

NEW PRODUCTS

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

LAWRENCE G. RUBIN

FOCUS ON SENSORS

Orientation Sensor

MicroStrain has introduced the 3DM-G, an orientation sensor that combines three angular-rate gyros with three orthogonal DC accelerometers, three orthogonal magnetometers, multiplexer, 12-bit A/D converter, and an embedded microcontroller. This design enables the 3DM-G to operate over the full 360° of angular motion on all three axes—pitch, roll, and yaw. The device offers output data in Euler angle, quaternion, or matrix format; the digital serial output can also be programmed to provide scaled sensor data from all nine sensors. The 3DM-G, reportedly the smallest commercially available inertial measurement unit, features an angular velocity range of $\pm 300^\circ/\text{s}$ (maximum), an orientation angle resolution of less than 0.1° , and a repeatability of 0.10° . *MicroStrain Inc, 310 Hurricane Lane, Suite 4, Williston, Vermont 05495, <http://www.microstrain.com>*

►Circle number 181 on Reader Service Card

Noncontact Laser Sensors

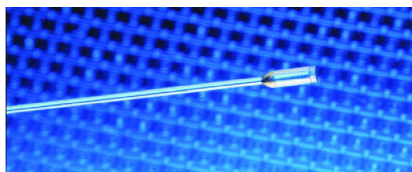
LMI Selcom has announced the LNS, a noncontact laser nanosensor that uses auto-focus principles and offers a resolution as fine as 5 nm and a frequency response rate of up to 300 kHz. The LNS incorporates laser diodes, a holographic diffraction grating (beam splitter), and a bar diode in a package 64 mm long and 20 mm in diameter. It has a measuring range from 8.8 to 300 μm (depending on the model selected), with an accuracy better than 0.5% of the measuring range. The LNS is available in four standard modules with standoff distances (the distance from the sensor to the middle of the measuring range) ranging from 2.3 to 26 mm. The sensor is useful for quantifying surface roughness of any highly reflective material such as glass, silicon wafers, or lenses, and material with mirror-type finishes. *LMI Selcom Inc, 21666 Melrose*

Avenue, Southfield, Michigan 48075, <http://www.lmint.com>

►Circle number 182 on Reader Service Card

Refractive Index Transducer

The RI transducer from FISO Technologies is based on the variation of a liquid-filled Fabry-Perot cavity length to precisely determine the refractive index of the liquid using white light interferometry. The measured RI will correspond to the averaged RI as covered by the light



source, which is centered around 800 nm. The refractive index range of the transducer is from 1.0000 to 1.7000, with a resolution of 0.0001. The transducer is compatible with the company's 4-, 8-, 16-, or 32-channel fiber-optic signal conditioners. The signal conditioners can perform the refractive index measurement without the need for complex calibration tasks, thus allowing the transducer to be zeroed in air. *FISO Technologies Inc, 2014 Jean-Talon North, Bureau 125, Sainte-Foy, Quebec, Canada G1N 4N6, <http://www.fiso.com>*

►Circle number 183 on Reader Service Card

Gear-Tooth Speed Sensor

Allegro MicroSystems has announced the ATS665, a true zero-speed, high accuracy, gear-tooth speed sensor incorporating an optimized Hall-element integrated circuit and samarium cobalt magnet. The differential Hall-element configuration reportedly is superior to a classical single-element, gear-tooth sensor. The most significant advantage of the ATS665 is its insensitivity to air-gap variation. The algorithm of this device

tracks the peaks of the signal and sets the switching thresholds, which are established as a percentage of peaks, thus maintaining switch points around the zero crossing. The higher resolution D/A converter steps minimize the impact of signal variation on switching accuracy. The ATS665 device is offered in the company's SG, a single-step, over-molded package. *Allegro MicroSystems Inc., 115 Northeast Cutoff, Worcester, Massachusetts 01606, <http://www.allegromicro.com>*

►Circle number 184 on Reader Service Card

Guidance, Navigation, and Control System

BEI Systron Donner Inertial has introduced the C-MIGITS family of products for applications requiring guidance, navigation, and control. The system provides a single source of information for position, velocity, time, attitude, altitude, heading, acceleration, and angular-rate data. The heart of C-MIGITS is the company's digital, quartz inertial-measurement unit, which incorporates micro-machined quartz rate sensors and vibrating quartz accelerometers. That unit is combined with a 12-channel coarse/acquisition-code global positioning system (GPS) receiver; the C-MIGITS can maintain accurate system navigation, even with the loss of GPS. Applications for the new miniature system include targets and drones, range instrumentation, long-haul commercial transportation, and helicopters. *BEI Systron Donner Inertial Division, 2700 Systron Drive, Concord, California 94518-1399, <http://www.systron.com>*

►Circle number 185 on Reader Service Card

Eddy-Current Displacement Sensor

Micro-Epsilon's eddyNCDT 3300 is a controller for use with the company's eddy-current noncontact displacement transducers. It achieves optimum accuracy for any metallic measurement object and under any installation conditions. It offers the following functional features: limit monitoring, autozero, peak-peak value, minimum, maximum, and selectable low-pass filters. The 3300 uses a temperature compensation measurement coil to provide stability values of 0.2% per °C and incorporates an analog system with a frequency response up



to 100 kHz. Thirteen transducer models are available to cover the measuring range from 0.5 to 80 mm with a linearity of 0.2% of full scale and a resolution of 0.01% of the measurement. *Micro-Epsilon, 3200 Glen Royal Road, Suite 110, Raleigh, North Carolina 27617-7419, <http://www.micro-epsilon.com>*

►Circle number 186 on Reader Service Card

Embedded Sensing Module

The QTM2000 from Quantum Research group is a module that can be used for proximity detection, fluid-level sensing, moisture detection, and industrial controls, where it is desirable to embed a complete sensing circuit onto a printed-circuit board. The module incorporates the company's charge-transfer capacitance sensor QT9701B2 integrated circuit and its operating circuitry into a single 24-pin DIP package. The QTM2000 offers many features, including multistage internal digital filtering, 200 μ s response time, 200 to 1400-ns selectable drive pulse width, four-stage charge cancellation for large load capacity, and postdetection processing. It also provides programmable sensitivity, hysteresis, detection mode, and drift compensation. *Quantum Research Group Ltd, 651 Holiday Drive, Building 5, Suite 300, Pittsburgh, Pennsylvania 15220, <http://www.qprox.com>*

►Circle number 187 on Reader Service Card

Differential Sensor Signal Conditioner

ZMD America has announced the ZMD31020, a signal conditioner for sensors with a differential output signal. The device provides digital correction and compensation of sensor offset, gain, temperature sensitivity, and nonlinearity through an on-chip microcontroller running a correction algorithm. A bidirectional digital seri-

al interface enables a PC-controlled calibration procedure. The ZMD31020 provides an analog multiplexer for differential sensor signal and temperature; a chopper-stabilized amplifier, programmable to three gains; 12-bit resolution for the sensor signal, 10 bits for temperature; cancellation of chip-related offset in sensor and temperature signal through short-circuit input switch and subtraction routine; and a correction formula based on seven calibration coefficients. *ZMD America Inc, 201 Old Country Road, Suite 204, Melville, New York 11747, <http://www.zmda.com>*

►Circle number 188 on Reader Service Card

Laser Scan Micrometer

Edmund Industrial Optics has released the laser scan micrometer, a bench-top instrument whose high scanning speed of 226 m/s allows inspection of small, high-temperature, or fragile workpieces even during motion or vibration. The micrometer, which can also measure transparent objects, has a measuring range from 0.5 to 60 mm with selectable resolution from 50 nm to 0.1 mm and a



repeatability of 0.6 μm . Two items may be measured simultaneously, and measurement conditions can be set and later recalled. The instrument provides analysis functions, including elimination of data exceeding the tolerance limit and automatic measurement with edge specifications. Users may specify segments, edges, reference values, resolution, and laser power deterioration. *Edmund Industrial Optics, 101 East Gloucester Pike, Barrington, New Jersey 08007-1380, <http://www.edmundoptics.com>*

►Circle number 189 on Reader Service Card

Isolated Transmitters

Acromag's 851T Intellipack signal conditioners are isolated transmitters that accept signals from sensors wired in a Wheatstone bridge configuration for use in measuring force, weight, level, torque, acceleration, pressure, and vibration. The trans-

mitter's input circuit allows true six-wire bridge measurement and includes an adjustable bridge excitation supply of 4–11 V with a remote sense feature. Signal processing functions include strain calculations, signal linearization (25 breakpoints), and average signal computations. The 851T's 16-bit sigma-delta A/D converter enables a resolution of $\pm 0.01\%$ of span. User-programmable outputs include both current and voltage ranges; a relay output is optional. *Acromag Inc, P.O. Box 437, 30765 South Wixom Road, Wixom, Michigan 48393-7037, <http://www.acromag.com>*

►Circle number 190 on Reader Service Card

Hand-held Mechanical Tester

Instron Corp has introduced the In-Spec 2200 Hand-Held, reportedly the industry's first hand-held mechanical tester. This portable instrument is for applications in which it is more efficient to bring the tester to the specimen than to bring the item to the lab. The In-Spec 2200 easily converts between two test modes: push-pull and tension-compression. In the push-pull mode, the force is reacted against the object itself; in the tension-compression mode, the force is reacted against a built-in crosshead. In both modes, the tester applies load or displacement at known, repeatable speeds. The new device is equipped with a color, personal digital assistant that monitors, tests, captures results, and easily connects to networks. *Instron Corporation, 100 Royall Street, Canton, Massachusetts 02021, <http://www.instron.com>*

►Circle number 191 on Reader Service Card

Noncontact Angular Encoder

Renishaw has announced the RGH20 read head that incorporates the company's RESR angular encoder system. The read head is designed with a taper mount that reportedly overcomes runout errors and is available in outside diameters from 52 to 413 mm. Performance features include angular resolution down to ± 0.01 arc second, accuracy to 1 arc s, zero backlash, and up to 129.6 million counts per revolution. The RGH20 offers outputs of 5, 1, 0.5, 0.2, 0.1, 0.05, 0.02, and 0.01 μm . *Renishaw Inc, 5277 Trillium Boulevard, Hoffman Estates, Illinois 60192, <http://www.renishaw.com>* ■

►Circle number 192 on Reader Service Card