

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

Precision Barometer

The Honeywell precision barometer uses silicon sensor technology with microprocessor-based signal compensation for temperature variations. The model HPB, for barometer applications, has a pressure range of 500–1200 mbars (50–120 kPa) and a resolution of 0.01 mbar. The model HPA is for altimeter applications, with a pressure range of 0–17.6 psia (0–1200 mbars) and a resolution of 0.001 psi. Both instruments include a user-selectable sample rate of 8.33 ms to 51.2 min and offer a two-tiered measurement uncertainty (from –40 to 85°C): ± 0.4 mbar or ± 0.8 mbar for the HPB and $\pm 0.03\%$ of full scale (fs) or $\pm 0.06\%$ fs for the HPA. For applications demanding low power, such as remote meteorological stations and ocean data buoys, the HPB contains a power control feature that minimizes power consumption between data logging. To accommodate computer interface applications, a converter is available for the HPB and HPA. *Honeywell, Solid State Electronics Center, 12001 State Highway 55, Plymouth, Minnesota 55441*

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Capacitive Readout Integrated Circuit

MicroSensors has announced the MS3110, an ultralow-noise, programmable integrated circuit (IC) to support a variety of MEMS sensors that require a high-resolution capacitive readout interface. The MS3110 works with either a single capacitive sensor or a differential capacitor pair and is capable of sensing capacitance changes down to 4 aF per root hertz. The IC provides a high-level output signal linear with the full range of sense capacitance, has provisions for trimming the gain and output offset, and offers a nine-step programmable bandwidth adjustment from 0.5–8 kHz. There is an on-chip capacitor for initial differential adjustments and

for quasi-differential operation with a dummy capacitor. Applications include accelerometers and also pressure, velocity, rate, and motion sensors. *MicroSensors Inc, 3001 Redhill Avenue, Building 3, Costa Mesa, California 92626*

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Quartz Pressure Calibrator

The model 8100 quartz pressure calibrator from Mensor comprises a color touch-screen display, an electronic module, and a pneumatic module that allows fast removal or installation of the company's individual quartz resonator transducers for recalibration or range change. The transducers are available in ranges from 15 to 1500 psia (1–100 bars) and provide temperature compensation from 15 to 35°C. They offer high resolution (up to 1 ppm, depending on



range), 0.003% of full-scale (fs) control stability, and an accuracy of 0.007% fs $\pm 0.003\%$ of reading. The 8100 provides a rate of 32 readings/s, with a response time of 0.33 s per fs step. As options, the calibrator can be supplied with two quartz transducers and with multiple ranges for each transducer. *Mensor Corp, 2230 Interstate Highway 35 South, San Marcos, Texas 78666*

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Pressure–Temperature Sensor

Texas Instruments has introduced the PT series pressure sensor that is

combined with a negative temperature coefficient (NTC) thermistor to read media temperature. The ceramic pressure transducer is a 0–5 V DC high-level output design that requires no amplification; the voltage output is ratiometric to supply voltage. The transducer is offered in 0–10 and 0–34.5 bar ranges with $\pm 0.75\%$ of span measurement uncertainty. The NTC thermistor is placed directly in the fluid stream, which reportedly provides faster response time and greater accuracy than would encased or pipe-mounted sensors. The thermistor has either 10 or 100 kilohm values at 25°C with a temperature range of –40 to 135°C and a $\pm 1\%$ measurement uncertainty. The PT series devices are available in a steel or brass housing with a variety of pressure fittings. *Texas Instruments Sensors and Controls Inc, 34 Forest Street, P.O. Box 2964, Attleboro, Massachusetts 02703-0964*

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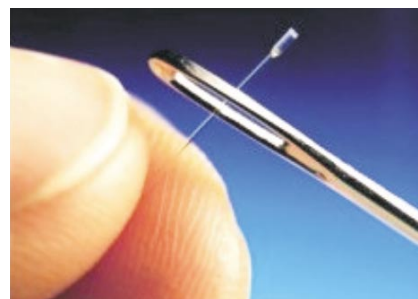
Temperature-Sensing System

Minco Products now offers the Thermal Vial temperature-sensing system for laboratory refrigerators and freezers. The system includes a platinum resistance temperature detector (RTD); a 4- to 20-mA transmitter, match-calibrated to the RTD for $\pm 0.75\%$ of span system accuracy, and a fluid-filled container to mimic the thermal response of other freezer contents for ultralow freezer, cryogenic storage, blood bank, and other medical and scientific storage applications to –269°C. The sealed polyethylene Thermal Vial container acts as a thermal ballast to delay reaction and provide a repeatable time response; it can be filled with cryopreservatives, alcohol, water, ethylene glycol, or other solutions to emulate the stored or processed material. The large (50 × 50 mm) footprint provides stability on a shelf or rack. *Minco Products Inc, 7300 Commerce Lane, Minneapolis, Minnesota 55432-3177*

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In-Vivo Pressure Transducer

The model FOP-M-055-300 from FISO Technologies is a fiberoptic, disposable, blood-pressure transducer designed for in-vivo blood-pressure, intrauterine, and intracranial measurements. The device is located at the tip of a (user-



supplied) catheter, internal to the body, and uses a white-light interferometric interrogation technique to measure pressure from 50 torr below atmospheric to 300 torr above. Resolution is 0.5 torr and precision is ± 1 torr or $\pm 1\%$ of reading, whichever is greater. Sampling rate is 200 Hz and frequency response is 50 Hz. Due to the optical nature of the transducer and transmission line, the system is insensitive to cable bending and high levels of EMI. The device has an 0.55-mm o.d. × 0.5-mm sensing section and an 0.25-mm o.d. fiberoptic section. *FISO Technologies Inc, 2014 Jean-Talon North, Bureau 125, Sainte-Foy, Quebec, Canada G1N 4N6*

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Differential Variable Reluctance Transducer

MicroStrain has announced an ultraminiature differential variable reluctance transducer (UM-DVRT) for measuring strain in small joints and tight spaces. Although the device is available in a two-coil (differential) configuration, the single-coil UM-DVRT design may prove superior with its diameter of less than 1 mm when an application demands extremely small size, such as monitoring strain in knee ligaments. The UM-DVRT's stroke range of 2 mm will provide a strain measurement range of 15% and an accuracy of $\pm 0.18\%$ strain. The nonlinearity over the 2-mm stroke range is $\pm 1.5\%$; that is reduced to $\pm 0.75\%$ over 1 mm. It is recommended that the single-coil design be used with the company's temperature compensating signal conditioner, DEMOD-DVRT-TC. The UM-DVRT is supplied with a multi-stranded, Teflon-insulated cable to provide superior resistance to lead wire breakage. *MicroStrain Inc, 194 North Winooski Avenue, Burlington, Vermont 05401*

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Differential Angular Measuring System

Kaman Instrumentation's DIT-5200 is a differential system that can make noncontact precise angular measurements. These measurements are critical in applications such as pointing and tracking, fast-steering mirrors, laser-beam communications, image stabilization, and forward-looking IR. Using eddy current, balanced-bridge technology, the DIT-5200 offers nanoradian resolution, high-gain analog DC output, and a low-noise floor. The system has a thermal stability of $\pm 0.03\%$ of full scale per degree Celsius. It is linear down to 0.1% of full range with a sensitivity up to 400 mV per μm , and is available in single- and dual-channel configurations. *Kaman Instrumentation, 3450 North Nevada Avenue, Colorado Springs, Colorado 80907*

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High-Current Monitor

Ion Physics has introduced the model CM-1-BS4 current monitor that can measure 50-kA pulses with 0.01 V/A sensitivity. Current monitors are wide-band current transformers that can be placed around a current-carrying conductor or a charged-particle beam to measure AC or pulsed currents without requiring a direct connection. If DC is present, it can affect the droop and saturation characteris-



tics of the monitors. The CM-1-BS4 has a maximum droop of 0.125% per ms, a usable risetime of 85 ns, a 3-dB bandwidth extending from 0.2 Hz to 4 MHz, and a maximum allowable fidt value of 1.5 ampere-seconds. The device measures 180 mm o.d. $\times$ 66 mm i.d. $\times$ 46 mm thick, and is encased in a conducting shield to minimize electrostatic pickup. *Ion Physics Corp., 11 Industrial Way, Atkinson, New Hampshire 03811*

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Temperature Microprobes

Physitemp Instruments offers a range of flexible Teflon microprobes used for implantation in brain and muscle tissue, blood vessels, spectrophotometer cuvettes, and in water baths. The sealed microprobes are made from type T (copper/constantan) thermocouple wire and have sensor leads as small as 0.009 inch in diameter. Their small mass results in fast response times, with time constants as low as 5 ms. The probes do not require individual calibration and are interchangeable in any type T thermocouple thermometer readout; temperature measurement uncertainty is 0.1°C within the physiological range. Custom probes are available for special applications. *Physitemp Instruments Inc., 154 Huron Avenue, Clifton, New Jersey 07013.*

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Airborne Particulate Sensor

MIE has introduced the pDR-1000AN (personal DataRAM) that provides continuous real-time particle concentration measurements of airborne dust, smoke, mist, and fumes; the measurement range is 0.001–400 mg/m^3 (autoranging). The instrument's optically feedback-stabilized sensing system produces optimal volume response to particles in the size range of 0.1–10 μm , reportedly achieving high correlation with standard gravimetric measurements. The pDR-1000AN's two-line LCD readout continuously displays both real-time and time-averaged concentration values, updated every second. It also offers digital signal outputs and an alarm output with a programmable switch. *MIE Inc., 7 Oak Park, Bedford, Massachusetts 01730*

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On the Web

Nuclear Associates has announced their Big Book Catalog online (http://www.nucl.com/Nuclear_Associates/index.htm). Products cover many modalities including radiology/fluoroscopy, mammography, nuclear medicine, ultrasound, radiation protection, radiation oncology, health physics and radiation monitoring, and magnetic resonance imaging/tomography. *Nuclear Associates, 100 Voice Road, Carle Place, New York 11514-0349* ■

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