

# 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.

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## X-ray spectrograph

The model 404 analyzer for nondestructive elemental x-ray analysis of objects too large to be placed within an instrument is moved to the object on a rolling pedestal or tripod. The x-ray beam can be aligned on a spot with diameter as small as 1 mm to as large as 35 mm. Alignment is assisted by a fiberscope that shows the spot the x rays will strike. All elements from aluminum ( $z = 13$ ) to plutonium ( $z = 94$ ) can be detected. The analyzer travels vertically on a rod, tilts up or down, and swivels right or left to direct the beam to the desired spot on the object. Three readouts are available: a color CRT display, an X-Y plotter, and a TTY printout. A computerized analyzer processes the signal input for the readouts. Standard software includes peak stripping, element identification, peak integration, and ratio. — *United Scientific Corporation, 1400 Stierlin Rd., Mountain View, CA 94042.*

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## Image analysis system

The model II Omnicon feature analysis system is entirely software controlled, allowing for the inclusion of a number of measurement and counting functions. A light pen permits modification of the feature selection process by allowing the operator to add or delete features from the selected set. The image analysis capabilities can be expanded by adding new programs that are written in BASIC or optional FORTRAN. The system can be interfaced with most optical microscopes, scanning electron microscopes, transmission electron microscopes, and micro-

probes. When used with scanning electron microscopes equipped to perform elemental analysis, it can control the



process so that element identification data can be combined with size and shape information of inclusions and particles. — *Bausch & Lomb, Rochester, NY 14601.*

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## Pulse generator

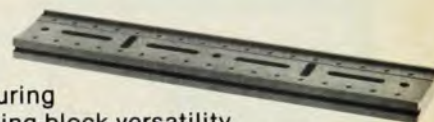
The model AHV-S miniature solid state impulse generator provides 200 ps baseband impulses at a pulse repetition rate in the 0–1.0 MHz range. The output amplitude is greater than +15 V while the pulse width is less than 200 ps at the 3 dB power points and less than 500 ps at the 10% rise time point. The generator requires a +15 V bias supply and a low-level, slow-speed



## NRC Mini-Mounts can save you time, space and money

NRC Mini-Series components are high quality, low-cost devices, are extremely versatile, and are delivered from stock. Experimentalists appreciate the total modular concept that allows them to satisfy their test set-up needs — time after time!

## Well-thought-out system



Featuring building-block versatility, this low-profile rail is compatible with existing NRC Mini-Series mounts and with a wide selection of sliding or translating carriers. The standard 0.5-in. diameter posts fit imported optical rail systems having 13.7 mm post holders. One end of the post has a 1/4-20 hole for attaching optical mounts.

## Fibre-Optic positioners too!

A more specialized member of the family. This 5-axis fiber positioner is a good example of the breadth of the Mini-Series line. The typical mount features extremely fine 56-pitch adjustment screws, and kinematic design for smooth precise setting of optic position.



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## new products

trigger signal (eg., TTL) to produce an impulse output signal containing useful spectral components to frequencies as high as X-band. The standard package size is  $4.25 \times 2.63 \times 1.71$  in.—*Avtech Electrosystems Ltd., Box 5611, Stn. F, Ottawa, Ontario, Canada K2C 3M1.*

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## Signal averaging system

The 1170 microprocessor based system can average signals at 1 MHz/12 bits with 100% duty cycle, next sweep can be triggered immediately upon completion of the preceding sweep, eliminating problems with sweep repetition rates at high speeds. Built-in data reduction capabilities include integration, trial integration, additive or subtractive transfer with trial mode, addition or subtraction of constants, shift



left or shift right, baseline correction, digital smoothing, normalization, inversion, differentiation, and ratioing of one memory segment to another. The system is available in 1, 2, or 4 k 20-bit word memory, and with a range of inputs and outputs to eliminate experimental interfacing problems. Parallel and serial BCD I/O and binary I/O are built in.—*Nicolet Instrument Corporation, 5222 Verona Rd., Madison, WI 53711.*

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## Solar simulator

A solar simulator designed to provide a laboratory sun spectrum of one solar constant in a 4-in. square uniform collimated beam uses as sun source a short arc, high-pressure, 500-W xenon lamp that is coaxially mounted in a solid nickel aluminized collector. The collector reimages the lamp arc to a 1-in.-diam spot of light. The beam from the collector is folded by a 45°-aluminized mirror. An optional color-corrected low-level tungsten source is available that provides illuminant C spectrum superimposed on the sun spectrum by a dichroic beam splitter.

A 90-Hz chopper modulates the source so that the low-level illuminant C signal can be extracted from the collimated beam. A photo coupler picks off the chopper frequency and provides a synchronized signal for a phase locked demodulator. By means of

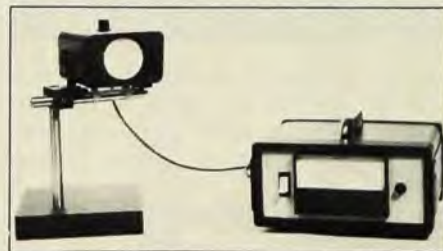


selectable filters, three spectral bands are available: air mass zero sun, air mass two sun, and high-pressure xenon lamp spectra. The xenon lamp is adjustable from 400 to 600 W; the tungsten lamp color temperature is adjustable.—*Optical Radiation Corporation, 6352 N. Irwindale Ave., CA 91702.*

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## Radiometer

The LEM-1 is a direct reading radiometer capable of measuring average power output of repetitively pulsed lasers operating in the 500–1100 nm range. It has been designed specifically to make laboratory or field measurements of the 1064-nm output produced by Q-switched, neodymium doped yttrium-aluminum-garnet and neodymium doped glass lasers operating at pulse rates 20, 20, 30, or more



pulses per second. System calibration is performed at the factory for the fundamental wavelength 1064 nm as well as for its second harmonic at 532 nm. The instrument consists of a measuring unit, detector head, and support stand. The measuring unit contains the system power supply and an energy-power meter with two scales, one for measuring power to 0.4 MW, and the other for measuring energy to 10 mJ/pulse. Both scales can be changed by

multiples of 10 and 100. The detector head contains a thermally controlled PIN photodiode, a 2-in.-diam opal glass energy input window, circuits for amplification and control, and two scale modifying filters and their associated control mechanism. Filters are accommodated in front of the opal glass window to level response to 1064 and 532 nm radiation and to attenuate the beam with peak power levels above 40 MW. A screwdriver adjustment permits establishment of a threshold intensity above which an indicator lamp is activated.—*International Laser Systems, Inc., 3404 N. Orange Blossom Trail, Orlando, FL 32804.*

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## Microcurrent integrator

The AN285/8 integrator multiplexer, with dynamic range approaching  $10^6:1$ , provides integration of low-level currents derived from high impedance single or multiple-pulsed photon, ion, and electron detectors, including those used in scanning x-ray systems. Autozeroing techniques result in signal voltages and leakage currents essentially independent of component aging and temperature variations. The standard unit accepts an input charge of 10 000 pC; corresponding to 5  $\mu$ A full scale, for an integration period of 2 ms. Other input charges or currents can be provided by arrangement. Temperature coefficient offset is less than 1  $\mu$ V/°C and gain temperature coefficient is less than  $\pm 20$  ppm/°C. Linearity is 0.015% of reading and output noise is 14  $\mu$ V rms in a 300-kHz bandwidth. Each of eight channels consists of an input protection circuit, a temperature compensated current amplifier, an autostable resettable current integrator, and an autostable control circuit. External control signals operate the control circuit that resets the integrators and corrects the voltage offsets, current drifts, and leakage during periods between integrations. A differential output multiplexer accepts the high and low outputs from each integrator circuit, thereby minimizing ground loop and thermoelectric effects in the user's system.—*Analogic, Audubon Rd., Wakefield, MA 01880.*

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## Optical grade windows

Windows are available in a variety of standard sizes (from 12.5 to 150 mm) from stock. Standard materials include BK-7 glass, fused silica, and sapphire. To be effective, windows must impose their presence as little as possible upon the optical system. These silica win-



dows contribute less than  $\lambda/7$  transmitted wavefront distortion; sapphire windows transmit from 150 nm to 6  $\mu\text{m}$ . All are available with a variety of standard AR coatings. Special sizes, shapes, and coatings are available upon request.—*Melles Griot, 1770 Kettering St., Irvine, CA 92714.*

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## Fixed coaxial attenuators

Available in nine standard nominal dB values, 1, 3, 6, and 10–60 (10 dB steps), these new precision fixed coaxial attenuators cover the frequency ranges of dc to 12 GHz and dc to 18.0 GHz. Model 43, dc–12.4 GHz, has a VSWR of less than 1.20–12.4 GHz and Model 44, dc to 18.0 GHz, of less than 1.25–18.0 GHz. Power rating is 5 W average and 1 kW peak at 25°C. All units are sweep tested for VSWR. 0–30 dB units are sweep tested for insertion loss; 31–60 dB are tested at dc, 4, 8, and 12 (and 18 GHz for Model 44). Weinschel Precision Type N connections mate with connectors conforming to MIL-C-39012 Lab Std. Standard configuration is male/female.—*Weinschel Engineering, Gaithersburg, MD 20760.*

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## New Literature

**Lasers**—A 4-pp. data sheet describes an F-center laser that operates in either continuous or pulsed mode from 2.2 to 3.1  $\mu\text{m}$ . Continuous wave output is 0.3 to 20 mW for a 1-W pump power.—*Burleigh Instruments, Inc., Burleigh Park, Fishers, NY 14453.*

**Waveform**—Research and testing applications employing transient waveform recorders are described in a 22-pp. handbook. A variety of recording techniques and system configurations are presented for 28 different applications.—*Physical Data, Inc., 8220 S.W. Nimbus Ave., Beaverton, OR 97005.*

**Circuit technology**—Vol. 12, No. 1 of Analog Dialogue, 20 pp., contains application notes and new product descriptions, including applications for multiplying DACs, a semiconductor temperature sensor, a complete monolithic 10-bit A/D converter, offset voltage effects with glass-encapsulated diodes, a low-drift superbeta op amp, fast six-decade logarithmic amplifiers, analog I/O boards, a low-cost 12-bit multiplying D/A converter, and five new product descriptions.—*Analog Devices, P.O. Box 280, Norwood, MA 02062.* □

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