42 x 67	90 x 64 x 123	85.9 x 65 x 60.5	68 x 56 x 84	109 x 76 x 66	95 x 68 x 63		141 x 133 x 110	141 x 133 x 110	
Weight (g)	255	282	<250g	916	432	395	550	480		3kg	5kg	

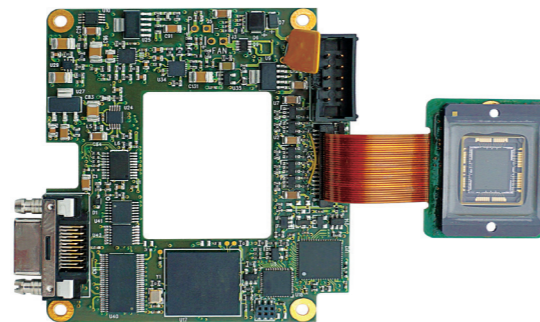
All specifications correct at time of print. Other options available on request. More detailed specifications can be found in datasheets for each product on www.raptorphotronics.com

Working with OEMs

Raptor's business model is based on volume demand from OEM customers. Understanding our customers' needs is vital when putting together a solution that matches their needs. The ability to be flexible and being able to offer a range of custom fittings means we can deliver unrivalled price performance solutions, with a pricing structure scalable with volume requirements. Our expertise includes:

- Sensors: CCD, EMCCD, CMOS, Scientific CMOS, Intensifier tubes, InGaAs
- Analogue and digital signal processing
- Digital design including PCI, USB, LVDS, CameraLink, GigE
- FPGA (VHDL) development for imaging processing
- High speed analogue and digital design
- Low noise pre-amp circuit development
- High voltage and ultra fast pulse circuit design
- Embedded firmware development
- Application development in C++, VB & Delphi.

- Mechanical and Optical design.
- Heat removal interfaces, e.g. heatsink-less conductive configurations
- Chassis mounting options
- Specific QC / testing to meet customer requirements



Raptor Board level OEM cameras are available in range of sensors, interfaces and layouts

OEM Accreditations

Raptor's core business is targeted at the OEM market. Since our inception in 2006 we have focused on building our credentials / capabilities to meet our OEM customer needs. These include:

- Operating a quality management system, the company fully complies with the requirements of BS EN ISO 9001:2008
- Accustomed to designing to MilSpec standards including MIL-STD-810F and MIL-STD-704F
- RMAs of less than 2% – we deliver quality products
- Workmanship to class IPCa610
- ESD Compliant
- RoHS Compliant

We have also introduced our Raptor Certified Supply Chain to ensure that our suppliers conform to best practice guidelines e.g. Counterfeit goods inspections.

Raptor Key Facts

- Established 2006
- Camera solutions designed and manufactured in Northern Ireland
- Complete Turnkey manufacturing
- Strong Financial Performance - \$10m turnover in FY2015
- Operating in three key markets; Surveillance, Scientific and Industrial.