

new products

The items listed have been selected from among those appearing concurrently in "New Instruments" or "New Materials and Components" in *Review of Scientific Instruments*. We gratefully acknowledge the cooperation of the editor of RSI, J. B. Horner Kuper, the associate editor for New Instruments, Joshua Stern, and the associate editor for New Materials and Components, R. K. Eby.

These descriptions are based on information supplied by the manufacturer and in some cases from independent sources. Neither *Review of Scientific Instruments* nor PHYSICS TODAY assume responsibility for their correctness.

Force magnetometer

The model 300 force magnetometer is designed to measure the magnetization of solids and liquids. Measurement is based on the Faraday method in which a sample is suspended from a balance in a known magnetic field. Instead of shaped pole faces, the system uses a model 502 Lewis coil set and a model 202 power supply to provide the field gradient. The system is sensitive to a magnetic moment of 3×10^{-7} emu. The



coil set produces a spatially uniform gradient that is independent of the applied field. The high sensitivity normally associated with the Faraday method at high fields is thereby extended to low fields as well, and magnetization curves are obtained directly on the system $x-y$ recorder. Measurement errors common to the Faraday method are eliminated by automatically reversing the gradient while sweeping field. A 4-in. magnet and power supply with a digital sweep unit, a recording microbalance, and a Hall-type field sensor complete the system. Variable temperature oper-

ation is provided with a model 310 liquid nitrogen or a model 321 liquid helium variable temperature probe. The probes allow temperature to be varied rapidly from the cryogenic range to 1150 K in a single unit.—George Associates, Box 960, Berkeley, CA 94701.

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Laser power meter

The model 460 power meter is capable of providing direct measurements of a wide variety of gas, diode, and dye laser outputs. It is direct reading in watts for average power measurements of cw or repetitively pulsed lasers. Accessories are available for measurement of integrated energy (joules), peak power, and pulse shape of pulsed lasers. The full range of average power is 1.999×10^{-8} to 1.999×10^2 W. Energy range is 1.999×10^{-9} to 1.999 J. The instrument incorporates a silicon photovoltaic detector to achieve low noise, uniform response over the detector surface, stable performance, and a spectral range from 200 nm in the ultraviolet to 1100 nm in the near infrared. The detector is windowless, avoiding measurement error from multiple reflections in parallel optics.—EG and G Inc., Electro-Optics Div., 35 Congress St., Salem, MA 01970.

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Leak detectors

The 936 series helium mass spectrometer leak detector is offered in three models: the 936-60 is a standard leak detector; the 936-65 is a high sensitivity model with fast helium cleanup; and the 936-70 is an automated trapless model that eliminates the need for liquid nitrogen. All models have cycle times less than 6 sec from atmospheric pressure to test mode for fine leak testing, and approximately 3 sec for

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The QL-30 is similar in design and fits all EMI 1-1/8" tubes. When supplied less flange, the slim line design allows compact packaging for OEM use. RFI shielded version available.



The new "S" Housing for side looking (squirrel cage) PMTs fits all tubes of this type, EMI or others. STD or RFI shielded versions available.

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new products

gross leak testing of small parts. High sensitivity tests can be performed at port pressure up to 500 mTorr; gross leak testing as high as 1 atm cm³/sec. Gross leaks are measured by the spectrometer tube. The instruments use a stainless steel spectrometer tube that remains heated continuously to keep it clean and prevent contaminant condensation on critical tube surfaces. The tube's integral cold cathode gauge decomposes hydrocarbons before they reach the ion source. The valve sequencing system protects the tube and pump from pressure rises. An interlock in the cold cathode gauge shuts off filament power in overpressure conditions or upon loss of power. After any test interruption, a cycle reset latch protects against improper operation. Sensitivity of the 936-60 is 8×10^{-11} atm cm³/sec for helium and 3×10^{-11} atm cm³/sec for air; the 936-65 2×10^{-11} atm cm³/sec for helium, 7.5×10^{-12} atm cm³/sec for air; the 936-70 4×10^{-10} atm cm³/sec for helium and 1.5×10^{-10} atm cm³/sec for air. —*Varian Vacuum Div., 121 Hartwell Ave., Lexington, MA 02173.*

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Spectra recorder

The 140A digital recorder, in combination with a 440A FFT real time analyzer, records a sequence of high



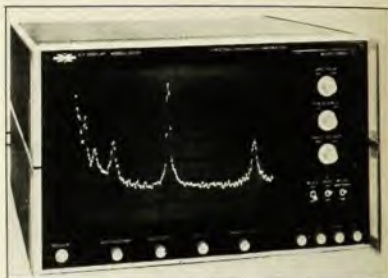
resolution spectra, on line, as the data are changing. An automatic stacked plotting feature allows the positioning of one spectrum under the other for as many as 64 spectra. The system is designed to simplify the collection and plotting of time history of vibration and noise spectra from a device whose characteristics are time dependent. Instantaneous or averaged frequency spectra from a vibration or acoustic pickup are recorded at approximately 2/sec. Spectra may be spaced at equal time increments or, by use of an optional accessory, at equal speed or distance increments. Data are retained

indefinitely on a digital cartridge, each of which holds as many as 1500 spectra. Information as to the control settings of the spectrum analyzer are also retained in digital form on the cartridge. Eleven frequency ranges from 0–10 Hz to 0–20 000 Hz, in 1–2–5 steps, are available. —*Nicolet Scientific Corp., 245 Livingston St., Northvale, NJ 07647.*

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Spectrum display

The model SD311 high speed, high resolution X-Y display uses a 12-in. diagonal nonglare cathode ray tube to provide for undistorted presentation of spectral data, especially for display of spectra from real time spectrum analyzers and FFT signal processors. Linear and logarithmic input may be selected on both the frequency and spectrum axes, and Z-axis input is



provided. Retrace blanking and raw input (time history) are also switch selectable. Display may be switched from a spectrum analyzer output to that of an auxiliary unit, for example a "waterfall control" for providing a continuously updated moving spectrum, past history display on the screen. Specifications include: settling time less than 7 μ sec to within a trace width of final value; repeatability with less than 0.15% error for readdressing a point from any direction; linearity within $\pm 1\%$ of full screen over 12-in. diagonal screen; cathode ray tube writing rate greater than 20 in./ μ sec. —*Spectral Dynamics Corp., Box 671, San Diego, CA 92112.*

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Electron multiplier

The 4800 series continuous dynode electron multipliers detect positive or negative ions and electrons, ultraviolet radiation, and soft x rays. Characterized by low noise and gain of 1×10^6 , it can be used for either analog or digital mode signal processing. The glass dynode structure is compact and its surface can be exposed to air without degradation. Count rates to 10 MHz, and dc anode current to 7 μ A

can be handled. The mounting fixture permits stable operation at the high potentials associated with negative ion



detection.—*Galileo Electro-Optics Corp., Galileo Park, Sturbridge, MA 01518.*

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Temperature probes

The 80T series self-powered temperature probes, intended for use with digital multimeters, are available in Celsius (-50 to 50°C) and Fahrenheit (-58 to 302°F) versions. Basic accuracy of the probe is $\pm 2^{\circ}\text{C}$ or $^{\circ}\text{F}$. Battery life is rated at 1000 h continuous operation. The sensing element, a semiconductor junction, is housed in a probe-like assembly connected by a 46-in. shielded cable to the signal conditioning electronics contained in a temperature-to-voltage converter box. Digital multimeter compatibility is not critical; any instrument with $\pm 0.25\%$ accuracy, 1 M Ω or higher input resistance, and adequate sensitivity is said to do. In use, the converter box is plugged into the multimeter and the probe tip is exposed to the material to be measured. Settling time in the case of 100° steps is specified at 8 sec to settle within 1° . The probe is able to stand off voltages to 350 V dc that may be present on devices being measured.—*John Fluke Mfg Co., Inc., Box 43210, Mountain Lake Terrace, WA 98043.*

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Spectrometer

The Spectraspan IV microprocessor controlled plasma spectrometer for both quantitative and qualitative atomic analysis permits automatic quantitative analysis of trace elements including refractories and some nonmetals. Qualitative analysis for all elements is performed with an optional photographic attachment. The instrument can handle solutions with solids content as high as 20%. The plasma jet is sustained in inert argon. The Intel microprocessor used provides overall control, calibration, monitoring, and reporting, and permits verification of

instrument performance through built-in diagnostic features. An optional printer can be interfaced with the microprocessor. The spectrometer features an Echelle grating that permits high dispersion from 1900 to 800 Å. When performing qualitative analysis in photographic mode, the entire spectrum is covered on a single 4×5 -in. film.—*Spectrametrics, Inc., 204 Andover St., Andover, MA 01810.*

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X-ray analysis systems

A resolution enhancement module, used with the manufacturer's NS-880 computer based multichannel analyzers, improves the resolution of the Si(Li) energy dispersive x-ray spectrometers from 148 to 130 eV. The program, which is derived from a solution of a Fredholm integral equation, effectively removes some of the Gaussian noise generated by the system electronics. The resulting spectral peaks approximate more closely the original detector resolution before degradation by the signal processing electronics.—*Nuclear Semiconductor, 1400 Stierlin Rd., Mountain View, CA 94042.*

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New Literature

Electromechanical equipment—An illustrated 116-pp. catalog presents thousands of units and equipment. These units are warehoused in stock for immediate shipment. Among illustrated units featured are: accelerometers, amplifiers, blowers and fans, counters and timers, digital displays, gyros, laboratory equipment, motors, potentiometers, power modules and supplies, relays and switches, synchros, test and measurement equipment, transducers and transformers.—*American Design Components, 39 Lispenard St., New York, NY 10013.*

High vacuum equipment—A 48-pp. catalog offers an expanded line of high and ultrahigh vacuum valves, fittings, pumps, systems, and accessories. The valve selection includes angle and in-line, stainless steel gate, and a number of special function valves. Three types of vacuum pumps are offered: magnetic-ion, sorption, and combination units with sublimation pumping. Several models of vacuum furnaces and metal evaporation sources are listed. Various systems are offered, including a selection of compact table top models.—*Thermionics Laboratory, Inc., 22815 Sutro St., P.O. Box 3711, Hayward, CA 94544.* □



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