

## new products

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers, and in some cases by independent sources. 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.

### Scanning thermometer supporting 81 channels

The new Model 740 programmable scanning thermometer introduced by Keithley Instruments can linearize inputs from the seven most popular thermocouple types (J, K, T, E, R, S, B) and includes a separate millivolt range for nonstandard thermocouple types or measurements requiring microvolt sensitivity. The unit supports up to 81 channels, scans at 20 channels per second and includes a nonvolatile data memory with a capacity for 100 readings. It also features a built-in cold-junction reference, an 8-digit alphanumeric LED display with Celsius or Fahrenheit scale selection, a built-in IEEE-488 interface, digital calibration, a "smart print" feature, selectable analog filter, programmable alarm limits and a real-time 24-hour clock.



The single-channel basic configuration can be expanded to nine channels by adding a Keithley 7057A thermocouple scanner board. Additional channels (up to 81 total) are available by using the Model 740 as a master controller over other Keithley scanner mainframes.

Thermocouple types can be mixed or matched in any combination. One can select the output in either degrees Celsius or Fahrenheit, or in millivolts. The accuracy is better than  $\pm 0.5^\circ\text{C}$  and the resolution is  $0.1^\circ\text{C}$  or  $0.1^\circ\text{F}$ .

Front-panel control settings are programmable by a microcomputer or instrument controller through the built-in IEEE-488 interface.

Digital calibration improves stability

by eliminating the use of mechanical trimmer components; the unit is said to avoid drifting due to temperature, aging and mechanical shock.

For hard-copy output, a "smart print" feature locates and memorizes the IEEE printer's address if the printer is the only other device on the bus. This allows the use of less expensive addressable printers and provides compatibility of the unit with virtually all available IEEE printers.

A selectable filter can provide an additional 20 dB of normal-mode and common-mode rejection at power-line frequencies. This 3-pole analog filter attenuates noise before it is amplified and digitally converted for linearization.

The unit is packaged in a half-rack case suitable for free-standing bench-top use. Kits are available for adapting it to rack-mounting combinations for system applications. *Keithley Instruments, 28775 Aurora Road, Cleveland, Ohio 44139*

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### Calibrator providing standards for voltages and resistance

Dowty RFL Industries has introduced a universal calibrator, the Model 829M, that replaces separate dc and ac calibrators as well as resistance standards. The unit calibrates digital multimeters with resolution up to  $4\frac{1}{2}$  digits. One can select six voltage ranges (dc or ac) from 2 mV to 1100 V full scale, with six-decade resolution. The setting can be as small as 5 ppm ( $0.1\ \mu\text{V}$  in the 10-mV range). One can select current ranges from 20  $\mu\text{A}$  to 1.99999 A with a 5-ppm resolution (1 nA in the 100- $\mu\text{A}$  range). By using a second Model 829M calibrator and the Model 809 phase generator-meter, one can test ac power, phase angle and power factor. *Dowty RFL Industries, Powerville Road, Boonton, New Jersey 07005*

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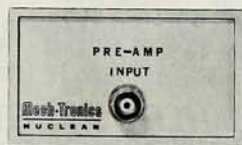
## PARITY





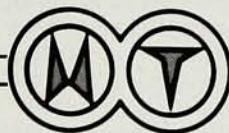
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## new products

### Probes for Doppler velocity measurements with lasers

TSI has introduced optical probes that combine fiberoptics technology and laser-velocimetry techniques for the measurement of flow velocity in confined or restricted areas. Several probes are available for use with TSI argon-ion or neon-helium laser systems. The probes can be submerged in liquids. The smallest of these probes is only 14.3 mm in diameter and 100 mm long and contains all the necessary transmitting and receiving optics. The measuring region (focal length) of this probe in air is 60 mm from the end of the probe.

In all the TSI probe systems light is transmitted from the laser to the probe through optical fibers and back-scattered light is returned to a photodetector through a receiving fiber. Typical applications for these probes include the measurement of flow around curved bodies and between rod bundles (as in a heat exchanger), sediment studies and multiphase flows. Data acquisition and processing software is available for the study of flow properties. *TSI, 500 Cardigan Road, P.O. Box 64394, St. Paul, Minnesota 55164*

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### Peak-power meters with automatic self-calibration

Wavetek has announced its new Series 8500 peak-power meters for the measurement of both single and repetitive pulses as narrow as 15 nanosec (regardless of pulse shape). In the cw mode the dynamic range is 60 dB (+20 to -40 dBm). The frequency range is 30 MHz to 40 GHz, and detectors are available that cover three different bands within the above range. An LCD display presents menus, power readings and a profile of the detected pulse.

Using interactive prompts and soft-key menus the user can make the steps required for measurements; most manual measurements can be made automatically. Any function that can be controlled through the front panel can also be controlled remotely through the general-purpose interface bus.

An automatic self-calibration system makes the system linear over the full dynamic range of the detector. Because of the large signal capability and high detection sensitivity of the diode detectors, a single detector can read pulse and cw power over the full dynamic range of the instrument. Excluding mismatch effects, the calibration



tor power uncertainty at 0 dBm is  $\pm 1\%$ . The linearity is  $\pm 2\%$  and the calibration factor uncertainty is  $\pm 1\frac{1}{2}\%$  in the range of 30 MHz to 10 GHz,  $\pm 2\frac{1}{2}\%$  in the range of 10 GHz to 18 GHz and  $\pm 4\%$  in the range of 18 GHz to 26.5 GHz.

The Series 8500 is available in two models. Model 8501 has a single detector input and is priced at \$8000. Model 8502 contains two detector inputs and is priced at \$11 800. *Wavetek, 488 Tasman Drive, Sunnyvale, California 94089*

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### Secondary-ion spectrometer for materials analysis

The newest secondary-ion mass spectrometer introduced by VG Instruments, the Simslab II, uses a high-transmission quadrupole mass spectrometer with a choice of three separate primary ion-beam sources. The microfocused liquid-metal ion beams allow SIMS imaging with a lateral resolution down to 500 Å. The instrument also features high-intensity, mass-filtered oxygen- and cesium-ion sources for concentration-depth profiling; fast-atom bombardment for surface chemical analysis and the study of insulators; and a fast frame-store computer system for three-dimensional data storage and image processing. The system is designed for long-term flexibility and can accept a range of accessories, including those for complementary surface analytical techniques, such as Auger-electron spectroscopy and electron spectroscopy for chemical analysis. *VG Instruments, 300 Broad Street, Stamford, Connecticut 06901*

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### Scientific software for IBM personal computers

Fourier Perspective II, the latest software package released by Alligator Transforms, includes programs for fast Fourier transforms, digital filtering and frequency analysis. The software runs on the IBM PC, XT, AT and compatibles, is menu driven and can execute one- and two-dimensional operations, including convolution, deconvolution



lution, power spectra, cross spectra, autocorrelation, cross correlation, median window filtering and other data-file manipulations. One can visualize results by two- and three-dimensional graphics, including hidden-line and non-hidden plots. The graphics can be printed on more than 40 types of dot-matrix printers, using the GRAFPLUS screen utility package. The software package requires MS-DOS 2.0, 256 K of memory, two disk drives and the IBM color card or the Hercules monochrome graphics card. The 8087 math coprocessor is recommended but not required. *Alligator Transforms, P.O. Box 11386, Costa Mesa, California 92627*  
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## Current source for diode lasers

Analog Modules has announced the Model 770, a laser-diode current source delivering up to 250 mA. One can adjust the output current between 0 and 250 mA with a 10-turn dial potentiometer. One can set a current limit



with a front-panel trimmer and select between a constant-current and constant-light-power mode. The large analog meter on the front panel is suitable for absolute and relative measurements. The current (up to 10 KHz) can be modulated through a modulation port. The unit operates on either 120 or 240 V and is priced at \$770. *Analog Modules, 125 Baywood Avenue, Florida 32750*

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## Compact infrared monochromator

Spectra Physics's new minimonochromator system, Model SP5155, weighs 2 lbs and measures 6.6 x 2.9 inches. The optical configuration is that of an Ebert monochromator with grating-blaze options to cover the 2.7-30 micron region.

The unit includes a sinebar wavelength drive with micrometer readout that is linear in wavelength. The monochromator also includes standard and interchangeable slits with fixed open-

ings, tilted slits to reduce optical feedback and standard optical interfaces for a variety of spectroscopic and infrared applications for materials characterization. Standard interface optics is available for interfacing the unit with Spectra Physics's tunable diode lasers and SP5800 laser source assembly. *Spectra-Physics, 25 Wiggins Avenue, Bedford, Massachusetts 01730*  
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## Miniature helium-neon laser with polarized output

Melles Griot's new helium-neon laser measures only 5.2 inches (132 mm) long



and 1.0 inch (25 mm) in diameter. It produces 0.5 mW of output power at 632.8 nm; the output power stability is  $\pm 20\%$ . The output beam is polarized and 0.47 mm in diameter. The polarization ratio is 500:1 and the beam divergence is 1.7 mrad. The operating voltage is 800 to 1000 V dc at 4.0 mA, making battery operation possible. *Melles Griot, 1770 Kettering Street, Irvine, California 92714*

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## New literature

**Sample handling**—The new *Handbook of Sample Preparation* published by Spex Industries describes techniques for the preparation of inhomogeneous or otherwise unmanageable samples for spectroscopic analysis. *Spex Industries, 3880 Park Avenue, Edison, New Jersey 08820*

**Powder diffraction**—JCPDS has published Set 35 of its *Powder Diffraction File*. The set contains 1500 diffraction patterns of inorganic compounds and 500 diffraction patterns of organic and organometallic compounds. The complete file consists of 35 sets of data containing over 44 000 numeric patterns of crystalline materials. *JCPDS, International Centre for Diffraction Data, 1601 Park Lane, Swarthmore, Pennsylvania 19081*

## 50 MHz PHOTON DISCRIMINATOR



**Model 511**  
**\$600.00**



- Fast Amp-Disc for Single Photon Counting Applications
- 18 Nanosecond Resolving Time at all Sensitivities
- Unique Gain/Threshold Control provide 30 microvolt to 20 millivolt Threshold Range
- NIM Fast Negative and Slow Positive Outputs provided

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