

Tucsen announces next generation sCMOS camera improving speeds to 300fps & reducing read noise to low of 0.43 electrons

The Aries 6504 offers a 2048 x 2048 array of 6.5 micron back-illuminated pixels, a peak QE of 95%, speeds of up to 300 fps and ultra-low read noise at 100fps

MOSELEY, UNITED KINGDOM, June 27, 2025 /EINPresswire.com/ -- [Tucsen](#) announces next generation sCMOS camera improving speeds to 300fps and reducing read noise to low of 0.43 electrons.

The Aries 6504 camera has been designed to harness the latest in

sensor technology from our partner [Gpixel](#) and will utilize their new [GSENSE6504BSI](#) sensor. The camera offers a 2048 x 2048 array of 6.5 micron back-illuminated pixels with a peak QE of 95%, speeds of up to 300 fps and ultra low read noise.



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Gpixel and Tucsen have been long established partners for over a decade integrating over 20 different sensors into over 40 different cameras.”

Lou Feng, Head of Business Development

“Back illuminated sCMOS is not new and there have been several commercially available 4 Megapixel models in the past however, these have been limited in speed (40fps in HDR) and read noise (1-1.6 electrons) noted James Francis,” Strategic & Expansion Director. “What makes the Aries 6504 special is that we can now operate at speeds of 100fps in HDR and can even achieve an impressive 300fps at full resolution – combine this with ultra-low read noise and we now have the fastest and most sensitive sCMOS camera based on a 6.5 micron pixel on the market.”

Low-light images show the difference between the GSENSE6504BSI (0.43e- read noise) featured in the Aries 6504 and the GSENSE2020BSI (1.3e-) which is popular with Tucsen and other camera manufacturers. The low read noise specification opens the door to many new applications limited by read noise permitting true EMCCD like detection capabilities, allowing scientists to

detect more enabling applications that require single photon detection like quantum imaging.

This ultra low read-noise will also help customers reduce illumination, saving samples, or reducing exposure times which in turn enables speed increases. This extra sensitivity should provide faster acquisition times in applications such as High Content Screening, Spatial Biology, Confocal Imaging and many forms of Spectroscopy.

In addition to 3x lower read noise, the new generation technology offers a 17x improvement in dark current performance. GSENSE6504BSI has a measured dark current of 0.004 electrons/pixel/second at -30°C (die temperature) compared to 0.07 electrons/pixel/second for the same pixel size in GSENSE2020BSI. This will undoubtedly expand the application range of sCMOS cameras in ultra-low-light, long-exposure scenarios, such as in vivo imaging of small animals and astronomical imaging.

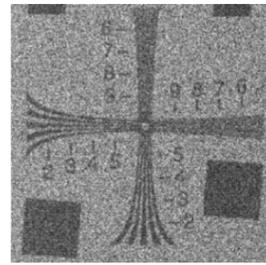
The GSENSE6504BSI sensor is a key part of the Aries 6504 solution. "Gpixel and Tucsen have been long established partners, working together since Gpixel was incorporation in 2012," commented Lou Feng, head of business development. "We integrate over 20 different Gpixel sensors and work extremely closely with their engineers to ensure we drive the best for our customers."

Beyond the strong collaboration work with Tucsen's partner Gpixel, the new Aries 6504 will feature deep cooling, high-speed interfaces and critical to many of our OEM integrators, an ultra small housing.

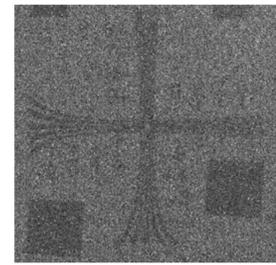
Pricing is expected to fall in-line with existing Tucsen sCMOS products featuring the current GSENSE2020BSI sensor.

Expected timeline

Specifications online: August 2025

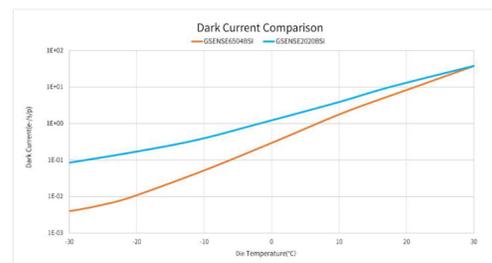


GSENSE6504BSI / Aries 6504



GSENSE2020BSI / Existing sCMOS

Image shows comparison of 2 sCMOS sensors



Dark current comparison of GSENSE6504BSI and GSENSE2020BSI over temperature

Dark current comparison between classical sCMOS and new Aries 6504

Accepting orders: October 2025

Delivery starts: January 2026.

About Tucsen Photonics:

Tucsen Photonics is a leading developer and manufacturer of high-performance imaging solutions for scientific and industrial applications with operations in China, Singapore, UK, USA and Europe. With a commitment to innovation and quality, Tucsen Photonics continues to redefine the possibilities of digital imaging.

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