

### Low-light cameras offer compact solution



[www.lumenara.com](http://www.lumenara.com)

A series of 5-megapixel colour CMOS cameras for industrial and scientific applications combine high resolution and good performance in low-light conditions, according to their manufacturer, Lumenara of Canada. The Lw570 and Lw575 offer rates of 7 frames per second at full resolution, which is  $2,592 \times 1,944$  pixels, increasing to 60 frames per second when just a portion of the image is selected (sub-windowing). The Lw575 measures  $2.25 \times 3.85 \times 1.56$  inch<sup>3</sup> ( $5.7 \times 9.8 \times 4.0$  cm<sup>3</sup>) and weighs 300 g, and the Lw570 measures  $2.00 \times 2.50 \times 1.63$  inch<sup>3</sup> ( $5.1 \times 6.4 \times 4.1$  cm<sup>3</sup>) and weighs 150 g. Both have a (1/2.5)-inch-format sensor measuring  $5.7 \times 4.3$  mm<sup>2</sup> and a dynamic range of 60 dB. The cameras consume approximately 2.5 W of electrical power and can be driven through a USB 2.0 computer interface or an external source of 5 V d.c. at 500 mA.

Lumenara says that other features include a fast rolling shutter, 8- or 10-bit digital output, and input-output control for synchronization with strobe and peripheral devices. Both come with a C-mount lens as standard or a CS-mount option. A software-development kit with sample code enables users to integrate the cameras into their applications.

### CMOS sensors boost image-capture rates

[www.sony.com](http://www.sony.com)

The IMX021 from Sony, Japan, is a 12.47-megapixel, ultrahigh-speed image sensor based on CMOS architecture. The sensor takes advantage of the compatibility of CMOS technology with both analog and digital circuits, which allows each column within the sensor to have its own analog-to-digital (A/D) converter. The approach takes analog signals from vertical lines, converting them into digital signals within the shortest possible distance. Sony claims that the sensor can provide A/D conversion at a rate of 10.39 frames per second (12-bit images) per second in all-pixel scan mode, while minimizing the noise caused by analog processing, reducing image

degradation. The system also diminishes noise because the parallel circuit structure enables A/D conversion at lower than normal frequencies. The company says that a combination of these noise-cancellation features enables the sensor to generate better quality images.

### X-ray imagers speed up

[www.hamamatsu.com](http://www.hamamatsu.com)

The latest CMOS flat-panel sensor for digital X-ray imaging from Hamamatsu of Japan offers rates of 9 frames per second at full resolution and real-time data acquisition (that is 27 frames per second) with  $2 \times 2$  pixel-binning. The C9321SK-05 sensor consists of a detector array of  $1,056 \times 1,056$  pixels, each  $50 \mu\text{m}^2$  in size. The imager uses a gadolinium oxysulphide scintillator (a device that converts X-rays into photons that can be directly detected) deposited on a fibre-optics plate. Hamamatsu says that the plate provides lower X-ray shot noise to improve image quality and also shields the sensitive CMOS electronics inside the panel, thus enabling a lifetime of 6 million Roentgen at 150 peak kilovoltage. To supplement the sensor, Hamamatsu also provides a range of sealed and open X-ray sources for high-resolution imaging applications.

### Automotive sensors see in the dark

[www.ovt.com](http://www.ovt.com)

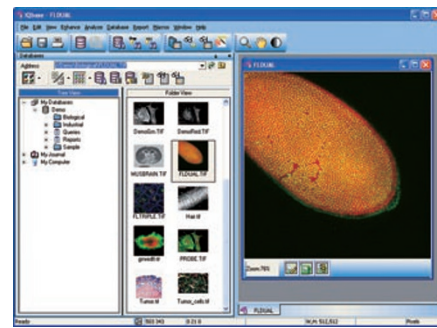
A series of automotive CMOS image sensors from OmniVision Technologies now have visible and near-infrared capability, enabling the sensors to operate in dual modes to suit both day- and night-vision applications. OmniVision says that changes in the production process have extended the chip's spectral sensitivity to wavelengths of 1,050 nm and that the single-chip, dual-mode approach eliminates the need for two sensors. When combined with a few low-power LEDs, OmniVision says that the infrared sensitivity enables the cameras based on the sensors to perform object detection in darkness and to see beyond the usual range of a vehicle's headlights. In terms of operation, the sensor provides a standard colour image during daylight, then automatically switches to black-and-white night-vision mode when natural light falls below a predefined lux level. The sensors also suit use as anti-theft cameras when combined with a single, low-power LED. According to the company several automotive manufacturers are sampling the sensors for use in pedestrian, sign and object detection, as well as rear-view camera applications.

### Thermography cameras boast millikelvin sensitivity

[www.cedip-infrared.com](http://www.cedip-infrared.com)

The Titanium series of infrared camera systems from Cedip Infrared Systems suits both research and development or industrial thermography applications. The cameras are available with a range of detectors, including indium antimonide, mercury cadmium telluride and quantum-well infrared photodetector focal-plane array detectors. According to Cedip these detectors can achieve sensitivity of less than 18 mK even at the highest frame rates in both the mid- and long-wave infrared ranges. The cameras can be programmed to capture rates of 1–380 Hz in full-frame mode, or up to 20 kHz at reduced frame sizes. They also have a subarray windowing mode with integration time adjustable in increments of 1  $\mu\text{s}$  and smart external triggering capacity to capture fleeting events. A choice of detector array size is available with versions offering  $320 \times 256$  pixels or  $640 \times 520$  pixels with pitches of 30, 25, 20 or 15  $\mu\text{m}$ . The spectral response covers three wavelength ranges available on request: 3–5  $\mu\text{m}$ , 8–12  $\mu\text{m}$  or 1.5–5  $\mu\text{m}$ .

### Software aids image organization



[www.mediacy.com](http://www.mediacy.com)

Version 2.5 of IQbase scientific image management software from Media Cybernetics, USA, makes it a simple task for large organizations to store, search and share large numbers of images and related data. The software enables users to share images over a local network or the Internet. Images can be searched based on keywords or more detailed context-sensitive parameters. The program provides automatic PDF report templates and enables one-step export to PowerPoint tools. It also provides visualization tools, such as image overlay and annotation, and enables the use of graphs and charts for interactive analysis. Users can control which attributes are displayed with their images.