



Ultra Sensitive Imaging

Features and Benefits

- **Compact and light**
Ideal for integration into space restrictive set-ups
- **1.2 e⁻ read noise**
Lower detection limit than any CCD
- **5.5 megapixel sensor format and 6.5 μm pixels**
Extremely high resolution over a 22 mm field of view
- **Rolling and Global shutter**
Maximum flexibility across all applications
- **Rapid frame rates**
100 fps full frame sustained
- **Dual-Gain amplifiers**
Extensive dynamic range of 25,000:1 @ 30 fps
- **ROI and pixel binning**
User-defined ROI (1 pixel granularity) and hardware binning
- **Dynamic Baseline Clamp**
Ensures quantitative stability
- **Software Exposure Events**
Rapid software notification via SDK of start / end of exposure synchronization
- **iCam**
Fast exposure switching
- **Interface flexibility**
Choice of Camera Link 3-tap or 10-tap
- **3-year sensor enclosure integrity warranty**

Scientific CMOS - Fast, sensitive, compact and light.

Andor's new Zyla sCMOS camera offers high speed, high sensitivity imaging performance in a remarkably light and compact, TE cooled design. Zyla is ideally suited to many cutting edge applications that push the boundaries of speed, offering sustained frame rate performance of up to 100 fps, faster with ROIs.

A highly cost-effective 30 fps version is also available offering 1.2 e⁻ rms read noise, representing an ideal low light 'workhorse' camera solution for both microscopy and physical science applications, in either research or OEM environments.

Rolling and Global (Snapshot) Shutter readout ensure maximum application flexibility. Global shutter in particular provides an important 'freeze frame' exposure mechanism that emulates that of an interline CCD, overcoming the transient readout nature of rolling shutter mode.

Specifications Summary

Model	V	X
Active pixels (W x H)	2560 x 2160 (5.5 Megapixel)	
Sensor size	16.6 x 14.0 mm (21.8 mm diagonal)	
Pixel size (W x H)	6.5 μm	
Pixel well depth (typical)	30,000 e ⁻	
Readout speeds (MHz)	560, 200	
Read noise	1.2 e ⁻	
Sensor operating temperature	0°C	
Maximum frame rate	30 fps @ full frame	100 fps @ full frame
Interface options	Camera Link 3-tap	Camera Link 10-tap

Key Specifications For All Models^{*1}

Sensor type	Front Illuminated Scientific CMOS	
Active pixels (W x H)	2560 x 2160 (5.5 Megapixel)	
Sensor size	16.6 x 14.0 mm 21.8 mm diagonal	
Pixel size (W x H)	6.5 μm	
Pixel readout rate (MHz)	560 (280 MHz x 2 sensor halves) 200 (100 MHz x 2 sensor halves)	
Read noise (e ⁻) ^{*2}	Rolling Shutter	Global Shutter
200 MHz	1.2	2.6
560 MHz	1.45	2.6
Maximum Quantum Efficiency	57%	
Sensor operating temperature ^{*3}	0°C (up to 35°C ambient)	
Dark current, e ⁻ /pixel/sec @ min temp ^{*4}	0.14	
Readout modes	Rolling Shutter and Global Shutter (Snapshot)	
Pixel well depth (e ⁻)	30,000	
Maximum dynamic range	25,000:1	
Linearity (% , maximum) ^{*5}	Better than 99%	
MTF (Nyquist @ 555 nm)	45%	
Photon Response Non-Uniformity (PRNU)	< 0.5%	
Pixel binning	Hardware binning: 2 x 2, 3 x 3, 4 x 4, 8 x 8	
Pre-defined Region of Interest	2048 x 2048, 1920 x 1080, 1392 x 1040, 512 x 512, 128 x 128	
User defined ROI granularity	1 pixel [*]	
I/O	External Trigger, Fire, Fire n, Fire All, Fire Any, Arm	
Trigger Modes	Internal, External, External Start, External Exposure, Software Trigger	
Software Exposure Events ^{*6}	Start exposure - End exposure (row 1), Start exposure - End exposure (row n)	
Hardware timestamp accuracy	25 ns	
Anti-blooming factor	x 10,000	

* Minimum ROI height 12 rows

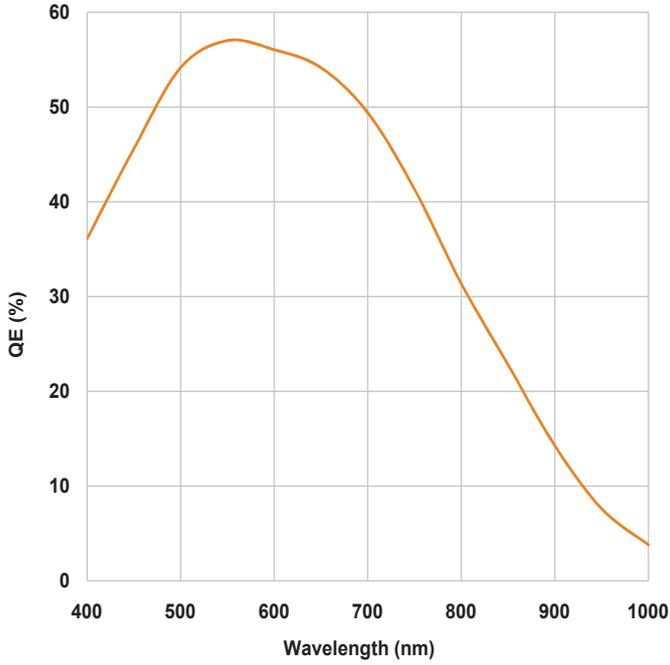
Model Specific Specifications

Model	V	X
Data range	11 bit and 16 bit	11 bit and 16 bit
Interface options	Camera Link 3-tap	Camera Link 10-tap

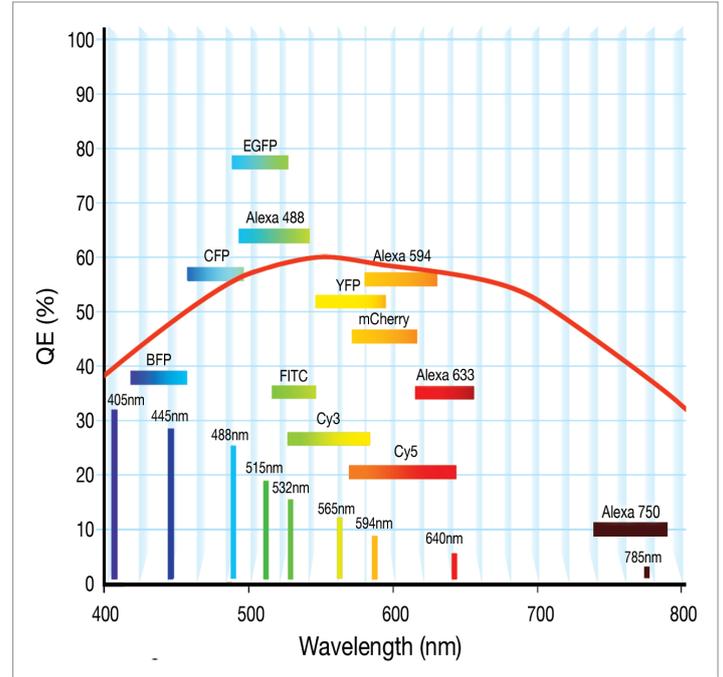
Maximum Frame Rate Table^{*7}

Array Size	V - 3 tap		X - 10 tap	
	Rolling Shutter	Global Shutter	Rolling Shutter	Global Shutter
2560 x 2160 (full frame)	30	30	100	50
2048 x 2048	39	39	105	52
1920 x 1080	80	80	198	97
512 x 512	419	201	419	201
128 x 128	1,639	721	1,639	721

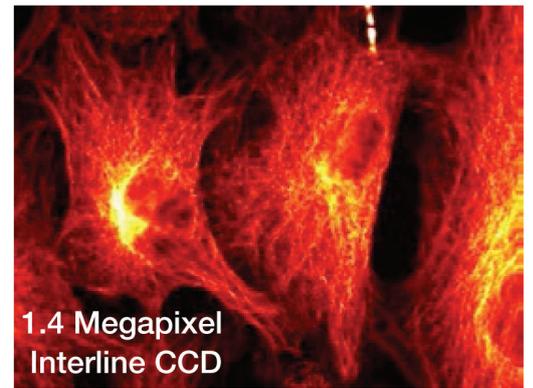
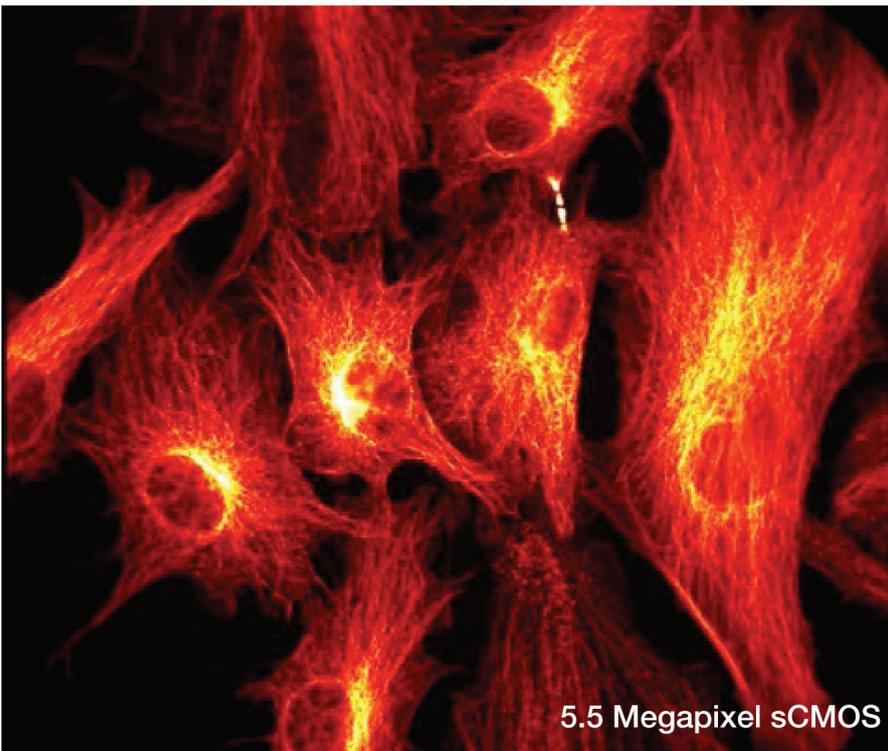
Quantum Efficiency (QE) Curve⁸



QE v Fluorophore Emissions



Field of View Comparison



Field of View (FoV) comparison: sCMOS v 1.4 megapixel interline CCD

Creating The Optimum Product for You

How to customize the Zyla :

Step 1.

Quote the camera type.

Step 2.

Please indicate which software you require.

Step 3.

Please indicate which accessories are required.

DG-152 **V** -C1E-FI

example shown

Step 1.

Choose camera type

V: 30 fps, 11 bit and 16 bit, Camera Link 3-tap

X: 100 fps, 11 bit and 16 bit, Camera Link 10-tap

Step 2.

The Zyla also requires at least one of the following software options:

Solis Imaging A 32-bit application compatible with 64 and 32-bit Windows (XP, Vista and 7) offering rich functionality for data acquisition and processing. AndorBasic provides macro language control of data acquisition, processing, display and export.

Andor iQ A comprehensive multi-dimensional imaging software package. Offers tight synchronization of EMCCD with a comprehensive range of microscopy hardware, along with comprehensive rendering and analysis functionality. Modular architecture for best price/performance package on the market.

Andor SDK A software development kit that allows you to control the Andor range of cameras from your own application. Available as 32 and 64-bit libraries for Windows (XP, Vista and 7) and Linux. Compatible with C/C++, LabView and Matlab.

Third party software compatibility

Drivers are available so that the Zyla can be operated through a large variety of third party imaging packages. See Andor web site for detail: andor.com/software/

Step 3.

The following accessories are available:

ACC-MEC-05609 CS-mount adapter

ACM-05574 F-mount adapter

OA-ECMT Auto extension tubes (set of 3) for C-mount

OA-ENAF Auto extension tubes (set of 3) for Nikon AF

ACC-ASE-02992 5 meter Camera Link connector cable. Note, order x2 if using with 'X' Camera Link 10-tap model.

ACC-ASE-06931 10 meter active Camera Link connector cable, including power supply. For use with Zyla 'V' 3-tap Camera Link model.

ACC-ASE-06962 10 meter active Camera Link connector cable, including power supply. For use with Zyla 'X' 10-tap Camera Link model.

ACC-ZYLFOX-3TAP-30M 30 meter fibre-optic extender solution for use with Zyla 'V' Camera Link 3-tap model.

ACC-ZYLFOX-3TAP-100M 100 meter fibre-optic extender solution for use with Zyla 'V' Camera Link 3-tap model.

ACC-ZYLFOX-10TAP-30M 30 meter fibre-optic extender solution for use with Zyla 'X' Camera Link 10-tap model.

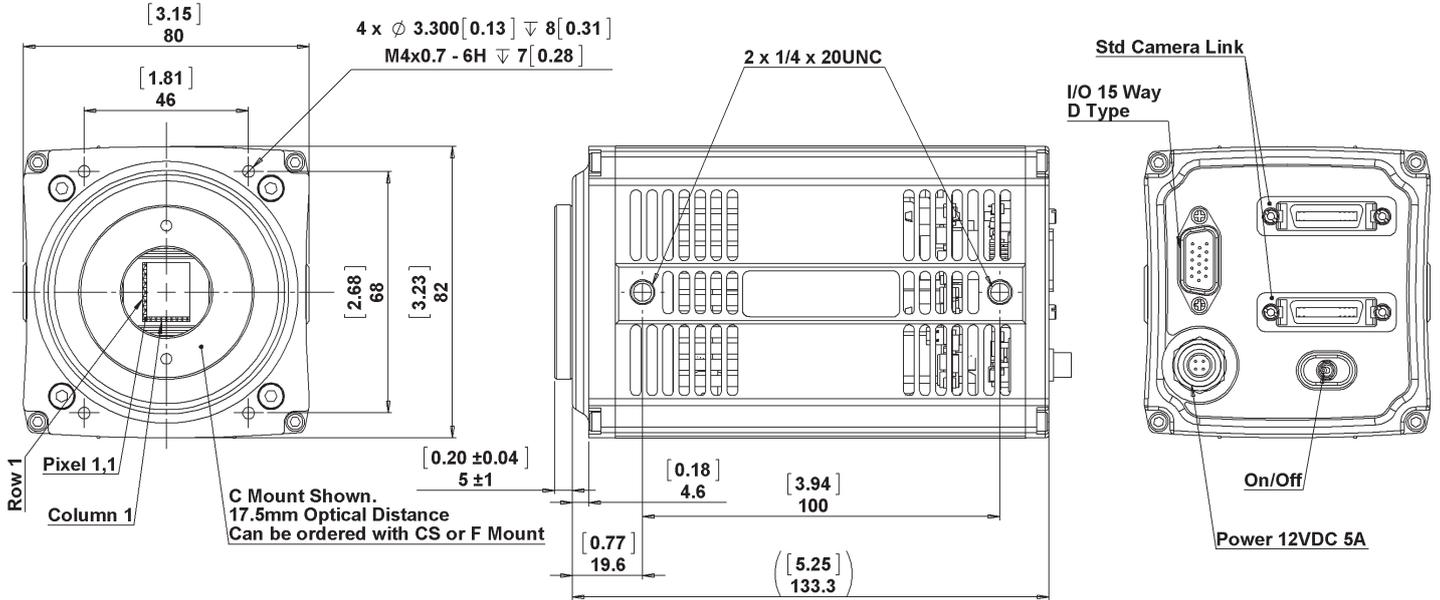
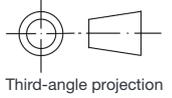
ACC-ZYLFOX-10TAP-100 100 meter fibre-optic extender solution for use with Zyla 'X' Camera Link 10-tap model.

WKST-1 WIN PC Workstation for up to 100 fps continuous spooling to hard drives, acquiring up to 120,000 11-bit full resolution images: Dell T5500, 2.4GHz Quad Core, 4GB RAM, 4 x 250GB SSD hard drives configured in RAID 0.

WKST-3 WIN PC Workstation for up to 100fps continuous spooling to RAM, acquiring up to 5,200 11-bit full resolution images: Dell T5500, 2.4GHz Quad Core, 48GB RAM, Dell 500GB hard drive. RAMDISK utility pre-loaded.

Product Drawings

Dimensions in mm [inches]



Weight:
1,000 g

Connecting to the Zyla

Camera Control

Connector type: 3 meter Camera Link 3-tap or 10-tap connectors (longer cable lengths available as accessories)

TTL / Logic

Connector type: 15 way D Type with TTL I/Os for External Trigger, Frame Readout and Fire Pulse

Regulatory Compliance

RoHS compliant

Compliant with the requirements of the EU EMC and LV Directives through testing to EN 61326-1 and EN 61010-1

(Applicable to Enclosed 'E' camera)

Power: +12VDC ± 5% @ 5A

Ripple: 200 mV peak-peak 0 - 20 MHz

120 - 240 VAC 50/60 Hz external power supply PSE-approved available

15-way D-type pinouts

Pin	Signal	Type
1	ARM	Output
2	Aux_Out_1*	Output
3	FIRE row n	Output
4	FIRE row 1	Output
5	Aux_Out_2	Output
6	Ground	GND
7	External Trigger	Input
8	Spare Input	Input
9	Reserved	N/A
10	Reserved	N/A
11	Reserved	N/A
12	Reserved	N/A
13	Reserved	N/A
14	Reserved	N/A
15	Reserved	N/A

* Aux_Out_1 is configurable as Fire, Fire n, Fire All or Fire Any. See Zyla hardware manual.



Order Today

Need more information? At Andor we are committed to finding the correct solution for you. With a dedicated team of technical advisors, we are able to offer you one-to-one guidance and technical support on all Andor products. For a full listing of our regional sales offices, please see: andor.com/contact

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Items shipped with your camera

- 1x Camera Link card and 3 meter connector cable(s).
- 1x Power supply with mains cable
- 1x 7-way Multi I/O timing cable, offering Fire, External Trigger, Shutter and Arm (3 meter)
- 1x Quick Start Guide
- 1x CD containing Andor user guides
- 1x Individual system performance sheet

Footnotes: Specifications are subject to change without notice

1. Figures are typical unless otherwise stated.
2. Readout noise is for the entire system and is taken as a median over the sensor area excluding any regions of blemishes. It is a combination of sensor readout noise and A/D noise.
3. Specified cooling temperature assumes ambient temperature of up to 35°C.
4. Dark current measurement is taken as a median over the sensor area excluding any regions of blemishes.
5. Linearity is measured from a plot of Signal vs. Exposure Time over the full dynamic range.
6. Software Exposure Events provide rapid software notification (SDK only) of the start and end of acquisition, useful for tight synchronization to moving peripheral devices e.g. Z-stage.
7. The maximum frames/s table for Zyla indicate the maximum speed at which the device can acquire images in a standard system at full frame and also a range of sub-array size, for both rolling and global shutter readout modes, 11-bit single amplifier. Note that the write speed of the PC hard drive can impose a further restriction to achieving sustained kinetic series acquisition.
8. Quantum efficiency of the sensor at 20°C as measured by the manufacturer.

Recommended Computer Requirements:

- 2.4 GHz Quad Core
 - 4GB RAM (increase RAM if to be used for continuous data spooling)
 - Hard Drive:
 Minimum 250 MB/s continuous write for 'V' model
 Minimum 850 MB/s continuous write for 'X' model
 - PCI Express x4 or greater for 'V' model
 - PCI Express x8 or greater for 'X' model
 - Windows (XP, Vista or 7) or Linux
- * See technical note entitled: 'Andor sCMOS Data Flow Considerations and PC Recommendations'

** Note, Andor supply PC workstations for Neo, see page 4.

Operating and Storage Conditions

Operating Temperature 0°C to 35°C ambient
 Relative Humidity < 70% (non-condensing)
 Storage Temperature -10°C to 50°C

Power Requirements

Please refer to page 5



Windows is a registered trademark of Microsoft Corporation.
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