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.

McLeod gage

The 94163-001 vacuum gage uses only 6 ml of mercury contained and completely covered by a layer of the measuring fluid, low-vapor-pressure dibutyl sebacate oil. The oil prevents evaporation of mercury and contamination of the atmosphere. Readings of pressure are said to be consistently accurate to 0.1 mTorr in the range 0–5 mTorr. The gage consists of a closed container with fitting for connection to vacuum systems, mounted on a metal support base. A vertical plunger is provided with a bell shaped spherical bulb at the bottom and two borosilicate capillaries at the top, one for reference and the other for measurement. The gage is operated by moving the plunger downward into the oil until the bulb contacts the mercury which acts as a piston to push oil into the capillaries. When zero level of reference is reached, the level in the measuring capillary indicates system pressure. —*Central Scientific Company, Inc., 2600 South Kostner Ave., Chicago, Illinois 60623.*

Circle No. 140 on Reader Service Card

Fiber optics receiver

The FOD-100 is a high-speed, precision receiver in which light collection efficiency is optimized with maximum operating bandwidth. The new receiver has a convenient fiber interface, a large receiver area (5.1 mm^2), a responsivity greater than 0.65 A W^{-1} at 904 nm, a spectral range of 350–1100 nm, and a rise time (10%–90%) of less than 1 ns. It incorporates a new high-speed, high-sensitivity silicon photodiode, the FND-100, which is also available alone.—*EG & G, Inc., Electro-Optics Div., 35 Congress St., Salem, MA 01970.*

Circle No. 141 on Reader Service Card

Nonsilver film

A new room-light film has capabilities for adding images after the film has been fixed. Initial applications of recording film SO-101 are in recording images from cathode-ray tubes, lasers, and other exposing devices used in instrumentation applications. An electrical charge supplied by a corona charging device is applied to the photoconductive layer of the material to sensitize the film. Where light strikes the photoconductive layer, it loses its charge, and, when the film is placed in an electrographic liquid toner, a visible

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image is formed over a clear, dimensionally stable, polyester support. The film is heat treated to fuse the positive-charged toner particles in place. If required, the transparent conductive layer of the film can be sensitized again with another electrical charge and exposed to a light source, then toned and fused to add additional images to the film's surface. It is said that exceptional resolution is obtainable with appropriate toners. Conventional and positive electrographic liquid toners may be used. Film storage temperatures aren't as critical as with silver-halide photographic materials that are used for similar applications. And film speed is currently comparable with that of silver-halide non-camera films.—*Eastman Kodak Co., 343 State St., Rochester, NY 14650.*

Circle No. 142 on Reader Service Card

Ratiometer module

The model 4122 ratiometer card module, designed for use in optical arrangements having dual beam or split beam sources and lock-in amplifiers, and for general application in laboratory measurements and systems, generates analog outputs representing X/Y and $\log X/Y$ simultaneously. The output ranges are 0% to ±10.0% for direct ratio, and 0 to ±3.0 (at 1 V/decade) for log ratio. Inputs of either polarity and magnitude up to ±10 V can be accommodated. Stability is better than ±0.1% and departure from linearity is less than ±0.25%. Response time is less than 1 ms. Zero alignment is accomplished with self-checking indicators. The module is contained on a 4.5 × 6.5-in. card mating to a standard 2 × 22-pin edge connector and is powered by ±15 V. It is compatible with the manufacturer's signal analysis modules, including the model 4110 phase sensitive detector and the model 4130 gated integrator.—*Evans Associates, Box 5055, Berkeley, CA 94705.*

Circle No. 143 on Reader Service Card

Distribution analyzer

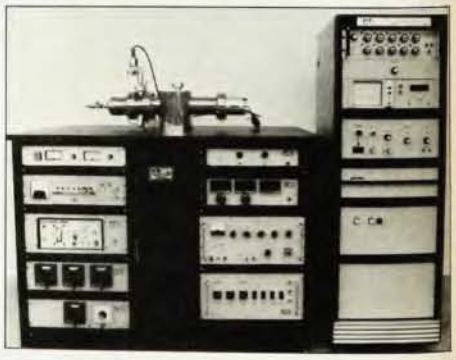
The db-621A multichannel distribution analyzer is a 32-channel system for monitoring amplitude information, determining the equivalent acoustical energy level, and storing transient information for later analysis. It is a stand alone instrument containing all necessary hardware and software for interfacing microphones via telephone lines, sampling, storing, computing, displaying, and outputting statistical information. Scanning rate is set at 10 samples/s per channel; dynamic range is 64 dB with a measurement resolution of 1 dB. The distribution (histogram) memory is subdivided into 32 two-dB-wide locations, one for each of the 32

input channels. Memory capacity for each memory amplitude location is 1.6×10^7 samples. At 10 samples/s, a minimum of 19 days data taking is possible before each channel reaches maximum capacity. The analyzer computes L_{eq} for any channel at any time during the test and also computes the percentage of time that the signal is present at each of the 32 amplitude levels. It can automatically scan and display the percentage of time at each level beginning at the lowest and ending at the highest level, thereby generating the distribution function for the test period. Each percent computation extends to six significant figures to resolve the occurrence of a single sample during a 24-h test period.—*Metrosonics, Inc., Box 18090, Rochester, NY 14618.*

Circle No. 144 on Reader Service Card

Ion–molecule reaction instrumentation

The MMS-160 ion mobility reactor, ion mobility spectrometer/quadrupole mass spectrometer, in combination with a suitable digital data acquisition and storage system, will perform studies in ion molecule reaction kinetics, ion mobility with mass identification, mass analysis with precursor identifi-



cation, chemical analysis at threshold level to 10^{-12} mole parts, and chemical analysis at 10^{-14} to 10^{-9} mole amounts. The studies can be performed at pressures ranging from 1 to 1500 Torr with ambient air, nitrogen, carbon dioxide, and all gas mixtures. Sub-

ambient to 230°C operation is available. Inlet systems, including exponential dilution flash, differential thermal analyzer, gas chromatograph, liquid chromatograph, and others can be directly coupled to the instrument at atmospheric pressure for chemical measurement and analysis purposes. The apparatus, not including data readout, is housed in two cabinets. The ion mobility spectrometer vacuum system contains all the vacuum system, ion–molecule reactor, and ion mobility sensors and electronics. The other cabinet contains the mass spectrometer electronics.—*PCP, Inc., 2155 Indian Road, West Palm Beach, Florida 33409.*

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Intensity-energy monitors

The model 321 intensity monitor and the model 323 energy monitor are designed to measure either pulsed or continuous sources with traceability to NBS. The model 321 is a digital ultraviolet powermeter reading in mW/cm² (power density) for measurements in exposure systems such as those used in semiconductor photolithography, hybrid (thin film), and ultraviolet polymer curing and drying applications. The model 323 measures pulsed

sources in μJ/cm² (energy density) for determining total energy in step-and-repeat systems, pattern generators, and low energy pulsed exposure systems. Both models use LCD displays and include built-in illuminators. The monitors are portable. Interchangeable probes are available in a variety of industry-recognized standard responses to meet specific spectral requirements. Accuracy is said to be ±5% absolute.—*Optical Associates, Inc., 3300 Edward Ave., Santa Clara, CA 95050.*

Circle No. 146 on Reader Service Card

Variable delay line

The new Minitrim line provides maximum delays from 10 through 300 ns, attenuation of less than 0.5 dB, and resolution of less than 1 ns. Standard features include precious metal bifurcated contacts, an O-ring seal, stainless-steel shaft, crack resistant epoxy fiberglass case, two-point terminal embedment, and an internal PC board. Dimensions are 0.35 in. high by 0.70 in. wide and either 2.25 or 4.00 in. long. The shorter units have approximate TD/TR ratios of 4:1, while the longer units have approximate ratios of 7:1.—*Kappa Networks, Inc., 165 Roosevelt Ave., Carteret, NJ 07008.*

Circle No. 147 on Reader Service Card

Colored glass filters

All these filters are supplied with individual spectrophotometer curves. The 50-mm-square filters are made from virgin Schott material. There are 78 available from stock. Each filter and its spectrophotometer curve are stored in a protective plastic display page. Sets of 12 filters complete with curves and binder are also available.—*Melles Griot, 1770 Kettering St., Irvine, CA 92714.*

Circle No. 148 on Reader Service Card

New Literature

NMR spectrometer—A 4-pp. data sheet discusses the EM-360L, a 60-MHz NMR spectrometer with research features including sensitivity 30:1 or better and resolution 0.3 Hz or better.—*Varian Instrument Division, 611 Hansen Way, Box D-070, Palo Alto, CA 94303.*

Scanning systems—A 10-pp. brochure describes a line of computer assisted flatbed digital scanning systems used for image digitizing, enhancement, data extraction, and quantitative restoration via plotting.—*Optronics International, 7 Stuart Rd., Chelmsford, MA 01824.*

Reed relays—A manufacturer's catalog describes the LR series which is available in one to four pole contact configurations and with diagonal, side, or end coil terminal locations. A two-piece bobbin protects the glass reed switch capsule, captures the reed leads and serves as a mounting frame with stand-offs. Leads are tin coated or gold plated. For applications where high-impedance, low-level signals are switched, electrostatic shielding can be specified. Electromagnetic shielding also is available if the relay is to be subject to strong magnetic forces or when multiple relays are stacked close together. The LR series includes standard, instrument grade, high-voltage, and mercury wetted switches, depending upon application. Also available as a standard is the LS series which is an encapsulated sealed reed design.—*Electronic Specialty Div., Datron Systems, Inc., 18900 Sandy Blvd., Portland, OR 97230.* □