

NEW PRODUCTS

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LAWRENCE G. RUBIN

FOCUS ON MAGNETICS

Passive Solid-State Magnetic Sensors

Spinix has developed miniature magnetic sensors based on the magnetostrictive and the piezoelectric effects. In response to a magnetic field, the device's magnetostrictive component imparts a strain on a piezoelectric element that in turn produces an electrical output signal. The new passive solid-state magnetic (PSSM) sensors consume no electrical power and can produce an electrical signal of more than 200 mV/mT. A PSSM sensor used as a magnet-wheel or gear-speed sensor has a sensitivity-independent frequency range of 0.3 Hz–10 kHz, and a very low temperature-dependent sensitivity over the -40 to 125°C range. A PSSM electrical current sensor does not have a zero-offset voltage, requires no temperature compensation, and can be designed to maintain linearity in magnetic fields higher than 0.1 T for measurements of large currents. *Spinix Corp., 351 Rheem Boulevard, Moraga, California 94556*

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Hall Effect Gaussmeters

F. W. Bell has introduced a new line of high-accuracy, high-speed, Hall effect gaussmeters, the 7000 series. The instruments display seven parameters per channel: flux density, minimum, maximum, peak, and valley values, frequency, and temperature. The three-channel model 7030 (the 7010 is single-channel) adds vector summation and angle. The new gaussmeters feature 50 kHz frequency response for the measurement of AC fields and operate with the company's line of more than 100 fifth-generation Hall effect probes that include three-axis designs for vector summing requirements; the probes also provide temperature compensation. Both meters incorporate corrected and uncorrected analog outputs for each channel, digi-

tal outputs for classifier tests, and IEEE-488 and RS-232 communications ports. *F. W. Bell, division of Bell Technologies, 6120 Hanging Moss Road, Orlando, Florida 32807*

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Digital Motor Drives

Two new universal digital motor drives from MCG deliver motor velocity regulation and torque control, and incorporate optically isolated input-outputs. The model DSD features five modes of operation, including velocity



mode with analog inputs, presets, and summation; analog torque command; pulse follower with step-up and step-down pulses; step/direction; and encoder. The DSI drives are capable of homing (returning to a predefined position) and executing up to 16 different moves including incremental and absolute. They include a simple indexing capability that does not require a command source. The drives offer a diagnostic status display with multiple protection features and circuits. Both models provide user-assignable inputs and outputs. The company can supply a variety of motors for use with the drives, including brush and brushless servo motors, and step motors. *MCG, 14700 Martin Drive, Eden Prairie, Minnesota 55344*

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Adiabatic Demagnetization Refrigerator

Janis Research has announced a cryogen-free, two-stage adiabatic demagnetization refrigerator (ADR) and superconducting magnet system. The ADR system includes a magnetic shield to provide a field-free environment for cooling field-sensitive detectors. It offers a typical hold time of more than three days below 100 mK with no added heat load (reaching a base temperature of approximately 60 mK) and a recycling period of about three hours. The system uses a 4 K pulse-tube closed-cycle refrigerator and has internal isolation against the vibrations that occur during the cooling cycle. Standard thermometry is supplied at the two stages of the ADR, at the two stages of the refrigerator, and at the magnet. Power supplies are available for charging and discharging the magnet during the magnetization and demagnetization cycles. *Janis Research Co, 2 Jewel Drive, P.O. Box 696, Wilmington, Massachusetts 01887*

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NMR Magnetic Field Camera

GMW Associates has announced the MFC-3045, an NMR magnetic field camera from Metrolab Instruments SA of Switzerland. The system is suitable for MRI (magnetic resonance imaging) magnet mapping applications such as inhomogeneity analysis, shim coil and gradient coil characterization, and superconducting magnet decay monitoring. The NMR measurement of the field provides a resolution of 0.2 ppm with a typical measuring time of five seconds. The system incorporates up to

96 NMR probes, measured simultaneously, and mounted onto a probe-array unit that is designed for any field value (adjustable over a $\pm 2\%$ range) from 0.08 to 7 tesla (3.4 to 300 MHz) and whose position accuracy is better than ± 0.3 mm. The array configuration is normally a half-moon that rotates around the field axis, but other configurations can be built to customer specifications. *GMW Associates, 955 Industrial Road, San Carlos, California 94070*

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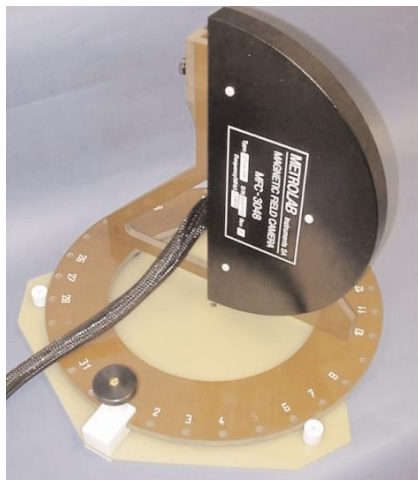
Portable Fluxgate Magnetometer

Walker Scientific has introduced the FGM series battery-powered fluxgate magnetometers that consist of ten models—eight single axis and two triaxial. DC magnetic fields can be measured with an accuracy of $\pm 0.5\%$ (± 1 count) and offer a linearity of better than $\pm 0.02\%$ on all ranges (± 20 , ± 200 , and ± 2000 mG, full scale); the resolution is 0.01 mG on the 20-mG range. An optional nulling or relative display feature can be used to offset ambient fields up to ± 600 mG; in that mode, the model FGM-5DTAA offers an accuracy of $\pm 0.25\%$ of reading. The triaxial magnetometers can measure the three vectors of the field simultaneously, displaying individual vectors or the resultant vector and its direction with a range up to 2000 mG. The FGM series incorporate a $3\frac{1}{2}$ -, $4\frac{1}{2}$ -, or 5-digit display and all have a buffered analog output DC to 100 Hz, with an optional DC to 400 Hz response. *Walker Scientific Inc, Rockdale Street, Worcester, Massachusetts 01606*

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Polymer-Bonded Magnets

Electron Energy Corporation (EEC) has developed a new line of polymer-bonded magnets based on a technology that embeds rare earth metallic powder in a polymer matrix during the manufacturing process. EEC reports that, in addition to the advantages of attractive magnetic properties with superior shaping capabilities, one series of products maintains high-temperature stability to higher than 300 °C, well above the temperature limit of previous rare earth bonded magnets. The new line uses a ram-extrusion technology that can produce magnets with unlimited length as well as the highest magnetic energy achievable in the industry.



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The EEC bonded magnets include a line incorporating samarium/cobalt particles, resulting in anisotropic magnetic properties and the highest operating temperatures. Another set of products makes use of neodymium/iron/boron powder with isotropic properties and lower cost. *Electron Energy Corp, 924 Links Avenue, Landisville, Pennsylvania 17538*

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Linear Motor Stage

The ALS130 motor stage from Aerotech uses a center-driven non-cogging linear motor as the driving element. Reportedly, this design has no backlash, windup, or "stiction" normally associated with a lead-screw or ball-screw drive. The ALS130 provides a step-to-step resolution of 20 nm when coupled with the company's MXH series multiplier box. The linear motor drive offers a top speed of 500 mm/s and a peak unloaded acceleration of 1G. Cross-roller bearing models of the ALS130 feature ripple-free motion required for scanning, inspection, and fiberoptic applications. Where higher duty cycles or larger loads must be accommodated, the linear motion guide bearing is better suited. ALS130 series stages are available as XY assemblies with an option for precision orthogonality alignment to 5 arc seconds. *Aerotech Inc, 101 Zeta Drive, Pittsburgh, Pennsylvania 15238-2897*

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Magnetic Measurement System

Shb Instruments has introduced the model 110 Magnetic Measurement Systems to extend the application of hysteresis loop tracers to new areas. The systems are designed to make BH loop, magnetoresistance, and magnetostriction measurements on a wide variety of both magnetically hard and soft thin-film materials. The model 110T provides a maximum magnetizing field of 10 kOe in the

normal axis direction, 200 Oe in the transverse axis, and can handle a substrate diameter of 25 mm. The model 110L can accommodate up to 200-mm-diameter substrates at fields up to 3 kOe normal and 75 Oe transverse. The systems feature real-time loop display and measurements on films as thin as 0.3 nm with a sweep frequency range of 0.05–10 Hz. All instruments are equipped with a "pattern memory" feature to digitally cancel ambient fields, allowing operation at high sensitivity in noisy magnetic environments. *Shb Instruments Inc, 19215 Parthenia Street, Suite A, Northridge, California 91324*

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Magnetic Encoder

NorthStar Technologies has developed the H20M, a new 2-inch magnetic digital encoder intended for heavy-to medium-duty industrial applications. The H20M is designed using magneto-ASIC (application specific integrated circuit), Hall effect sensing technology, said to provide more durability than the more fragile optical encoders. Weighing only 15 oz, the encoder is compact—perhaps the smallest of any encoder used in process industries. The H20M has a maximum operating frequency of 120 kHz and withstands vibration of 5 Hz to 2 kHz at 20 G. It provides a current output of 150 mA with a differential line driver. When used with couplings, the encoder can be installed with a variety of mounting options, including flange or servo mounting. *NorthStar Technologies Inc, 575 McCorkle Boulevard, Westerville, Ohio 43082*

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High-Energy Product Magnet

Magnetic Component Engineering has announced that N5062, a sintered, high-energy-product neodymium/iron/boron permanent magnet alloy is available in large cross section. It is guaranteed to have a minimum energy product of 48.5 MGOe, and a nominal value of 50 MGOe. The remanent field, B_r , of the material is 14.1 kG minimum, without compromising the intrinsic coercivity, H_c , with a minimum of 12.0 kOe. Applications include electro-optics, microwaves, high-performance motors, and sensors. *Magnetic Component Engineering, 23145 Kashiwa Court, Torrance, California 90505* ■

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