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.

Ion-gas analyzer

The IG-124 analyzer provides direct digital display of concentration in ppm, moles/liter, or other common units, using ion selective or gas-sensing electrodes, without the need for electrode calibration curves. After a calibration procedure, the analyzer can be left unattended to perform continuous or automatic monitoring. Panel controls correspond to the Nernst relationship, including digital set points for temperature (°C) and electrode slope (mV/log concentration). A separate adjustment is provided for mean ion activity coefficient using a 10-turn potentiometer. The analyzer can also be used with Clark-type electrodes to read oxygen concentration or BOD, and with hydrogen ion electrodes to read p_H. Internal potential and current sources are provided for performing both amperometric and potentiometric titrations. Electrode potential can be monitored on a ±2000 mV scale.—*Lazaar Research Laboratories, Inc., 3424 West 8 St., Los Angeles, California 90005.*

Circle No. 140 on Reader Service Card

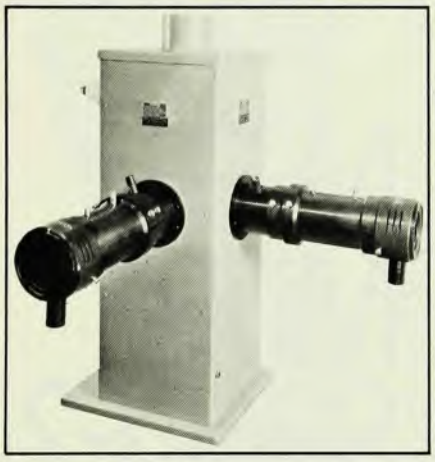
Lock-in amplifier

The 9502 two-phase lock-in amplifier combines the capabilities of a one or two phase lock-in, a vector voltmeter, a harmonic suppressing tracking filter, and a ratiometric measuring system. Operating mode is selected by pushbutton. The range of capabilities is provided by plug-in modules. These include: differential preamplifier, current preamplifier, nanovolt preamplifier, ultralow noise preamplifier, active filter, "sinetrac" filter, oscillator, and two arithmetic units—"omniphase" and a ratiometer. To facilitate data collection, a dual bus network permits the arithmetic module outputs to be read directly on front panel meters. Dynamic range is 10^9:1. Output zero stability is 10 ppm/°C or better. Frequency range is 0.5 Hz–220 kHz. Sensitivity is 10 microvolts without preamplification, and 10 pV or 0.1 pA with preamplification. A group of indicators display and identify different types of overload as well as reference channel malfunction. The reference input is completely isolated.—*Ortec Inc., 203 Midland Rd., Oak Ridge, Tennessee 37830.*

Circle No. 141 on Reader Service Card

Solar energy system

Packaged systems for solar energy studies are certified to provide solar constants over a defined area and distance. A typical system produces 140 mW/cm² (one solar constant) over a 1 ft² area, projected at 3 ft. Each system provided is supplied with xenon arc lamps, from 1000 to 3000 W, and a range of different lamps can be employed in using each system. A system that uses two focusing sleeves to collect



two collimated beams of light permits two separate measurements to be made with similar source characteristics.—*Schoeffel Instrument Corp., 24 Booker St., Westwood, New Jersey 07675.*

Circle No. 142 on Reader Service Card

Liquid level controller

A dual pump and alarm control utilizes a solid state integrated circuit transducer. It provides alternating pump control for normal operation between two limit settings. A third limit setting energizes both pump circuits when the setting is reached. A fourth limit is

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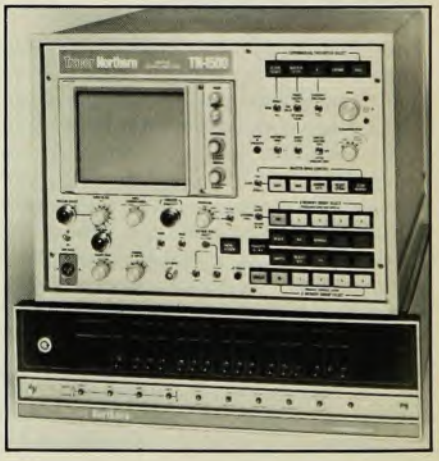
provided for "alarm service." Limits are adjusted with potentiometers. The linear transducer senses pressure via a silicon diaphragm with strain resistor and temperature compensating circuitry diffused directly into the silicon. Input pressure from the liquid reservoir is by means of tygon tubing. The transducer delivers 100 mV output, which is adequate to drive most logic circuits without amplification. The power requirement for excitation is 5 mA, and the overpressure factor is 300%. Other specifications include a full scale standard pressure range of from 5 to 200 psia or psig; maximum pressure, 2 × full range, 300% max; full scale output, 50 mV minimum; linearity and hysteresis, ±0.5% of full scale; and an operating temperature range of −40°–250°F.—*I. C. Transducers, Inc., 1750 Junction Ave., San Jose, California 95112.*

Circle No. 143 on Reader Service Card

Digital signal analyzer

The TN-1500 analyzer is designed to facilitate multi-input signal averaging, multichannel scaling measurements, and general purpose multi-input signal processing. Latency histogram time interval distribution, time interval trend, and frequency distribution measurements and pulse height analyses may also be performed in conjunction with accessories. All front panel controls and machine functions are controlled by a master software program stored in read-only memory in the Nova 2 computer that is included in the system. The core memory of the computer



is employed to store data, software constants, and custom or user designed software. The system is available in 1024, 4096, or 8192 memory address configuration with a $2^{24} - 1$ word length. A 1024 address scratch pad memory is maintained for display and

for on-line and off-line data processing functions, permitting simultaneous data acquisition, processing, display, and readout operations. The system is directly compatible with a wide range of peripherals.—*Tracor Northern Inc., 2551 West Beltline Hgy., Middleton, Wisconsin 53562.*

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Viscometer

The model 7.008 instant readout recording viscometer uses continuous control of the amplitude of low frequency shear waves generated by a small immersed stainless-steel sphere to measure viscosity. Measurement time is less than 1 min per sample (1–30

ml, and larger quantities of flowing liquids). Viscosity of gasoline, oil, suspensions, asphalt, starch, polymers, blood, and molten metals is measured over a range 0–100 000 cP.—*Nametre Co., 272 Loring Ave., Edison, New Jersey 08817.*

Circle No. 145 on Reader Service Card

Logic analyzer

The model 20D logic analyzer provides a "snapshot" capture of up to eight different data channels. As a companion to an oscilloscope, it allows precise setting of triggers, thresholds, latches, and sweep modes for recording of digital data streams. A pretrigger-record mode permits looking backward up to 256 bits before trigger; a delay mode provides selectable postponement up to 9990 samples after trigger. Sample settings may be adjusted from 50 msec to 50 nsec. Operating from an internal or an external clock up to 20 MHz, the instrument accepts bit streams through threshold detectors whose outputs are stored in a 8 × 256-bit semiconductor memory. Thresholds are adjustable ±10 V, and a switch allows direct reading of the setting

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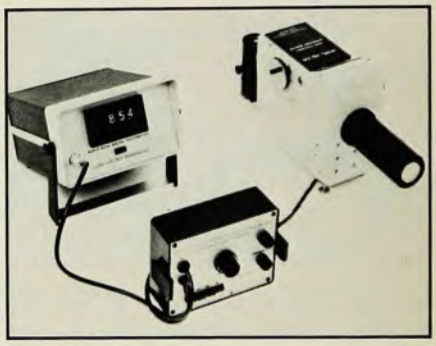
when using either 1/1 direct or 10/1 attenuated probes. Triggering is by external input or built-in combinational trigger. Two instruments may be bussed together to provide up to 16 channels of capture and display.—*BP Instruments, Inc., 10601 S. Saratoga/Sunnyvale Rd., Cupertino, California 95014.*

Circle No. 146 on Reader Service Card

Spectroradiometric system

The model 820S spectroradiometric system, designed to permit spectral irradiance measurements from 350 to 800 nm, is comprised of three components: a model 820A digital photometer, a model 820-18 photomultiplier control module; and a model 700-23A, $f/3.5$ grating monochromator with cosine receptor. Full scale sensitivity is 120 pW/cm²nm at 550 nm, with 6 nm half-power bandwidth. Other plug-in gratings cover the ultraviolet portion



of the spectrum to 250 nm, and the near infrared to 1.0 micrometers (with an SI photomultiplier). A filter compartment accommodates 2 × 2 in. blocking filters or attenuators. Signal intensity and wavelength are presented digitally.—*Gamma Scientific, Inc.,3777 Ruffin Rd., San Diego, California 92123.*

Circle No. 147 on Reader Service Card

Ultrasonic liquid sensor

The Sensall model 621S employs a pair of small, encapsulated transducers which are curved to fit around a tube, pipe, or vessel. There are three models which wrap around ½, ⅝, and ¾ in. diameters. Other sizes may be specified. It employs a low energy ultrasonic signal for detection. In operation, a remote unit generates an electrical signal which is converted to an ultrasonic signal at the transducer. The ultrasonic signal passes through the vessel wall to the opposite transducer only when liquid is in the signal path. It then closes the electrical cir-

cuit, activating a relay in the control unit. The ultrasonic signal is said to be unaffected by variations in temperature, pressure, reflected light, liquid conductivity, or vibration. Temporary installation is accomplished by placing silicone lubricant on the transducer faces and joining them together around the vessel. Permanent installation requires the use of epoxy adhesive to bond the transducers together. The two transducers weigh 6 oz and will operate in temperatures ranging from 0° to 250°F. The control unit incorporates solid state electronics operating a DPDT relay rated at 10 A. It is said to be free from measurement drift, requiring no recalibration after initial adjustment. Circuitry is housed in a standard 6 × 6 × 4 in. JIC enclosure weighing 5½ lb. Watertight and explosion proof housings are also available. Input voltage is 117 V ac 60 Hz. Power consumption is less than 6 W. Controls will operate in temperatures ranging from −30° to +150°F.—*National Sonics Div., 250 Marcus Blvd., Hauppauge, New York 11787.*

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New Literature

Multiprogrammer—An 8 pp. brochure describes a do-it-yourself automatic test and process control system that manages up to 240 individually controlled I/O functions with a single programmable desktop calculator.—*Hewlett-Packard Co., 1501 Page Mill Rd., Palo Alto, California 94304.*

Monochromator—A 4 pp. brochure gives specifications for the model 1018B, 0.45 m Czerny-Turner monochromator that can be used with available gratings and accessories from 180 nanometers to 29.4 micrometers and features a computer compatible scan drive.—*McKee-Pedersen Instrument, Box 322, Danville, California 94526.*

Molybdenum laser mirrors—Data sheet No. 211 gives the physical characteristics and prices for mirrors which can be used as external and internal cavity reflectors. They are available in diameters of 1–2 in. and thicknesses of ¼–⅜ in.—*SPAWR Optical Research, Inc., 1621 Pamona Rd., Corona, California 91720.*

"Personnel protection"—A 4 pp. data bulletin describes equipment for protection from radiation. Included are protective barriers with lead glass windows, dosimeters, radiation monitors, and safety trays.—*Atomic Development Corp., 7 Fairchild Ct., Plainview, New York 11803.* □