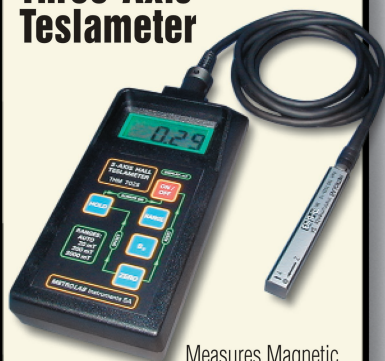


Magnetic field

Three-Axis Teslameter



Measures Magnetic Field (B) and the three components B_x , B_y and B_z . Suitable for fringe field mapping and safety surveys. RS-232 interface.
Price: \$1990 ea. USA list.

www.gmw.com

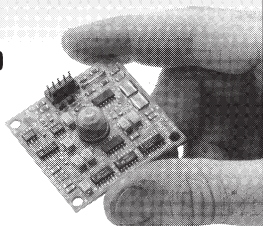
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New Products

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

Programmable Hall Effect Sensor

The MLX 90251, a programmable, linear, Hall effect sensor from Melexis, is fabricated using silicon-MOS technology. Designed for linear and rotary position sensing, the device possesses active error-compensation circuitry to minimize the offset error, V_{oq} (the output voltage at zero magnetic field). That parameter is programmable, as are the device sensitivity, slope direction, clamping level, bandwidth, first- and second-order temperature coefficients of sensitivity drift, and the thermal V_{oq} drift. The MLX 90251 incorporates a 128-bit reprogrammable redundant EEPROM. The sensor's ratiometric output is proportional to the supply voltage. When using the supply voltage as a reference for the A/D converter, voltage fluctuations of $\pm 10\%$ will not affect accuracy. *Melexis USA, 41 Locke Road, Concord, NH 03301, <http://www.melexis.com>*

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Linear Image Sensor

Hamamatsu Corporation has introduced the S9226 CMOS linear image sensor designed for image input applications. It features high sensitivity, a typical dark current of 3 fA, and a typical readout noise of 0.3 mV at low gain and 0.6 mV at high gain. It has a maximum video data rate of 200 kHz. The device incorporates a built-in timing generator that allows operation with only start- and clock-pulse inputs and a signal processing circuit that uses a charge amplifier with excellent input/output characteristics. The S9226 covers the spectral range of 400–1000 nm and achieves a peak relative sensitivity of 100% at 700 nm. It can be operated by a single 3.3-V power supply. The sensor features 1024 pixels that are 125 μm in height and a pitch of 7.8 μm ; the result is an active area length of 7.987 mm. *Hamamatsu Corporation, 360 Foothill Road, P.O. Box 6910, Bridgewater, NJ 08807, <http://usa.hamamatsu.com>*

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Interface for Pressure Standard

A new serial interface has been added to Pressure System Inc's series 970 Intelligent Quartzonix pressure standard to enable users to switch between RS232 and RS485 protocols. The series 970 combines a vibrating quartz beam technology with low-power miniature digital electronics to achieve a compensated $\pm 0.01\%$ FS (full scale) static accuracy and a resolution of $\pm 0.00007\%$ FS. The pressure standard has a stability of better than $\pm 0.01\%$ FS over six months. It is



available in pressure ranges up to 3400 kPa, including a barometric pressure range of 76–110 kPa. The 970 is capable of up to 12 readings per second. Standard calibrated temperature range is 0–60°C with an optional range of –20°C to +70°C. Acceleration sensitivity is +0.004% FS/g and vibration sensitivity is +0.001% FS/g. *Pressure Systems Inc, 34 Research Drive, Hampton, VA 23666, <http://www.pressuresystems.com>*

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Improved Base Metal Thermocouple

Watlow Electric Manufacturing Company has developed the WATCOUPLE to offer more accurate measurements and less drift than type K thermocouples. The new sensor uses alloy 600 and nickel-silicon alternative metals to provide four times more accuracy than type K (special limits), three times less drift, and it lasts three times longer than type K.

The WATCOUPLE is also based on the IEEE 1451.4 standard, so it automatically communicates its individual voltage table, calibration, manufacturing, and traceability information. A WATCOUPLE is more accurate than class A resistance temperature detectors above 100°C and exhibits a maximum peak temperature rating of 1316°C with a maximum continuous temperature rating of 1177°C. The new thermocouple is available in all standard sizes and configurations. *Watlow Electric Manufacturing Co, 12001 Lackland Road, St. Louis, MO 63146, <http://www.watlow.com>*

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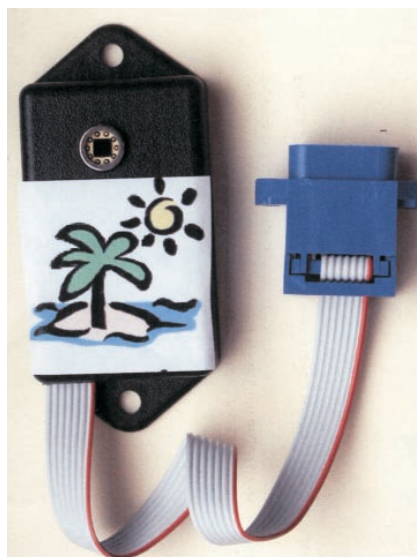
Sound Level Analyzer

Bruel and Kjaer has announced the Type 2550 hand-held sound level analyzer with a 120-dB dynamic measurement range. The instrument's high-resolution touch screen has different color schemes optimized for viewing outdoors and indoors, both day and night. The basic SLM module incorporates hardware, including a microphone/preamplifier assembly, and sound level meter software that enable simultaneous measurements of rms and peak levels, each with its own frequency weighting, over a 3 Hz–20 kHz linear frequency range. With a 20-megabyte internal memory, up to 1000 measurements can be stored at any one time. An optional module (BZ 7223) provides real-time frequency analysis in 1/1- or 1/3-octave filter bands; the BZ 7224 module allows free selection of up to 10 parameters to log at intervals from 1 s to 24 h. *Bruel & Kjaer North America Inc, 2815-A Colonnades Court, Norcross, GA 30071, <http://www.bkhome.com>*

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Positioning Module

The SiQu9UV-M from Phresh Photonics is a positioning module that combines a silicon quadrant photodiode with amplifiers and position-sensing circuitry. The device has excellent wavelength response in the UV, visible, and NIR (190–1000 μm) and can thus be used with almost any light source. The SiQu9UV-M circuit provides for amplification of each quad element's current, with voltage outputs of both the sum of the quadrants and the differences of top minus bottom and left minus right. The module can be used to accurately determine the location, position, and movement and the intensity fluctuations of a light beam. This version is supplied with a 3 mm $\times$ 3 mm UV-enhanced



reponse silicon quadrant detector with 100- μm separation between quadrants. Alternative versions with larger quads are also available. *Phresh Photonics, 5737 Kanan Road, Suite 217, Agoura, CA 91301, <http://www.phreshphotonics.com>*

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Vacuum Transducer

MKS Instruments has announced the HPS series 901P Loadlock Transducer for use in applications requiring a wide range of pressure sensing capabilities. The new gauge combines the company's MicroPirani sensor (absolute pressure) and a unique piezo sensor. The MicroPirani is made of a 1-mm-square silicon chip that allows measurements to be made in a small volume. The 901P can read pressures down to 10^{-5} torr, or two decades below a standard Pirani. The piezo device is a differential pressure sensor that measures from 760 torr below to 760 torr above atmospheric pressure. In addition, the piezo sensor provides a gas-independent absolute pressure measurement from 50 to 1000 torr with an accuracy of better than 1% in that range. The 901P provides an analog output based on the readings of both sensors. *MKS Instruments, HPS Products, 5330 Sterling Drive, Boulder, CO 80301, <http://www.mksinst.com>*

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Analog Accelerometer Module

The model 2220 accelerometer module from Silicon Designs combines a model 1221L accelerometer with high-drive, low-impedance buffering

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for measuring acceleration. The module incorporates a sealed, micromachined, capacitive sense element, a custom IC sense amplifier, and differential output stages. Six models are available, with input ranges of +2 to +100 g and frequency responses of 0–400 Hz (for the +2 g model) up to 2500 Hz for the +100 g input range. The model 2220 produces two analog signal outputs that vary with positive or negative acceleration and are fully differential about a common mode voltage of approximately 2.5 V. The sensitive axis is perpendicular to the bottom of the module package. The output scale factor is independent of the supply voltage (from 9 to 32 V). *Silicon Designs Inc., 1445 NW Mall Street, Issaquah, WA 98027, <http://www.silicondesigns.com>*

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Noncontact Pyrometer

Mikron Infrared has introduced the MI-P 140, a digital pyrometer for non-contact temperature measurements between 122 °F and 2372°F on metals, ceramics, graphite, and other materials. The user can select one of three focusable optics for distances from 3.9 to 102 in., with small spot sizes available—a minimum of 0.01 in. There are



five models, with temperature ranges covering 122–752°F, 167–1022°F, 212–1292°F, 320–2192°F, and 392–2372°F. Each model has subranges adjustable within the full temperature range (minimum subrange span 92°F). A subrange can be set without recalibration of the pyrometer and does not affect its accuracy and repeatability. The analog measuring output corresponds automatically to the selected subrange. Emissivity is adjustable from 0.100 to 1.000 in steps of 0.001. *Mikron Infrared Inc., 16 Thornton Road, Oakland, NJ 07436, <http://www.mikroninfrared.com>*

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Mathematical Modeling Software

COMSOL has developed FEMLAB 3.0a, said to be the first native

Macintosh implementation of scientific software that addresses scientific modeling. Users of Apple's OS X v10.3 Panther software can run 3.0a standalone as a native Mac application, or they can call on the package's Matlab-integration features to aid in the design and execution of interdisciplinary applications. Because FEMLAB version 3 was written in C++ and Java, the software could handle much greater problems, in less time. 3.0a users can take advantage of solvers optimized for both time and memory. Also important is cross-platform compatibility: Scientists can now take a model developed on one platform and run it without modification on any of the other platforms. *COMSOL Inc., 8 New England Executive Park Suite 310, Burlington, MA 01803, <http://www.comsol.com>*

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On the Web

Pyrometer Instrument Company offers free access to their ePyroCal Emissivity Calculator. Emissivity is a value that must be established to accurately determine IR true temperature. The company measures IR radiance while simultaneously measuring and correcting for emissivity. *Pyrometer Instrument Company Inc., 209 Industrial Parkway, Northvale, NJ 07647, <http://www.pyrometer.com>*

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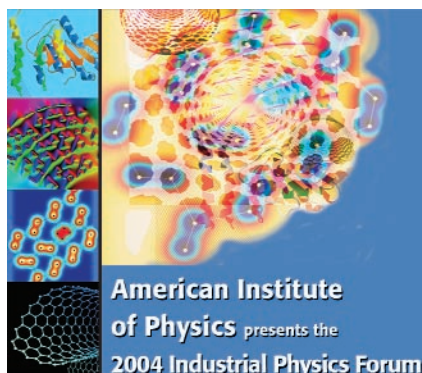
Cyber Technologies USA has launched a new Web site in conjunction with the introduction of its Vantage noncontact laser-based sensor system for high-resolution inspection and 3D measurement of thick films, solder paste, coatings, and board warpage. *Cyber Technologies USA, 808 Commerce Park Drive, Ogdensburg, NY 13669, <http://www.cybertechnologiesusa.com>*

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New Literature

The 2004 *Laser Measurement Instrumentation* catalog is available from Ophir Optonics. A CD comes with the catalog, which provides information on the line of photodiode, thermal, pyroelectric, repetitive pulse, and OEM measurement heads. *Ophir Optonics Inc., 260-A Fordham Road, Wilmington, MA 01887, <http://www.ophiropt.com>*

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