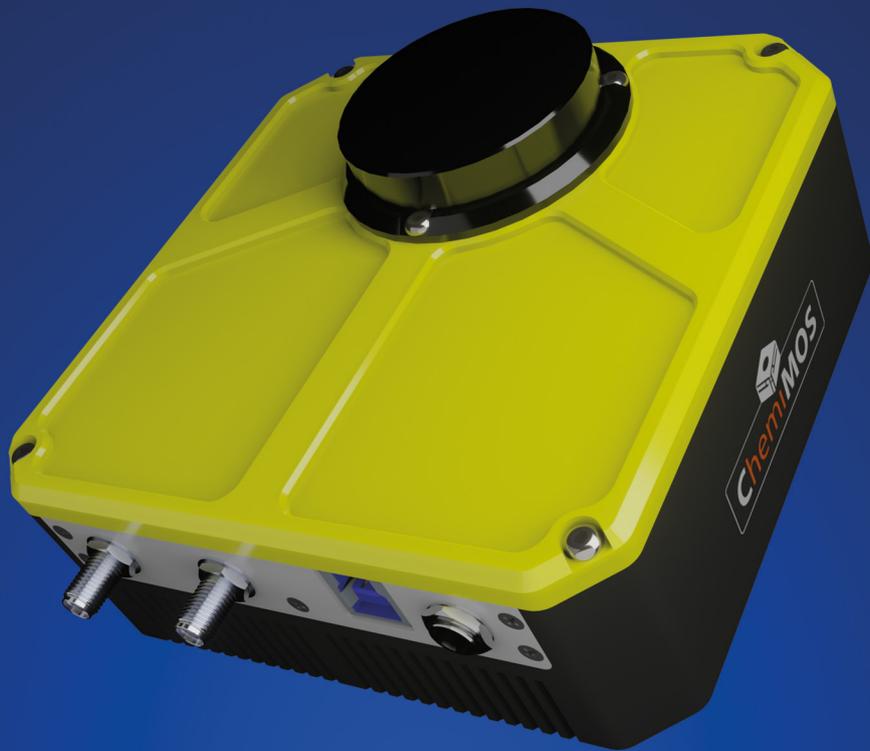




ChemimOS 9.0

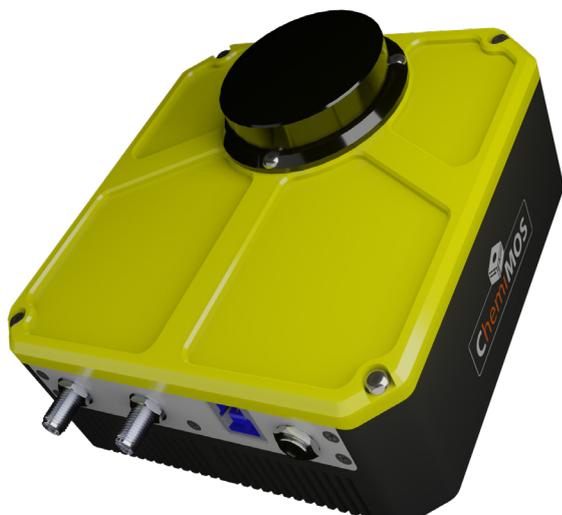
CMOS designed for long exposure imaging



- ✓ Latest generation cooled CMOS
- ✓ Extremely low noise
- ✓ High quantum efficiency
- ✓ No amp glow
- ✓ Deep pixel full well
- ✓ Designed for integration



ChemiMOS Overview



ChemiMOS is a cooled CMOS camera designed from the ground up to be ideally suited for integration into scientific systems requiring long exposure images. Hours of exposure time has previously only been available with CCD technology, but is now possible with ChemiMOS due to the zero-amp glow and low-noise design. This latest generation of CMOS technology will be available for the foreseeable future, ensuring long-term, supply chain stability. Benefits include very low read noise and deep pixel full well, allowing for unprecedented dynamic range.

Cooling is optimised to minimise the dark current, without the need for extreme temperatures, which could complicate the end user design. Calibration routines such as dark frame subtraction and off-camera image processing are included, meaning flexibility and transparency when operating the camera. There is no down time for recalibration as the sensor characteristics change over time.

Technical Specifications

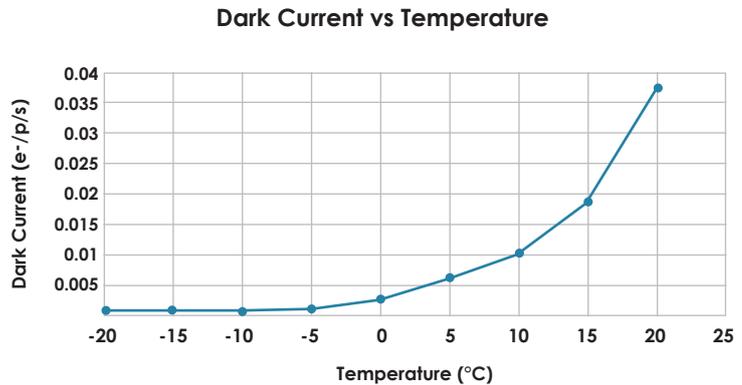
*ChemiMOS 9.0 specifications	
Image sensor	IMX 533 (latest generation Sony CMOS)
Resolution	3000 × 3000
Pixel size	3.76 µm
Read noise	~1e ⁻
Dark current noise (at -20°C)	0.0005 e ⁻ /p/s
Set point cooling (at ambient of 20°C)	-20 °C
Full well capacity	50,000 e ⁻
A/D converter	14 bit / 12 bit
Frame rate	12 bit - 20 fps 14 bit - 16 fps
QE peak	>90%
Interface	USB 3.2 Gen1
Lens mount	C-Mount (can be customised)

Customised versions of ChemiMOS are also available with 26 MP, 60 MP, 102 MP and 150 MP variant of the sensors. Contact Atik Cameras for more information.

*Please note, all specifications are provisional figures, and subject to change.

Key Features for Long Exposure Applications

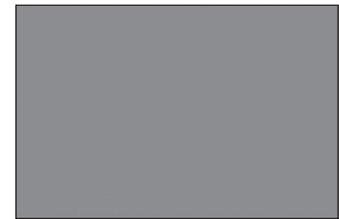
1. Low Dark Current - The exceptionally low dark current of $0.0005 \text{ e}^-/\text{p}/\text{s}$ means that the noise component due to thermal build up is an order of magnitude lower than similar scientific long exposure CMOS cameras, allowing exposures in the tens of minutes to hours with minimal dark current noise.



2. No Amp Glow - The use of the absolute latest generation of Sony IMX Sensors allows for the readout electronics on the sensor to be turned off / quietened meaning that ChemiMOS camera does not suffer from amp glow. Although amp glow can be 'calibrated' or dark subtracted out, at long exposures there is still a residual noise affect and a detrimental effect on the achievable dynamic range of the cameras. Atik Cameras worked from the premise that starting from a cleaner sensor is always preferable.



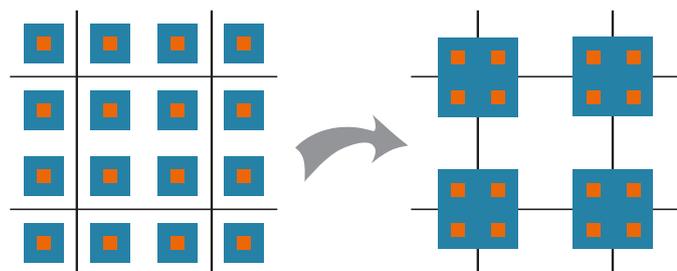
Above left:
Raw (scaled for viewing)
image of the IMX428 at
1000s



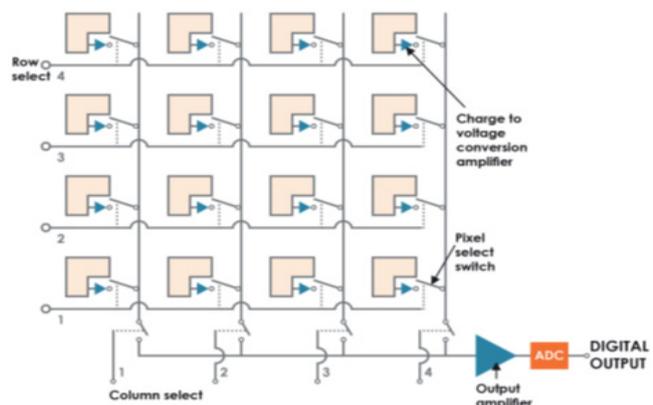
Above right:
Raw (scaled for viewing)
image of the IMX455 at
1000s

3. Low Read Noise - Due to the fact that each pixel is read independently, CMOS cameras cannot bin in hardware to get the same signal to noise improvements as a CCD. However, with a read noise many times lower than CCD (1.2 e^- vs $\sim 6 \text{ e}^-$) additive software binning can realistically be considered. There is an added advantage that this also increases the full well by adding the single pixel full well capacities.

Binning



4. 16 bit image mode - ChemiMOS has multiple modes that enable 16 bit image collection. Either using HDR with combined image collection or additive binning, true 16 bit datasets are produced. With 16 bit image mode any images captured with ChemiMOS are provided in a 16 bit format meaning that as a customer switches between modes the software will always receive a 16 bit image.

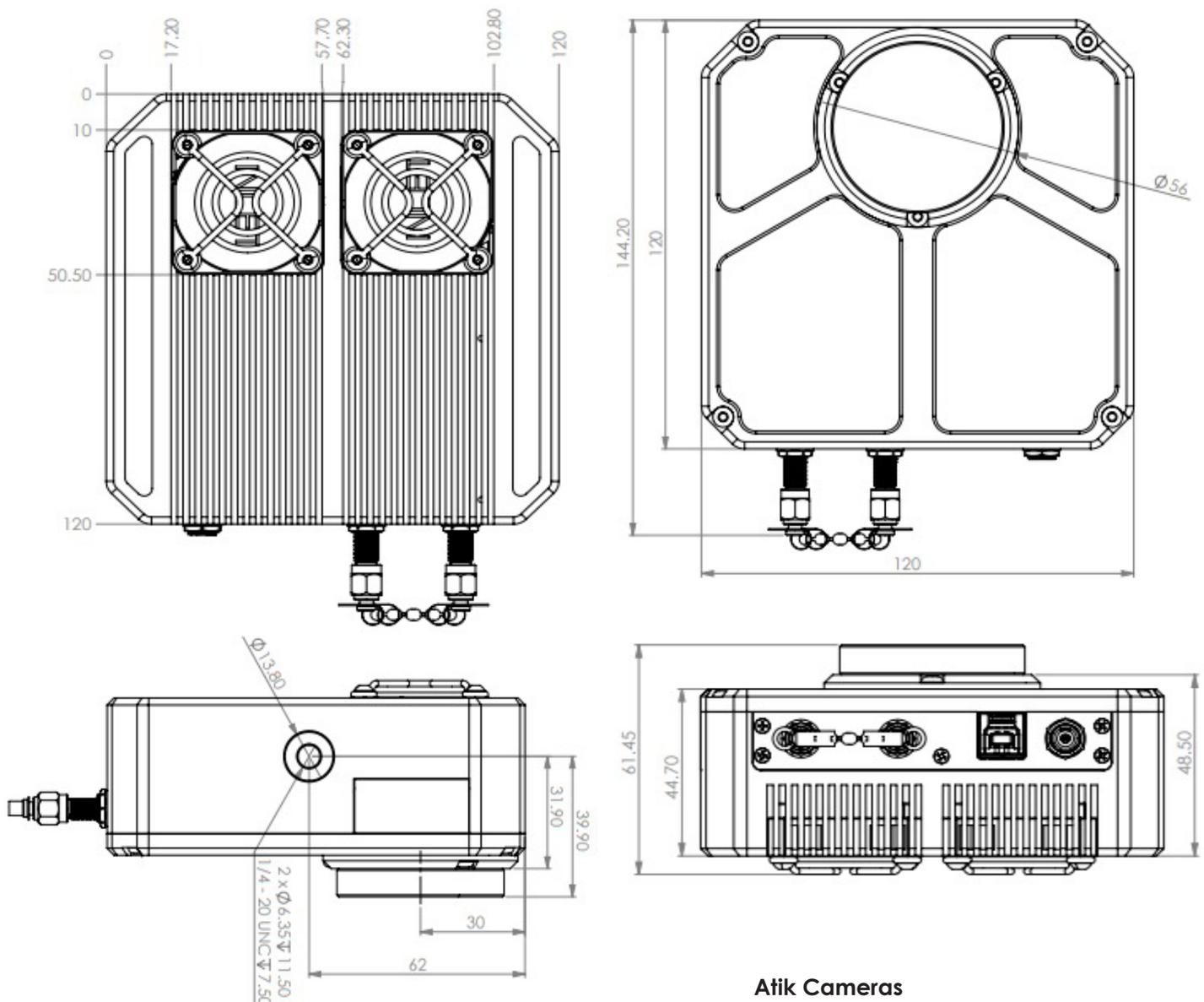


Integration

Our cameras run from a standard SDK library that is fully transferable between PC, Mac and Linux operating systems. With full example files and a dedicated support team, integrating and supporting ChemiMOS in your system is made easy.

OEM Supply

Atik Cameras is a reliable OEM supplier with over 15 years' experience in this field. Since moving to a larger state-of-the-art facility in January 2020 to increase production capacity, Atik Cameras have shipped over 10,000 cameras per year to integrators all around the world. With industry leading quality standards and robust batch tracking, you can be sure that cameras shipped from our European production facility in Portugal, will be of the highest quality and will work for your customers for many years to come.



Atik Cameras

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