

NEW PRODUCTS

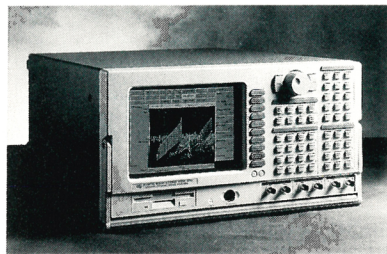
The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

LAWRENCE G. RUBIN

FOCUS ON TEST & MEASUREMENT

Two-Channel Dynamic Signal Analyzer

Stanford Research Systems recently introduced the SR785—a precision, full-featured two-channel dynamic signal analyzer. The heart of the SR785 is a 32-bit floating point processor, which allows a true, two-channel, 100 kHz real-time bandwidth, a noise floor of -160 dB V rms/Hz^{1/2}, a 90 dB dynamic range in fast Fourier transform (FFT) mode and a 145 dB dynamic range in swept sine mode. Basic meas-



urements include FFT, order tracking, real-time octave analysis, swept sine, correlation, time-histogram and time capture. User-defined math functions allow the SR785 to perform many kinds of the SR785 to perform many kinds of time, frequency and amplitude domain measurements.

A low-distortion source generates sine, two-tone, white noise, pink noise, burst, chirp and arbitrary waveform outputs. The SR785's features include 8 Mbytes of data memory, up to 800 lines of frequency resolution and such data analysis capabilities as band, sideband and harmonic analysis and pass-fail testing. Computer interfaces and a printer port allow displays to be output to the disk, computer or printer.

Applications of the signal analyzer include modal analysis, machine diagnostics, vibration testing, acoustics,

audio research, control systems and noise analysis. *Stanford Research Systems, 1290-D Reamwood Avenue, Sunnyvale, California 94089*

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Electrometer and High-Resistance Meter

Keithley Instruments' model 6517A is an electrometer and high-resistance meter that provides accuracy, sensitivity and speed said to be previously unavailable in this type of instrument, particularly for high-resistance measurements. The key feature of the 6517A is its voltage (polarity) reversal method, whereby the instrument calculates the weighted average of four polarity reversal readings to eliminate the effects of background current and drift. Additional features of the 6517A include high-resistance measurements of up to 10^{17} Ω , a 1 kV voltage source with sweep capabilities and a built-in "bias-measure" test sequence. The instrument has a $5\frac{1}{2}$ digit resolution of 10^{-16} A on the 20 pA range (0.0005% of full scale) and an input impedance of 200×10^{12} Ω . The built-in data storage buffer can record and recall up to 125 readings per second, stamped with the time, temperature and relative humidity at which they were acquired.

The 6517A is well suited for measuring the resistance, resistivity and conductance of insulating materials, testing the surface insulation resistance of printed circuit board materials, finding the voltage coefficient of resistors and characterizing the leakage of diodes and capacitors. Its extremely low voltage (input) burden makes it particularly useful in solar cell testing. *Keithley Instruments, 28775 Aurora Road, Cleveland, Ohio 44139*

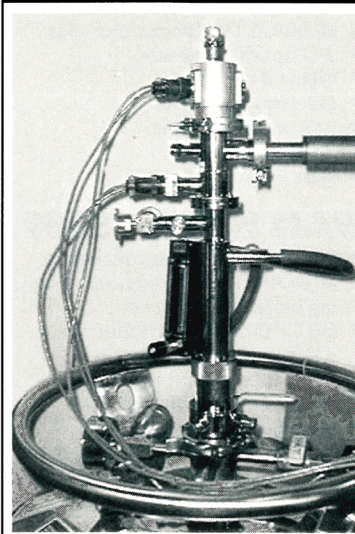
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CRYO

What's New?

Storage Dewar Mount Superconducting Magnet with Sample Variable Temperature

- Mounts directly into standard storage (transport) dewar
- Standard Field: 6 Tesla
- Operating Current: <50 amps
- Sample Temperature Range: <1.4 to 325K
- Samples top load into flowing vapor or liquid
- E-Flow: Eliminates liquid helium 'cold' needle valve
- Computer Controlled (optional)



CRYO Industries of America, Inc.

11 Industrial Way
Atkinson, NH 03811
TEL: (603) 893-2060
Fax: (603) 893-5278
cryo@cryoindustries.com

APS Show—Booth #412

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OPTICAL RAY TRACERS

Now: FOUR platforms!

Windows
PC-DOS
Macintosh
PowerMac

BEAM TWO \$89

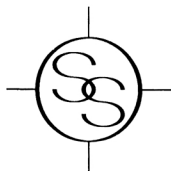
- + for students & educators
- + traces coaxial system
- + lenses, mirrors, irises
- + exact 3-D monochromatic trace
- + 2-D on-screen layouts
- + diagnostic ray plots
- + least squares optimizer
- + Monte Carlo ray generator

BEAM THREE \$289

- + for engineering applications
- + all BEAM TWO functions, plus:
- + 3-D optics placement
- + tilts and decenters
- + cylinders and torics
- + polynomial surfaces
- + 3-D layout views
- + glass tables

BEAM FOUR \$889

- + for advanced professional work
- + all BEAM THREE functions, plus:
- + big tables: 99 surfaces
- + full CAD support: output to DXF, plotter, PostScript
- + point spread function
- + modulation transfer function
- + wavefront display too



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200 and 400 MHz Digital Oscilloscopes

LeCroy announces its improved line of digital oscilloscopes, which includes two models with 200 MHz bandwidth and six models with 400 MHz bandwidth. For measuring high-speed analog and digital circuitry, LeCroy also offers specialized, as well as standard, high-impedance passive probes, including high-voltage probes, a current probe with 50 MHz bandwidth and differential amplifiers with a choice of probes for their inputs.

Each of the new "C" version scopes features a new processor with faster clock speed, more random access memory (RAM) than previously available and an improved input-output system with faster communications. The improved processor and RAM subsystem allows faster responsiveness of front panel knobs, faster calculation of parameters and other math and more power in zooming waveforms to see their details. The scopes allow up to four separate traces with zoom and math waveforms, which can be up to 1 Mbyte each in length for the acquisition memory. The new products offer LeCroy's SMART trigger and its exclusion trigger, in addition to edge and window triggers. *LeCroy, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977*

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Arbitrary Waveform Generator

Tektronix has introduced the AWG 500 series of arbitrary waveform generators. The AWG 510 and AWG 520 models, each with a 1 gigasample-per-second clock rate, can simulate such real-world signal degradations as noise, jitter and fading. Both models use an integrated hardware noise generator and are said to be the first signal sources capable of generating truly random white noise. In addition, users can simulate jitter with up to 2 ns timing resolution, to help characterize how a device will perform when subject to real-world timing and amplitude impairments. Data streams with industry-standard isolated bit-pulse shapes are available through a disk-drive menu or a new communications test menu that accesses 20 nominal signal standards and immediately displays the signal's amplitude, width, timing and pattern.

The AWG 500 series offers such editing features as a graphical editor, several digital and analog filters and

a powerful script editor. The script editor creates mathematically precise waveforms using polynomial equations, while an intuitive programming language is included for increased flexibility. It is also possible to build a signal from many waveform segments using the real-time sequencing feature standard to the AWG 500 series. *Tektronix, P.O. Box 500, Beaverton, Oregon 97077-0001*

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Noise-Rejecting Voltmeter

EG&G Signal Recovery has introduced the 7310, a multipurpose noise-rejecting voltmeter that uses the latest digital signal processing techniques to improve the measurement of noisy signals and signals at selected frequencies. The 7310 combines a precision, true root mean square voltmeter with signal filtering and conditioning, allowing the user to measure a signal at a selected frequency while rejecting all others, or to measure the amplitude of different frequency components in the same circuit. The meter will measure AC (0.2 Hz to 60 kHz) or DC voltages, currents or ratios. A built-in fast Fourier transform function produces a frequency



spectrum of the input signal to facilitate the identification of unwanted components, noise and signals of interest. This feature can be particularly useful when the signal appears to be clean but is in fact a composite of discrete frequencies. Maximum and minimum input levels are recorded, and the results are shown numerically on the main display and also on the analog bar graph. All functions of the 7310 can be activated through the standard interfaces. *EG&G Signal Recovery, Sorbus House, Mulberry Business Park, Wokingham, Berks RG41 2GY, United Kingdom*

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2 GHz PC-Based Sampling Oscilloscopes

PC Instruments continues to increase the bandwidth of PC-based instrumen-

tation with the introduction of the PCI-426 and PCI-436, sampling oscilloscopes with 2 GHz bandwidth and a sampling rate equivalent to 200 gigasamples per second. The single-channel PCI-426 and the two-channel PCI-436 each occupy one PC AT expansion slot and provide seven voltage ranges, DC offset and a probe compensation signal. Also included are 11 timebase settings, from 500 ps/division to 1.8 μ s/division, and an algorithm that quickly and automatically establishes a valid trigger level. As compared to wide-bandwidth boxcar integrators, these new oscilloscopes are less expensive, and they capture the complete pulse, not just the energy of the pulse. Also, these new oscilloscopes can be used to measure the radio frequency burst used in nuclear magnetic resonance systems.

High-speed sampling oscilloscopes require a repetitive input waveform and lack some of the features that are common on lower-bandwidth scopes. The PCI-426 and PCI-436 are DC-coupled and the trigger source is fixed to the external trigger input. To display the trigger point, a delay of ~ 14 ns between the trigger event and the measured waveform will need to be added, using any of several delay techniques. Included with each oscilloscope is the company's BenchTop Plus user interface and advanced programming support. *PC Instruments, 9261 Ravenna Road, Building B11, Twinsburg, Ohio 44087*

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Low-Drift Integrating Fluxmeter

High resolution and low drift define Lake Shore Cryotronics's new model 480 fluxmeter. The signal generated by a search (pickup) coil is proportional to the time rate of change of the magnetic flux normal to the plane of the coil turns. Therefore, the measurement of that flux necessitates integration. Any voltage drift at the meter's input will be integrated along with the real signal, causing an error, which increases with the time of measurement. To minimize the drift, the 480 controls the temperature of its integrator and employs both automatic and manual drift adjustments.

The fluxmeter can display the results in multiple measurement units with $5\frac{1}{2}$ digits of resolution. Its fast response can handle very short magnetizing pulses. Both positive and negative peaks can be captured and displayed simultaneously from a single

pulse. In DC mode, the 480 uses a sampling frequency of 30 samples per second so that slowly varying DC signals (typically up to ~ 10 Hz) can be measured. In the AC mode, root mean square magnetic measurements can be made at frequencies from 5 Hz to 50 kHz. Lake Shore offers several sensing coils and probe assemblies for use with the 480. They are factory-calibrated for accuracy and interchangeability; calibration data are loaded into memory in the probe connector. *Lake Shore Cryotronics, 575 McCorkle Boulevard, Westerville, Ohio 43082*

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Handheld Portable Gaussmeter

F. W. Bell has introduced the 5000 series of handheld portable gaussmeters. Models 5060, 5070 and 5080 are claimed to represent the latest developments in the measurement of magnetic flux density using Hall-effect technology. The high-end 5080 can measure magnetic fields from zero to 30 kG over three ranges with $3\frac{3}{4}$ -digit resolution (to 0.1 G on the 300 G range). The 5080 utilizes F. W. Bell's dynamic probe correction feature to achieve a basic accuracy of 1% for DC or true root mean square AC fields at frequencies up to 20 kHz; it also features both a corrected analog output (3 V full scale) and an RS-232 communications port. Readings are provided in gauss, tesla or amperes/meter. Instrument functions include peak hold, auto range, relative mode, min-max hold and auto zero. Transverse and axial Hall-effect probes are available, as well as custom types. *F. W. Bell, Division of Bell Technologies, 6120 Hanging Moss Road, Orlando, Florida 32807*

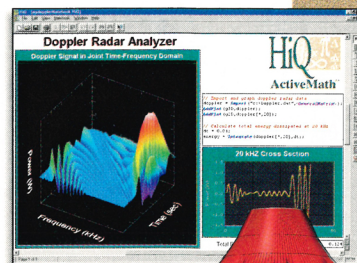
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New Literature

A new, 150-page signal conditioning catalog is available from Acromag. It describes the latest control technologies and features a series of educational notes for process instrumentation, data acquisition and distributed input-output applications. The catalog includes information on the company's transmitters, isolators, limit alarms and data and signal conditioning systems. *Acromag, 30765 South Wixom Road, P.O. Box 437, Wixom, Michigan 48393-7037*

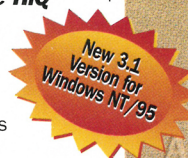
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