

# Falcon III

Digital Scientific Frame Transfer EMCCD

1024 x 1024 • 10µm x 10µm Pixel Pitch • Cooled to -70°C •



## Key Features and Benefits

*NEXT GENERATION* photon counting sensitivity

- **Lower read noise of <math><1e</math>-**  
Best sensitivity of any camera technology
- **Faster readout in full resolution**  
x 3 times faster than previous generations
- **Higher EM gain of x 5000**  
See single photon events
- **Up to 95% QE from back-illuminated sensor**  
Optimum Photon collection
- **Strong UV and NIR reponse and ultrawide bandwidth**  
From 200nm through to 1100nm
- **Deep cooled to -70°C**  
For minimal background events

**EMCCD - GEN III**  
**A NEW GENERATION**

*The Photon Harvester!*

Resolution	<b>1024 x 1024</b>
Pixel Size	<b>10µm x 10µm</b>
Readout Noise	<b>&lt;math&gt;&lt;1e&lt;/math&gt;-</b>
Frame Rate	<b>31Hz</b>
Camera Link	<b>16bit</b>

## Specification for Falcon III

Sensor Type	1" Back Thinned Frame Transfer EMCCD
Active Pixel	1024 x 1024
Pixel Size	10µm x 10µm
Active Area	10.2mm x 10.2mm
Full Well Capacity <sup>1</sup>	>29ke-
Shift Register Well Depth	200ke-
Non-Linearity	<1%
Readout Noise (RMS) <sup>1</sup>	EM Gain ON: <1e- EM Gain OFF: <60e-
Frame Rate <sup>2</sup>	31Hz
Exposure Time <sup>3</sup>	1ms to >1hr
Dark Current (e/p/s) <sup>1</sup>	<0.001 @ -70°C
Digital Output Format	16 bit Camera Link (base configuration / SDR)
Peak Quantum Efficiency	95% @ 575nm
Spectral Response <sup>4</sup>	300 - 1100nm
Dynamic Range	EM Gain ON: 89dB EM Gain OFF: 54dB
Cooling	-40°C with fan / -70°C with 20°C liquid & fan
Binning	1x1 up to 8x8
Lens Mount	C-Mount
Synchronisation	Trigger IN and OUT - TTL compatible
Power Supply	12V DC ±10%
Total Power Consumption <sup>5</sup>	<75W (TEC ON, Steady State)
Operating Case Temperature	-20°C to +55°C
Storage Temperature	-30°C to +60°C
Dimensions (L*W*H) <sup>6</sup>	120.9mm x 140.2mm x 113.1mm
Weight (no lens)	<1.5Kg

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## Ordering Information

### Camera

Falcon III EMCCD 1MP digital camera FA351V-BV-CL

Power Supply Unit FA-PSU-III

### Optional Accessories

Mini PC with XCAP Std and frame grabber RPL-PC-mf2280

Thunderbolt frame grabber RPL-mf2280

EPIX® EB1 frame grabber RPL-EPIX-EB1

EPIX® XCAP Std software RPL-XCAP-STD

MDR-SDR Camera Link Cable<sup>7</sup> RPL-MCL-CBL-2M

Thermoelectric Water Chiller Unit<sup>8</sup> RPL-CHILLER

Chiller Tubing<sup>9</sup> RPL-WTUBE-NINOX

Optical Lenses<sup>10</sup> RPL-xx-xxxx

Note 1: Measured at 10MHz pixel readout speed.

Note 2: For more detailed maximum frame rates with binning and ROI applied, please refer to the user manual.

Note 3: In practice, the maximum exposure will be dark current limited.

Note 4: Standard BV sensor cuts at 300nm, for UV options please contact Raptor for more details.

Note 5: For more detailed power consumption values, please refer to the user manual.

Note 6: Dimensions include all connector parts on the camera interface.

Note 7: Longer Camera Link cable available.

Note 8: Recommended coolant flow rate >0.5l/min & cooling capacity >100W @ 20°C.

Note 9: Includes tubing & connectors.

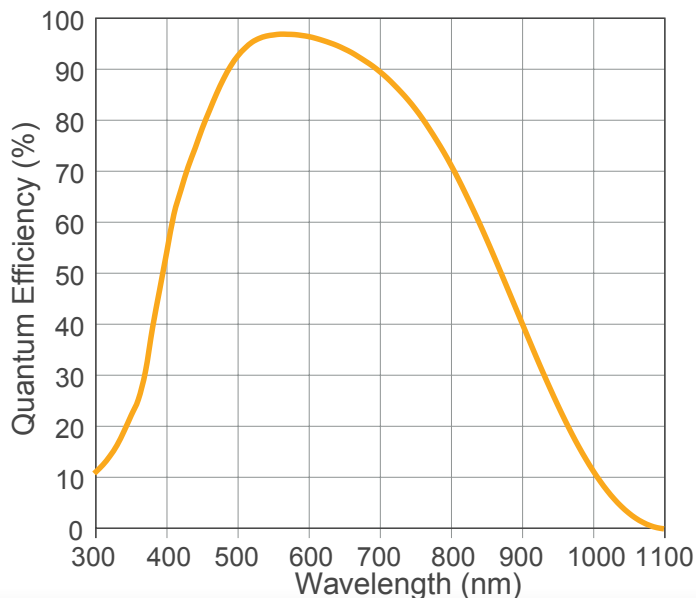
Note 10: Please consult us to check our range of lenses.

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

- Adaptive Optics and Astronomy
- Calcium signaling
- Fluorescence imaging / spectroscopy
- Flow cytometry
- FRET / FRAP / TIRF
- Genome sequencing
- High content screening
- High resolution fluorescence imaging
- Hyperspectral imaging
- Live cell imaging
- Photon counting
- Single molecule detection
- Solar cell inspection
- X-ray & High energy

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