

new products

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Lawrence G. Rubin

Focus on sensors

Fiberoptic pressure sensor

FISO Technologies has introduced the FOP-F125 pressure sensor. The ultra-miniature sensor is manufactured directly at the tip of a 125- μm optical fiber, providing an all-glass device assembled without the use of any adhesive. It is biocompatible and suitable for integration in medical devices and in minimally invasive instrument catheters. The front-facing FOP-F125 allows in situ measurements at locations unreachable by standard pressure sensors. The sensor's high resolution and precision in its pressure range of ± 300 mmHg, combined with a fast reading rate, are important when users attempt to detect very quick and subtle pressure variations. The optical nature of the FOP-F125 makes the sensor immune to electromagnetic field or RF interference regularly encountered in operating rooms or MRI devices. *FISO Technologies Inc., 500 St-Jean-Baptiste Avenue, Suite 195, Québec, QC, G2E 5R9 Canada, <http://www.fiso.com>*

See www.pt.ims.ca/16301-131

Three-channel interface module

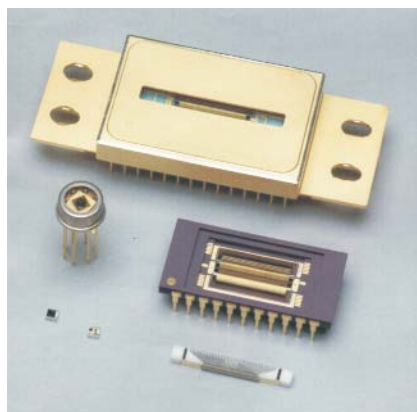
VIP Sensors has announced the model 6006, a Smart Sensors Network three-channel, integrated electronics, piezoelectric module with a fully digital interface. The smart network is a multi-drop transducer communications bus with a high data throughput that supports high-frequency measurements and a high level of synchronization for all channels connected to the network. A smart network controller card and PC software are responsible for sending

commands to each module and receiving and storing sensor data. In the model 6006, gain and offset, filter corner frequencies, and sample rates for an accelerometer are programmable. The module provides data in engineering units, performs self-testing functions of its electronics—all incorporated in the module enclosure—and stores information for identification of each sensor. *VIP Sensors, 302 Calle Paisano, San Clemente, CA 92673, <http://www.vipsensors.com>*

See www.pt.ims.ca/16301-132

Monitoring devices

Hamamatsu Corp has developed several indium gallium arsenide devices for laser diode and dense wavelength division multiplexing (DWDM) monitoring. For use with laser diodes, the G8941 series is a submount and front-illuminated-type PIN photodiode with active areas ranging from 0.3 to 1 mm in diameter. A back-illuminated PIN photodiode, the G9230-01, is eutectic-bonded to a ceramic substrate and has an active area of 0.3 mm o.d. For DWDM monitoring, the G6909-01 (0.8 mm o.d.) is a photodiode array that



features 40-channel parallel readout and low crosstalk. The G9201 to G9204 and G9494 series are image sensors that have each pixel connected to a charge amplifier array. The sensors offer low noise, dark current, and crosstalk; one or two video lines; and wide dynamic range. *Hamamatsu Corporation, 360 Foothill Road, Bridgewater, NJ 08807, <http://www.hamamatsu.com>*

See www.pt.ims.ca/16301-133

Optical switch

The MLX75303 Optical Switch SensorEyeC from Melexis is an integrated sensor IC that incorporates in one chip

a photodiode, transimpedance amplifier, and Schmitt trigger voltage output stage. This guarantees stable light responsiveness over time and relatively independent of temperature, and it also drastically improves noise behavior compared with designs that use discrete photodiodes. The device has applications such as day/night detection, paper-feed detection in copiers and printers, LCD backlight dimming, LED light control, and IR range detection and safety screens. To overcome dirt and dust buildup on light sensors, brighter light must be used; the MLX75303 can continue functioning at high speed, typically 10 μs , while being oversaturated by a light source up to 1000 $\times$ the sensor's switch-on threshold level. *Melexis Microelectronic Systems, 41 Locke Road, Concord, NH 03301, <http://www.melexis.com>*

See www.pt.ims.ca/16301-134

Oxygen concentration detector

The Ocean Optics RedEye Oxygen Patch is a self-adhesive patch that enables quick readings of the presence or absence of oxygen and provides quantitative measurements. Using a combination of proprietary sensing material and optical sensing technologies, the device can be integrated onto the surface of sample containers such as blood bags, pill blister packs, and disposable ventilator oxygen attachments. Depending on the application, with a handheld LED the sample presence of O_2 can be visually determined by color change, or a fluorometer can be used to directly measure the exact O_2 level. RedEye coatings are capable of monitoring such levels in gas to as low as 0.005% and dissolved O_2 in liquids to 20 ppb; higher O_2 levels present in cell culture and respiratory monitoring can also be determined. *Ocean Optics Inc., 830 Douglas Avenue, Dunedin, FL 34698, <http://www.oceanoptics.com>*

See www.pt.ims.ca/16301-135

Isolated probe system

LDS-Nicolet has released the Isobe5600 optically isolated probe system, designed for remote measurements in high voltage, high EMI, and other hazardous environments. A digital link incorporated into the device enables signals to be digitized with an A/D con-



verter close to the test object, transmitted via fiberoptics, processed in digital form, and converted back to an analog signal. The Isobe5600 features a DC to 20 MHz bandwidth, accuracy of 0.3%, 100 dB common mode rejection ratio at 80 Hz, nine voltage ranges from ± 100 mV to ± 50 V, and inputs up to 40 kV (peak AC) with optional probes. A lithium ion battery supplies up to 12 hours of operation. The isolated probe system is available with single-channel transmitter units working with a receiver that supports up to four transmitters. *LDS Test and Measurement, 8551 Research Way, M/S 140, Middleton, WI 53562, <http://www.lds-group.com>*
See www.pt.ims.ca/16301-136

Programmable Hall effect sensors

Allegro MicroSystems has introduced the A1360/1/2, a new family of programmable linear Hall effect sensors, designed for applications, such as high-frequency current sensing, that require high accuracy and increased bandwidth. Each BiCMOS circuit integrates a Hall element; temperature compensation circuitry to reduce its intrinsic temperature drift; a small-signal, high-gain amplifier; a clamped low-impedance output stage; and a dynamic offset cancellation technique. These ratiometric sensors provide a voltage output proportional to an applied magnetic field and benefit from a noise as low as 8 mV peak to peak. The device's bandwidth can be tuned via an external capacitor from 50 kHz to less than 100 Hz. The sensitivity range is programmable from 0.7–1.4 mV/G (A1360), 1.4–4.5 mV/G (A1361), and 4.5–16 mV/G (A1362). *Allegro MicroSystems Inc, 115 Northeast Cutoff, Worcester, MA 01606, <http://www.allegromicro.com>*
See www.pt.ims.ca/16301-137

Level and position measurement

The LM80 from K-TEK is a laser transmitter for noncontact level determination and positioning. It measures level at distances up to 30 m and position

over long distances up to 150 m and can measure any solid surface at any angle with pinpoint accuracy. The laser's low wavelength means a narrower beam with virtually no divergence so that there are no false echoes and no reflections. The LM80 incorporates advanced signal processing software to automatically compensate for color differences in the materials being measured and includes last pulse detection, which selects true signals from among the many that are reflected from dust clouds or other obstacles. Variable gain enables the selection of the best return signal in quickly changing visibility conditions. An optional laser pointer provides precise alignment. *K-TEK Corporation, 18321 Swamp Road, Prairieville, LA 70769, <http://www.ktekcorp.com>*
See www.pt.ims.ca/16301-138

Preamplifier for RTD measurements

Lake Shore Cryotronics has developed the model 3708 eight-channel preamp and scanner for use with the company's model 370 AC resistance bridge. The combination is able to make ultralow voltage noise measurements on resistance temperature detectors—2 nVrms/root Hz—sometimes required for successful use at cryogenic temperatures. The Linear Research model LR-700 AC resistance bridge was revered for many years as the industry standard for those



types of measurements. Lake Shore obtained that company's remaining stock of critical FETs, selected for their unique, low-noise characteristics and crucial to the LR-700's success; the FETs were used in the 3708. The new preamp/scanner is now one of three such devices offered by Lake Shore; users must choose the one that is optimum for a particular RTD. *Lake Shore Cryotronics Inc, 575 McCorkle Boulevard, Westerville, OH 43082, <http://www.lakeshore.com>*
See www.pt.ims.ca/16301-139

Triaxial acceleration sensors

Bosch Sensortec's BMA140 and BMA145 are MEMS-based accelerometers that feature three analog outputs. They are designed to detect inclination, motion,

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shock, and vibration over a wide ± 4 g measurement range. Analog outputs of measured values at three voltage levels are proportional (ratiometric) to momentarily measured acceleration, thus offering a maximum of motion data. The parallel analog signal path provides higher speed of reaction and better resolution compared with integrated A/D converters, multiplexers, and filters that serialize the data. The three outputs can be directed to a serial analog output via a multiplexer. The BMA140 is supplied in a $3 \times 3 \times 0.9$ mm 12-pin LGA package; the BMA145 comes in an ultraflat 16-pin LGA package with a 4-mm edge length. The units offer just $0.9 \mu\text{A}$ current draw in standby mode. *Bosch Sensortec GmbH, Postfach 10 60 50, D-70049 Stuttgart, Germany, <http://www.bosch.com>*
See www.pt.ims.ca/16301-140

Temperature and humidity sensors

Saelig Co has announced the UPSICAP sensors that accurately measure ambient temperature and relative humidity. Recently devised by U. P. S. I. France using its MSS bi-face technology, the tiny elements, measuring 9×9 mm, vary their capacitance with humidity and resistance with temperature. They are interchangeable without recalibration, and their performance is not affected by condensation and water immersion. The UPSICAP devices feature a response time of 0.25 s, a relative humidity range of 0% to 100%, and a temperature range of -85°C to $+85^\circ\text{C}$. Also available are micromodules in which the capacitive humidity cell is directly built on the active substrate's upper side and the digital output conditioner on the reverse side. *Saelig Company Inc, 1160-D2 Pittsford-Victor Road, Pittsford, NY 14534, <http://www.saelig.com>*
See www.pt.ims.ca/16301-141

Weight controller

Hardy Instruments has released the three-inch deep HI 4050 general purpose weight controller now available with the high-level Allen-Bradley remote I/O (RIO) network used to communicate with Allen-Bradley (Rockwell) programmable logic controllers. The HI 4050 includes WAVESSAVER, which eliminates the effects of surrounding vibration on fast, stable weight display and provides C2 elec-

tronic calibration without test weights. The controller also features a secure-digital-based secure memory module for fast transfer of configuration data and Integrated Technician for system diagnostics and troubleshooting. The RIO interface is a direct replacement for the company's HI 2151/30WC and HI 2110WI weighing instruments with RIO. *Hardy Instruments Inc, 3860 Calle Fortunada, San Diego, CA 92123, <http://www.hardyinstruments.com>*
See www.pt.ims.ca/16301-142

Handheld fiberoptic meter

Omega Engineering has introduced the FOH201 compact fiberoptic handheld meter to be used with the company's fiberoptic sensors for temperature, pressure, and strain measurements. The meter incorporates Omega's white-light polarization interferometry, which provides a means for making accurate and absolute measurements of the path-length difference for any type of interferometric fiberoptic sensor; that difference varies according to the parameter of interest. The FOH201 offers



a 20-Hz sampling rate, $\pm 0.003\%$ full-scale resolution, and $\pm 0.01\%$ full-scale precision. It is equipped with a $\pm 5\text{-V}$ analog output and a RS232 communication port for real-time data acquisition and can be remotely controlled from that port or directly from the front-panel keypad. *Omega Engineering Inc, One Omega Drive, Stamford, CT 06907-0047, <http://www.omega.com>*
See www.pt.ims.ca/16301-143

Energy supply for wireless sensors

The TE-Power-Bolt from Micropelt GmbH is a voltage-adjustable thermal battery that uses excess heat to generate electrical energy for devices that consume only a few milliwatts of power, such as wireless sensor nodes. With its microthermogenerator built into an M24 steel screw, the Power-Bolt can harvest energy from surfaces and structures that are $10\text{--}20^\circ\text{C}$ above ambient temperature or directly from hot liquids. Output power can range from 0.2 to more than 15 mW and is voltage stabilized by a DC/DC converter that can be set to fixed voltages between 1.2 and 5 V. The device protrudes about 55 mm from its host's warm or hot surface and, when exposed to fresh air, acts as a never-charge battery; continuous airflow instantly multiplies the output. *Micropelt GmbH, Emmy-Noether-Strasse 2, 79110 Freiburg, Germany, <http://www.micropelt.com>*

See www.pt.ims.ca/16301-144

New literature

Pepperl+Fuchs has published the 2008–2009 *Sensors Catalog & Selection Guide*, which includes almost 900 pages describing advanced sensors and featuring hundreds of new products. Technical and functional information is provided for inductive, capacitive, photoelectronic, and ultrasonic sensors. *Pepperl+Fuchs Inc, 1600 Enterprise Parkway, Twinsburg, OH 44087, <http://www.am.pepperl-fuchs.com>*
See www.pt.ims.ca/16301-145

Agilent Technologies has released a multipart series of Measurement Briefs, which include tips on making temperature measurements and getting the most from data acquisition and data logging equipment and power supplies, based on real applications. *Agilent Technologies Inc, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.agilent.com>*

See www.pt.ims.ca/16301-146

The catalog *Linear Actuators for Precision Motion Control* is available from Physik Instrumente. The brochure presents various submicrometer to subnanometer precise compact actuators that feature novel ceramic piezo motors and classical motors. *Physik Instrumente LP, 16 Albert Street, Auburn, MA 01501, <http://www.pi-usa.us>*

See www.pt.ims.ca/16301-147