

NEW PRODUCTS

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.

'Intelligent' Ion-Laser System

The Innova 300 represents a new generation of ion-laser systems from Coherent. It is designed for optimum performance and productivity in tunable (dye and titanium-sapphire) laser pumping, CPM laser pumping, laser semiconductor processing, micro-Raman spectroscopy, holography and nondestructive testing, among other applications. The Innova 300 is available in either an argon- or krypton-gas version and provides up to 6 watts of multiline visible power and 500 milliwatts of multiline uv power. The system features Power Track—an actively stabilized optical cavity that uses automatic servo control to continuously optimize performance. Because the alignment of the optical resonator is maintained, the sensitivity of the laser system's power and beam pointing stabilities is reportedly minimized. A gimbal mount provides a mirror rotation point at the mirror's surface; thus one can change the angular position of the mirror without inducing a length change in the 1-m optical cavity. An RS-232C interface is standard, and an optional on-board IEEE-488 and 0-to-5-V dc analog-digital control circuitry are available. A compact, CPU-controlled remote-control module using a menu-driven format with two-line, 16-character LCD display lets the laser-system operator quickly change oper-

ating parameters. The remote-control module uses a standard eight-wire telephone cable and RS-422 bus to communicate to the main system CPU in the laser power supply. This design allows a maximum cable length of 300 meters. The multiple CPU integration also offers an on-board memory to store user-defined, PC-entered laser-command programs, removing the need for a dedicated external PC. *Coherent, 3210 Porter Drive, P.O. Box 10321, Palo Alto, California 94303*

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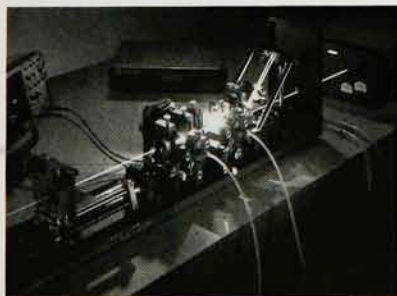
High-Frequency Lock-in Amplifier Extender

The Model PAR100 lock-in extender-enhancer from Palo Alto Research is reported to provide excellent high-frequency performance when used with a standard low-frequency lock-in amplifier. Features include four measurement modes (obtained by mixing the signal to be measured with various reference signals); a built-in, low-phase-noise frequency synthesizer; automatic frequency tracking; high-impedance single and differential inputs; provision for filtering; output gains of 1, 10 and 100; a frequency stability of 30 ppm between 0 °C and 40 °C (with aging of less than 10 ppm a year); a user-selectable output bandwidth of 500 Hz to 200 kHz; and an optional GPIB interface. *Palo Alto Research, 599 North Mathilda Avenue, Sunnyvale, California 94086*

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Electro-Optics Product Guide

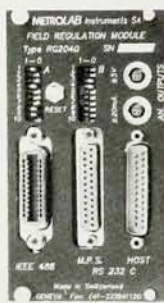
The 1990 Ealing Electro-Optics catalog introduces more than 1600 new products. The 450-page product guide is designed for easy use and portrays



COMPUTER INTERFACED NMR MAGNETIC FIELD REGULATION

Model RG 2040

- Plug-in module for the PT 2025 NMR Nuclear Magnetic Resonance magnetometer
- Provides long term NMR stabilization of magnetic fields (can achieve 0.1 ppm)



- Magnet Power Supply control
- Analog and digital fine correction
- Automatic measurement of magnet characteristics
- All regulation parameters can be memorized

Applications include:

- Analysing and beam handling magnet control and stabilization for particle accelerators
- Magnetic sensor calibration systems
- Closed loop field stabilization in MRI medical systems
- Precision field control for laboratory spectroscopy magnets

NMR PT 2025 Magnetometer



Field range	0.043 to 13.7 Tesla
Resolution	10 ⁻⁷ Tesla or 1 Hz
Interface	IEEE 488 and RS 232C
Accuracy	absolute: $\leq \pm 5$ ppm (1°H) relative: $\leq \pm 0.1$ ppm

METROLAB

Instruments SA

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CH-1228 Geneva, Switzerland
Tel: +41 (22) 794 11 21
Fax: +41 (22) 794 11 20

USA: GMW Associates
Tel (415) 368 48 84, Fax (415) 368 08 16
JAPAN: Daiel Musen Denki,
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VACSCAN has revolutionized
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- system "help" screens
- microprocessor control
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- multiplier detector option

Since its 1988 debut,
VACSCAN has captured
the interest of the entire
industry with its

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and
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FAILURES!**
**INCREASE OPERATOR
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Spectra Instruments
Division of Spectramass, Inc.
18 Technology, Building 134
Irvine, California 92718

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many applications by means of full-color illustrations. Each of the 15 sections illustrates more than 4000 products with complete technical descriptions and photographs depicting applications. Items can be quickly identified for a particular experiment or application. The guide organizes the company's full product line, including manual micropositioners, motorized micropositioners, component mounts, light sources, lasers and accessories, monochromators and detectors, optical benches, optical tables, optical instruments, optical components, optical filters and microscope components. The back of the product guide contains product and catalog-number indexes to simplify cross-referencing and a section listing reference books and optics manuals. *Ealing Electro-Optics, New Englander Industrial Park, Holliston, Massachusetts 01746*

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Precision Mirror Holders with Piezo Drives

Precision mirror holders designed to complement the precision positioning capabilities of a wide range of piezo drives now are available from Polytec Optronics. Gimbal mounts allow precise, mutually independent rotary motion about each axis, and ball bearings permit smooth, friction-free fine movements. To prevent unintentional translation motion, the mirror surface of plane always lies in the axis of rotation. The micrometer is arranged perpendicular to the optical axis, that is, parallel to the mirror surface. Manufactured by Physik Instrumente, the mirror holders accommodate a variety of high-voltage or low-voltage piezo translators. With these translators the holders can be used in a closed loop or can be fine-positioned in the range of a subsecond of angle. *Polytec Optronics, 3001 Redhill Avenue, Building 5-104, Costa Mesa, California 92626*

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Low-Frequency Plasma-Etch Generator

ENI announces its LPG-12A rf-power generator. Designed for plasma etching, CVD and sputtering applications, the LPG-12A produces more than 1200 watts of solid-state power throughout the frequency range of



90–460 kHz. The new generator features total water cooling, enhanced control and monitoring functions, extensive operator and system safeguards and an advanced low-noise interface. To ensure consistent, repeatable results, the unit automatically maintains rf-power output within $\pm 0.5\%$ of rated power at set frequencies from 1:1 to 3:1 VSWR relative to the ENI power standard. A significant reduction in extraneous noise levels has been achieved, we are told, through use of opto-isolated digital and ground-isolated analog inputs and outputs within the input-output interface. Enhanced safety features such as heavy-duty protective shielding, safety labeling and automatic safety interlocks are said to surpass industry standards and provide extensive protection for both the operator and the plasma system. *ENI, 100 Highpower Road, Rochester, New York 14623*

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Variable-Temperature Magnetometer for Small Samples

Quantum Design has introduced the MPMS₂, a new system for measuring magnetic properties of materials. The MPMS₂ is a SQUID-based variable-temperature magnetometer that measures the dc magnetic susceptibility of small samples over a wide range of applied magnetic field intensities. The MPMS₂ magnetometer uses a low- T_c SQUID amplifier to measure magnetic moments over a dynamic range of 10^{-7} to 1.25 emu. With a differential sensitivity of 10^{-8} emu, the magnetometer can characterize samples in thin film and bulk forms up to 8 mm in diameter and 7 mm in length. During a measurement, materials can be exposed to applied magnetic fields up to 10 000 oersteds and to temperatures from 5 to 350 K. The instrument's wide temperature range is made possible by a proprietary temperature-control system.

The system can be programmed to

run standard tests unattended, and it can characterize high- T_c superconductors, spin glasses, hard or soft magnetic materials and many other types of samples. It can also be configured to measure permanent or ferromagnetic materials (up to 300 emu), to collect hysteresis data or to measure the Hall effect. *Quantum Design, 11578 Sorrento Valley Road, Suite 30, San Diego, California 92121*
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Magnet Power-Supply Programmers and Helium-Level Meters

American Magnetics, has introduced its Model 410 line power-supply programmers for superconducting magnets. The line reportedly is built around state-of-the-art ramp-generator technology, for precision linear ramping of the magnet current. A digital readout displays the current to 0.1 amps. The programmers are computer addressable via a Model AIO-2000 IEEE-488 interface and allow user selection of either computer or manual mode of operation for controlling charge rate, current limit and current control. The amplifier input section is said to provide extremely low drift and large common-mode rejection for precise instrumenting. The line of programmers includes the Model 410, available in a stand-alone cabinet or with a 19-inch front panel for rack mounting; the Model 411, which incorporates an analog magnet-voltage readout; and the Model 412, providing both an analog magnet-voltage readout and a persistent switch heater power supply. Both the Model 411 and the Model 412 have 19-inch front panels.

American Magnetics has put several features into its Model 110 line of helium-level meters. These meters produce a voltage proportional to the length of the sensor above liquid helium, providing a continuous measurement of the helium level. The Model 110 allows superconducting helium-level sensors up to 80 inches

long to be used with high accuracy and reliability. The model line includes the Model 110A, with a 0-100% analog display; the Model 110D, with a 0-100% 3 1/2 digit digital display; and the Model 110P, which reads only when the push button is depressed, a feature that minimizes liquid helium boil-off. A quick-calibration option is also available with Models 110A and 110D; this permits rapid calibration dial-in for various-length sensors, allowing use of one instrument with all American Magnetics sensors. *American Magnetics, P. O. Box 2509, Oak Ridge, Tennessee 37831-2509*
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Software for Exploring Astronomical Motions

ORBITS is a new software program that helps students develop an intuitive understanding of gravity's effects on objects moving through space. The program was created to help students study the motions of stars, planets, moons, satellites and rockets. It calculates and plots the motions under the influence of gravity of two heavy bodies and up to five light bodies. Users can run time forward and backward and can change the velocity of any object. A variety of starting-point scenarios are available. Users also can create and store their own scenarios, view numerical values, replay computed orbits and explore realistic scenarios previously considered too complicated for an introductory course. By pressing a key, users can shift scales or view orbits in a different frame of reference. Reportedly, instructors should find ORBITS easy to incorporate into their curriculums. An 84-page manual for users describes the program and the physics it models, and discusses the cause, estimation and control of error. Included are a tutorial, exercises and projects.

ORBITS operates on IBM PC, XT, AT and PS/2 personal computers and compatibles with at least 384K of memory and CGA graphics. EGA or VGA graphics, a math coprocessor and a graphics-capable printer are recommended. The program is licensed for use on one machine. It is available in 5 1/4-inch diskette format (ISBN 0-88318-606-3) and 3 1/2-inch diskette format (ISBN 0-88318-677-2). A ten-copy site license is available. *Physics Academic Software, The Academic Software Library, Box 8202, North Carolina State University, Raleigh, North Carolina 27695-8202*
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