

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.

High-Efficiency Germanium Detector

Canberra has announced the production of "the world's first high-purity-germanium radiation detector with a relative efficiency exceeding 100%." Lest the uninitiated reader worry that this claim violates unitarity or the second law of thermodynamics, we point out that the new Canberra detector's efficiency is 115% *relative* to that of a 3"×3" sodium iodide detector, the standard by which germanium detectors are measured.

The detector weighs 2.5 kg, standing 8.9 cm high with a diameter of 8.2 cm. Its resolution at 1.33 MeV is 2.1 keV—impressive, we are told, for such a large detector. The raw material for the detector was provided by Tennelec of Oak Ridge. *Canberra Industries, One State Street, Meriden, Connecticut 06450*

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Another Efficient Germanium Gamma Detector

EG&G Ortec has also announced a germanium gamma-ray detector with efficiency exceeding 100%. (See the description of Canberra's detector above.) The measured efficiency of the detector, relative to NaI, is 104%.

The cylindrical detector element, with a diameter of 7.7 cm and a length of 10.3 cm, weighs 2.5 kg. It is a single crystal with an impurity concentration of less than one part in 10^{12}

germanium atoms. *EG&G Ortec, 100 Midland Road, Oak Ridge, Tennessee 37831-0895*

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High-Frequency Arbitrary Function Generator

The new LeCroy 9109 arbitrary function generator, with synchronous analog and digital outputs, is designed for applications requiring high-frequency mixed analog and digital test signals. Each of its two channels contains a fast memory that can be loaded with the digital representation of analog signals or digital patterns. The analog waveform and its digital replica are put out synchronously. The 9109 replaces multiple signal generators and digital word generators previously required to test analog-digital converters, digital filters, modems, disk-drive controllers and similar circuits.

The 9109 generates complex am, fm and phase-modulated signals common in modern data communications systems, while simultaneously putting out the equivalent digital data. Precise analog signal generation, combined with synchronous, selectable TTL or ECL digital outputs, make the 9109 suitable for testing modems, LANs or data-communication buses. It can simulate group-delay effects, allowing sinusoidal signals at different frequencies to be phase shifted with 0.1 phase precision. *LeCroy, 700 Chester Ridge Road, Chestnut Ridge, New York 10977-6499*

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Electron-Beam Electroreflectance Spectrometer

The Model EBER-1240 from Charles Evans & Associates is an electron-beam electroreflectance spectrom-

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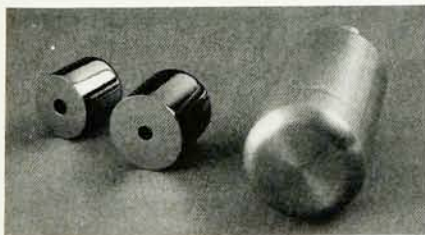
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eter. This new analytical instrument is designed to provide information about the electronic properties of direct-bandgap semiconductor materials such as gallium arsenide or mercury cadmium telluride.

The EBER-1240 electroluminescence spectrometer measures the fractional change in the reflectivity of a semiconductor as the surface electric field



is modulated by a low-energy electron beam. Values of the critical transition energies and linewidths are obtained by fitting the experimental spectrum to the known line-shape functions. The system includes complete hardware and software for data acquisition and fitting.

Because the spectrometer detects the reflected light from a sample, it is sensitive to the properties of very thin layers, even when they are below layers of other material. This means, for example, that one can readily obtain strong spectra from quantum wells and superlattice structures, which are very difficult to characterize by most other analytical techniques. The EBER-1240 is well suited to the study of III-V and II-VI compound semiconductors. *Charles Evans & Associates, 301 Chesapeake Drive, Redwood City, California 94063*

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High-Resolution Digitizer for Capturing Transients

Tektronix has introduced a programmable digitizer with a 256-K record length. Direct analog-digital output makes it possible to expand the record length beyond a billion samples by using external memory caches. This Sony-Tektronix RTD 710A programmable waveform digitizer combines its long-waveform memory with 10-bit

vertical resolution and a speed of 200 megasamples/sec.

Designed to capture transient or low-repetition signals from 1 MHz to 50 MHz, the RTD 710A is well suited to research and development applications, we are told. Tektronix foresees its use in high-energy physics, high-voltage impulse testing, measurement of laser-induced effects, communications and materials characterization. The new digitizer is also intended for use in testing magnetic and optical memory devices, ultrasonic systems, ccd imagers and radar systems.

The digitizer's 256-K memory can be allocated to one channel or split for simultaneous dual-channel digitizing. Record lengths can be selected from 1024 points to the full 262 144, in powers of 2. In multiple-event applications more records are available for sequential signal capture. Up to 256 one-kilobyte records can be predefined using the instrument's auto-advance acquisition mode, which lets the digitizer rapidly acquire and store successive single-shot events. *Tektronix, Jack Murdock Industrial Park, P. O. Box 3500, M/S C-1894, Vancouver, Washington 98668*

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Electron-Beam System Reaching a Megawatt/cm²

MAAS has developed an improved, self-accelerated electron-beam system that can operate over a wide power range, in the pulsed mode as well as continuously. The system includes the gun, power supply and beam-control electronics. With it, one can get to power densities as high as a megawatt/cm².

Because the electron gun contains all the necessary focusing elements, one can work at distances up to 3 meters. Five centimeters is the suggested minimum working distance. To avoid the disposal problems associated with insulator oil, the electron-gun control circuits have been redesigned to operate with air insulation. This makes for much easier maintenance. These new units appear to function well even at high altitudes, we are told.

This electron-beam system is well suited to single- and multihearth evaporation. It can be used as a gas-density probe, as an x-ray source or as a high-temperature Knudsen-cell heat source. It can, of course, also do surface annealing and electron-beam welding.

The beam diameter is variable from 200 microns to 2 cm. Beam currents can go as high as a full ampere, and electron energy can range from 5 to 35 kilovolts. Because the parameters are interdependent, MAAS has prepared a matrix of specifications to advise users as to what combinations of diameter, current and energy can be achieved with a given power supply. Electron-beam current is regulated to 0.1% by the standard supply, and it can follow externally applied waveforms with rise times as fast as 10 microseconds. *Measurement and Analysis Systems, 1155 Zion Road, Bellefonte, Pennsylvania 16823*
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Single-Axis Programmable Motion Controllers

Aerotech has introduced the Unidex 1 series of advanced, single-axis, programmable motion controllers. The

puts and outputs, as well as travel and home limits. There are six models in the Unidex 1 series, ranging in torque rating from 38 to 1050 oz.-in., with speeds up to 3000 rpm. The motor driver and power supplies are integrated into the control package. Matched microstepping motors with cables are included. The microstepping drivers make possible resolutions as fine as 50 000 steps per revolution. *Aerotech, 101 Zeta Drive, Pittsburgh, Pennsylvania 15238*
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Panoramic Survey Meter for Health Physics

Victoreen's Model 470A panoramic survey meter is designed for a number of health-physics applications. Its low-energy response makes it suitable for surveying x-ray and radiotherapy facilities. It uses an unsealed air-ionization chamber to measure alphas above 8 MeV, betas above 120 keV, and gammas and x rays above 10 keV. Readout is on a 2π solid-range taut-band meter. A collimator provides directional identification.

The meter's portability and wide dynamic range make it useful for nuclear reactor sites and fuel processing plants. Modern solid-state IC technology has been utilized to simplify circuitry, reduce weight and increase reliability, we are told. Two 1.5-volt D cells and four 22.5-volt no. 505 batteries provide at least 85 hours of continuous operation, with a shelf life of about a year. A battery-check function is built into the unit. Twelve overlapping ranges measure activity rates from 0 to 1000 R/h. Six overlapping ranges record total exposure up to 1000 mR. *Victoreen, 6000 Cochran Road, Cleveland, Ohio 44139-3395*
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New Literature

Optics—A 64-page catalog from Polytec Optronics describes the newly revised Physik Instrumente PI Optical System, with a detailed survey of new PI optomechanical components: benches, carriers, carrier pillars and combination elements, spatial filters, holders, laser-beam steering devices, and interferometric and holographic assemblies. Drawings, tables and application examples accompany the product descriptions, making this catalog something of a reference book. *Polytec Optronics, 3001 Redhill Avenue, Building 5-104, Costa Mesa, California 92626*

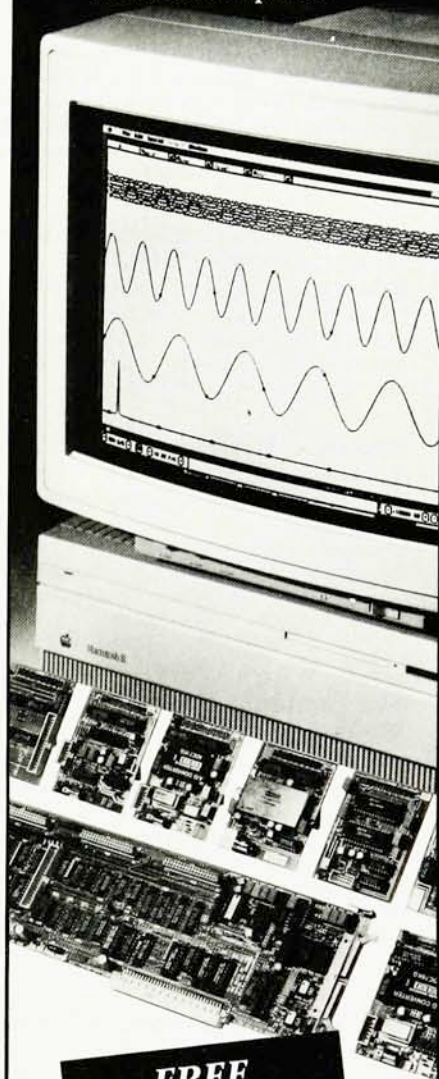


controllers employ a programming language with the ability to branch on interrupt, even during a move. Six kilobytes of nonvolatile memory (extendable to 14 K) accommodate up to 99 user programs, any one of which may be run on power-up.

Communication is accomplished by way of a standard RS232C port. An optional hand-held terminal with a position-tracking display permits editing and menu-assisted programming. Other interface ports provide programmable, optically isolated in-

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