

new products

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Lawrence G. Rubin

Focus on photonics and imaging

Fiber-optic components

SIFAM Fibre Optics has developed polarization-maintaining (PM) fused fiber components, which have operating bandwidths 50% wider than previous devices, with a single new device typically able to cover an 80-nm window at 1550 nm. This enables, for example, PM taps to be used for monitoring the signal or power in a fiber system in the same way monitoring taps are used in nonpolarized systems. The taps, together with splitters, combiners, wavelength division multiplexers, and ultralow-ratio taps, can be optimized at any wavelength between 900 and 1600 nm. PM high-power combiners are capable of concentrating the power from up to 19 fiber-coupled laser diodes into a single output fiber. Users have achieved optical output powers of more than 100 watts CW and hundreds of kilowatts pulsed. Larger diameter multimode 220- μ m input and 400- μ m output fibers are available in most combiner configurations. *SIFAM Fibre Optics Ltd, Broomhill Way, Torquay, Devon TQ2 7QL, UK, <http://www.sifamfo.com>*
See www.pt.ims.ca/12305-131

CCD line sensors

Hamamatsu Corp has announced new products, including a set of four back-thinned, full-frame transfer CCD line sensors, for time-delay integration (TDI) applications. Such devices are able to capture clear images of fast-moving objects by transferring signal charges from one pixel to the next in the same direction and at the same speed as the moving object. Through this process, a single exposure can be integrated in the sensor over the number of

vertical stages—up to 128. Vertical charge transfer is bidirectional so that image transfer can be performed in either direction. The TDI-CCD sensors operate over a broad wavelength range from 200 to 1100 nm, and their enhanced sensitivity is complemented by multiple output ports, which yield a high-speed line rate of 50 kHz or greater. *Hamamatsu Corporation, 360 Foothill Road, Bridgewater, NJ 08807, <http://www.hamamatsu.com>*
See www.pt.ims.ca/12305-132

Megapixel video camera

Photron has introduced the Fastcam SA-1 camera, capable of taking more than 5000 frames/s at megapixel resolution. It incorporates a new CMOS sensor that has resulted in a benchmark for slow-motion video imaging with true 12-bit resolution and 2- μ s global shuttering. The imager has a maximum speed at reduced resolution of 150 000 fps. The camera can be supplied with one of two memory configurations: 8 gigabytes featuring about 6 seconds of record duration at 1000 fps and 16 GB for more than 12 s at that same full resolution.



The Fastcam SA-1 is DC operated with SDI and RS-170 video outputs and supports IRIG/GPS inputs to meet precision time stamping and synchronization requirements. Optional particle image velocimetry is available to study the flow of gas in a wind-tunnel environment or to analyze flow in fluids. *Photron USA Inc, 9520 Padgett Street, Suite 110, San Diego, CA 92126-4446, <http://www.photron.com>*
See www.pt.ims.ca/12305-133

High-resolution camera

The IK-TU51 from Toshiba's Imaging Systems Division is a high-resolution 3CCD remote head camera that provides real-time imaging with 10-bit digital signal processing. The imager offers a frame memory for continuous video imaging in integration mode, a freeze-

frame function, and a user-selectable one- or two-pulse triggering mechanism. Key features include 0.02 lux at 4-s exposure and a six-vector color enhancement circuit. The camera system has 800-line resolution and interchangeable heads and can be supplied with either half-inch or one-third-inch image sensors. Toshiba announced that the IK-TU51 imager has been integrated into the ASAP Imaging system, developed by Apollo Telemedicine, to provide images from under a microscope to the internet, intranets, and other networks. *Toshiba America Information Systems Inc, Imaging Systems Division, 9740 Irvine Boulevard, Irvine, CA 92618-1697, <http://www.toshiba.com/taisid/indmed>*
See www.pt.ims.ca/12305-134

Lighting applications MOSFET

The STD11NM60N from STMicroelectronics is the first member of the company's new power MOSFET family that allows users to drastically reduce conduction losses and increase the efficiency and reliability of their lighting applications. In addition to greatly reducing ON-state losses by minimizing the resistance value, the 600-V device features an energy-optimized driver circuit, which enables the MOSFET to drive higher currents at a lower voltage gate threshold. The STD11NM60N features an excellent dV/dt capability and good avalanche performance that allow users to lower operating temperatures and thus enable reduced heat-sink dimensions. The device is well suited for use in high-power-factor and high-intensity discharge lamp electronic ballasts. *STMicroelectronics, 39, Chemin du Champ des Filles, C. P. 21, CH 1228 Plan-Les-Quates, Geneva, Switzerland, <http://www.st.com>*

See www.pt.ims.ca/12305-135

Synchronized video microscope

LabSmith has released the SVM340 synchronized video microscope for microfluidics and microbiology research. This inverted fluorescence/dark-field microscope captures, stores, and replays still images and video. It provides 75 $\times$ 50 mm scanning, with three-axis motorized traverse, and incorporates optics and illuminator travel below a motionless sample stage, ensuring that microsystem samples remain unper-



turbed. It has a range of video camera modules, including high-speed and high-resolution options. The SVM340 uses a synchronously pulsed LED illumination system to minimize blur and photo-bleaching. Innovative video triggering and analysis software enable high-resolution recording and playback of transitory events. Acquisition can be triggered manually or in automatic response to changes in intensity or color. *LabSmith Inc, 7665 Hawthorne Avenue, Livermore, CA 94550, <http://www.labsmith.com>*

See www.pt.ims.ca/12305-136

X-ray camera

DALSA Corp has developed the XR-4 digital x-ray camera, a 16-megapixel instrument for high-resolution radiography applications, including biomedical, specimen, mammography, and computed tomography (CT scanning). The camera has a very large field of view of 150 × 150 mm and can operate at 10 frames/s (4 × 4 binning mode), making it ideal for CT applications. Automatic exposure control in the XR-4 minimizes patient dosage and provides increased resolution and sensitivity. Digital radiography, a vital tool in early cancer detection, can help doctors to position biopsy needles through a process called stereotactic imaging. The camera can assist with specimen radiography to test tissue specimens. The XR-4 is available in three models: 7.5 × 7.5 cm, 7.5 × 15 cm, and 15 × 15 cm fields of view. *DALSA Waterloo, 605 McMurray Road, Waterloo, Ontario, Canada N2V 2E9, <http://www.dalsa.com>*

See www.pt.ims.ca/12305-137

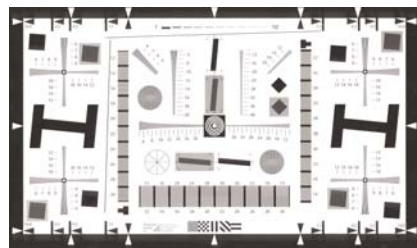
USB camera

J microTechnology has introduced the NAT-30 universal serial bus camera. Based on the company's INFINITY1-1 digital camera with 1280 × 1024 resolution and onboard processing, the new system is a versatile solution for clinical, life sciences, materials science, and educational professionals. The NAT-30 enhances viewing and documentation

support of J microTechnology's LMS-2709 laboratory microprobe station and the JR-27xx series of manual probe stations. Live video preview offers real-time focus and video capture, and auto-exposure and auto-white balance efficiently capture optimal images. The system's standard relay lens furnishes a field of view consistent with a 25× optical magnification. The camera provides a progressive scan of 1.3 megapixels, with 30-bit color depth and red-green-blue capture. *J microTechnology Inc, 3744 Northwest Bluegrass Place, Portland, OR 97229, <http://www.jmicrotechnology.com>*
See www.pt.ims.ca/12305-138

Digital camera resolution chart

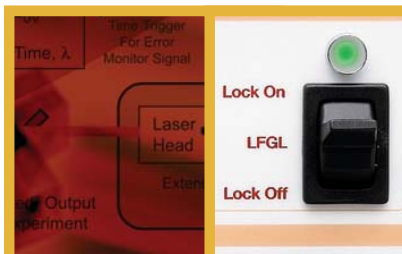
Applied Image's QA-77 enhanced digital camera resolution chart meets the need for higher-resolution targets mandated by the advancement in imaging and optical technologies. The new chart has a resolution range from 100 to 4000 line widths per picture height on the central hyperbolic wedges and up to 2000 on the corner wedges. This is twice the resolution performance specified



in the ISO 12233 standard. Other features include star targets, short line-pair series, and slanted short line-pair series. The QA-77 target is available on reflective material in three sizes: 100 × 178 mm, 200 × 356 mm, and 400 × 711 mm. To further aid with the measurement analysis of the target, the company offers Imatest software that enables measurement of the sharpness and image quality of digital camera and digitized images. *Applied Image Inc, 1653 East Main Street, Rochester, NY 14609, <http://www.aig-imaging.com>*
See www.pt.ims.ca/12305-139

Imaging signal processor

C&D Technologies has announced the ADCDS-1603, a video signal processor designed for electronic imaging applications that use CCDs as their photo-detectors. The device incorporates a



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configurable input amplifier, a correlated double sampler, and a 16-bit sampling AD converter in a 40-pin TDIP package. The CDS circuit eliminates the effects of residual charge and charge injection and kT/C noise on the CCD's output floating capacitor. The ADCDS-1603 features three megapixels/s performance, a signal-to-noise ratio of 85 dB at 3 MHz, edge triggering, gain and offset adjustments, precision 2.0-V reference, and a programmable analog bandwidth function. The signal processor can be used for typical applications in digital still cameras, digital video camcorders, and portable CCD imaging devices. *C&D Technologies Inc., Power Electronics Division, 11 Cabot Boulevard, Mansfield, MA 02048-1151, <http://www.cd4power.com>*
See www.pt.ims.ca/12305-140

Remote-head camera

Wilco Imaging is offering the remote-head SUV-Cam, a new camera system from Elmo that is designed for recording professionals. The camera is a small, lightweight system that captures high-resolution (480 horizontal $\times$ 420 vertical TV lines) video and can be quickly viewed on the built-in LCD display or on a TV monitor or projector by using an optional AV interface output. Frame-by-frame playback is easy to access with the single-button bookmark function. The quarter-inch CCD camera incorporates a 3.8-mm lens that produces a 36.5-mm wide-angle field of view at 35-mm film camera conversion. The SUV-Cam is suitable for harsh environments and confined spaces; it includes a recorder main unit with built-in microphone, external microphone output, SD card slot, remote head, and cables. *Wilco Imaging Inc., 7960 Silverton Avenue, Suite 204, San Diego, CA 92126, <http://www.wilcoimaging.com>*
See www.pt.ims.ca/12305-141

Laser scanning microscope

Carl Zeiss MicroImaging has developed the LSM 5 MP system, a laser scanning microscope especially configured for multiphoton microscopy. Highly efficient coatings on the optics ensure minimal power losses of the directly coupled femtosecond lasers. Advanced filter technology guarantees efficient suppression of the exciting light and simultaneous highly sensitive detection. Objective lenses feature optical

correction in the near-R spectral range that allows the optimum use of different IR excitation wavelengths, into ranges of more than 1000 nm. Those wavelengths enable even greater depths of tissue penetration. The LSM 5 MP incorporates the W Plan-Apochromat objective lens with 20 $\times$ magnification at a numerical aperture of 1.0 and a working distance of 2 mm. *Carl Zeiss MicroImaging Inc., One Zeiss Drive, Thornwood, NY 10594, <http://www.zeiss.com/micro>*

See www.pt.ims.ca/12305-142

Photodetector amplifier combination

Opto Diode Corp's ODA-5W-100M photodetector amplifier combination has a visible wavelength responsivity of 40 V/ μ W at 660 nm and a frequency response of 1 kHz. The device features a dark offset of ± 1 mV, dark offset noise of 5 mV rms, and a gain of 100 megohms. The ODA-5W-100M's detector area is 0.100 in. o.d., and its TO-5 package makes the combination easy to integrate and suitable for various applications such as fluorescence and spectroscopy. The device is ideal for low-light-level tasks in which electrical noise levels can affect the photodiode signal if the detector and amplifier are separate components on a printed circuit board. Different gains are available, depending on users' requirements. *Opto Diode Corporation, 750 Mitchell Road, Newbury Park, CA 91320, <http://www.optodiode.com>*

See www.pt.ims.ca/12305-143

Michelson interferometer

PROMET International has introduced the FiBO 300, a phase-shifting, Michelson interferometer that offers 3D surface mapping and visual defect evaluation capability from a portable, vibration-insensitive product. Although pocket sized, the instrument's diffraction-limited optical design and powerful FiBO Code software deliver high-contrast images, accurate readings, and flexible data reports. The FiBO 300's calibrated objectives range from 1.8 $\times$ to 20 $\times$ of actual optical magnification and thus enable such applications as inspection of multimode 125 to 700 μ m fiber connectors, photonic crystal fibers, and microlens arrays. The new interferometer features accurate and precise



measurements in seconds and quick-change, prealigned kinematic adapters. *PROMET International Inc., 4611 Chatsworth Street, Shoreview, MN 55126, <http://www.promet.net>*

See www.pt.ims.ca/12305-144

Interferometer test optics

Melles Griot Optics Group has released new Fizeau interferometer test optics to complement the company's Absolute Fizeau $\lambda/40$ transmission sphere product line. The addition of Absolute Fizeau $\lambda/50$ concave and convex reference spheres will allow users to record and store reference wavefronts for subtraction from interferometric test data and thus improve the system's accuracy. Absolute $\lambda/50$ transmission flats have been added to increase the accuracy of Zygo (Zygo Corp)-style Fizeau surface and wavefront testing interferometers to $\lambda/50$ without the need to store, manipulate, or subtract reference wavefronts during the testing process. Also available will be $\lambda/50$ reference flats to support applications that require reference wavefront subtraction. *Melles Griot Optics Group, 55 Science Parkway, Rochester, NY 14620, <http://www.mellesgriot.com>*

See www.pt.ims.ca/12305-145

New literature

Lumex has published its 350-page catalog titled *Opto-Component Solutions Guide*. It combines into one document four catalogs that cover LED displays, LCDs, eLeds, and SurfeelDs. *Lumex Inc., 290 East Helen Road, Palatine, IL 60067-6955, <http://www.lumex.com>* ■
See www.pt.ims.ca/12305-146

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