

NEW PRODUCTS

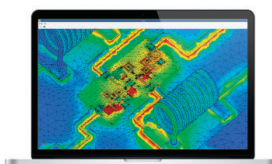
Focus on software, data acquisition, and instrumentation

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. For more information about a particular product, visit the website at the end of its description. Please send all new product submissions to ptpub@aip.org.

Andreas Mandelis

Software for RF and microwave design

Keysight's integrated design and simulation software, PathWave Advanced Design System (ADS) 2023, addresses increasing design complexity and higher frequencies in the RF and microwave industry. It includes improvements to electromagnetic (EM) simulation for circuit designers and streamlines integration of multitechnology circuit assembly and simulation into EDA (electronic design automation) workflows. Simulation performance enhancements in RFPro, the interactive EM simulator integrated with PathWave ADS, enable rapid design tuning and optimization. Error vector magnitude (EVM) distortion specification is required when designing for digitally modulated signals in RF and microwave applications; PathWave ADS incorporates Keysight instrumentation algorithms for compact test-signal generation and rapid EVM distortion calculations. It delivers EVM-simulation support for any modulated signals at the circuit level. **Keysight Technologies Inc.**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com



Langmuir probes for plasma diagnostics

Hidden's ESPion Langmuir probes are a series of bolt-on plasma process analyzers for fast-response, high-sensitivity analysis of plasma parameters for characterization and uniformity measurements. The ESPionSoft multilevel software package controls the ESPion system and gives detailed information on plasma stability and reproducibility. A wide range of plasma parameters are calculated, including plasma potential, electron temperature, electron energy distribution, ion density, and ion flux. ESPion systems are offered with standard sampling options to suit various plasma applications, including electron cyclotron resonance, high-power impulse magnetron sputtering, pulsed plasma thrust, and laser ablation. Probes are supplied with Hidden's multi-inductor chain for wideband RF blocking. For high-temperature applications, probes feature integral gas cooling. **Hidden Analytical Inc.**, 37699 Schoolcraft Rd, Livonia, MI 48150, www.hiddenanalytical.com

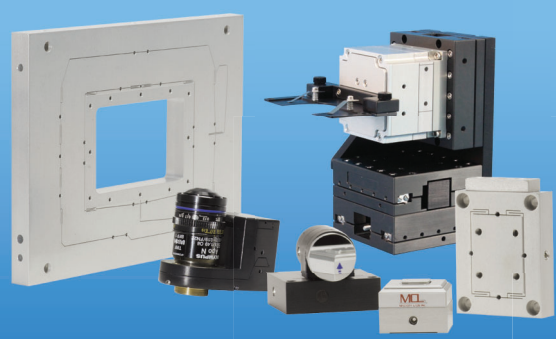


Microwave lock-in amplifiers



The GHFLI and SHFLI microwave lock-in amplifiers from Zurich Instruments extend the advantages of lock-in detection—such as noise rejection, phase sensitivity, and frequency tracking—to the

gigahertz range. With measurement frequencies of up to 1.8 and 8.5 GHz, respectively, the instruments are suitable for measuring periodic signals in such applications as RF MEMS and NEMS characterization and control, spin qubits, ultrafast laser spectroscopy, spintronics, and electronic-devices failure analysis. Each of two independent lock-in channels can measure multiple signals in parallel and generate multitone waveforms, and a full microwave measurement suite includes an oscilloscope, spectrum analyzer, and parametric sweeper. Eight demodulators allow users to simultaneously measure up to eight harmonics—or eight arbitrary frequencies with the multifrequency option—and provide signal amplitude and phase outputs for each harmonic or frequency. The demodulator filters reveal the best trade-off between noise rejection and measurement speed, with a time constant tunable between 14 ns and 21 s. **Zurich Instruments AG**, Technoparkstrasse 1, 8005 Zürich, Switzerland, www.zhinst.com



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NEW PRODUCTS



Phase-noise tester and signal-source analyzer

The 7000 series from Berkeley Nucleonics is an all-in-one solution that offers a set of low-noise functions for basic phase measurement. According to the company, having both absolute and additive residual measurement capabilities makes the 7000 series the most flexible tool of its kind on the market. It comprises a two-channel cross-correlation system with two internal, tunable reference sources; it also allows measurements with externally sourced references. The 7000

series can measure down to -190 dBc/Hz and evaluate signal sources ranging from VHF to microwave frequencies. Three platform options are available, each covering a different frequency range: the 7070, from 1 MHz to 7 GHz; the 7300, from 1 MHz to 26 GHz; and the 7340, from 1 MHz to 40 GHz. Applications include high-speed production testing of phase noise; voltage-controlled oscillator testing and characterization; additive phase-noise characterization of amplifiers, transmitters, and mixers; ultralow phase-noise oscillator analysis; and time stability analysis of clocks. **Berkeley Nucleonics Corporation**, 2955 Kerner Blvd, San Rafael, CA 94901, www.berkeleynucleonics.com

Integrated patch clamp amplifiers

Sutter Instrument's family of integrated patch clamp amplifiers (IPAs) enable efficient, low-noise, whole-cell recordings in electrophysiology applications. Available in either single- or dual-headstage versions, the amplifiers combine state-of-the-art technology with fully integrated digital-to-analog and analog-to-digital

conversion and a high-speed USB interface. Data are managed using the bundled SutterPatch data acquisition and analysis software, which is built on the foundation of Igor Pro from WaveMetrics. The IPA system, in combination with the SutterPatch software, automatically captures and stores all amplifier settings, stimulus information, and external experiment parameters and associates them in time with the raw data traces. The scope window supports multiple view modes in both a 2D and a novel 3D display, which is useful during assay development. **Sutter Instrument**, One Digital Dr, Novato, CA 94949, www.sutter.com



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Motion-control platform

Aerotech has added new products and features to its Automation1 software-based precision machine and motion-control platform. The number of compatible hardware products has increased, so more systems can use Automation1 as their core motion controller. Servomotor drives now include the XC6e higher-powered pulse-width-modulation model and the XL5e and XL2e linear amplifier servo drives. With the new MachineApps tool, users can quickly build and deploy graphical user interfaces for machines and motion systems. The Automation1 iSMC (software-based machine controller) connects with broader factory and laboratory automation systems via the new Python application programming interface and LabVIEW virtual instruments. The Studio development software now offers tools to streamline the development process. Those include configuration checklists, homing and motor-phasing helper modules, and parameter comparison and copying tools. Upgraded servo tuning and data visualization tools come standard. **Aerotech Inc**, 101 Zeta Dr, Pittsburgh, PA 15238-2811, www.aerotech.com



High-performance oscilloscope

Rohde & Schwarz has upgraded its R&S RTP (real-time processing) high-performance oscilloscope. According to the company, the compact, flexible instrument is not only easier to use but also delivers the fastest possible acquisition for real-time signal-integrity analysis. The R&S application-specific

integrated circuit enables an acquisition rate of 750 000 waveforms/s, which helps users more easily spot, isolate, and analyze design defects in circuit boards. The new models are offered in bandwidths of 4–16 GHz with a sample rate of up to 40 Gs/s. To reliably capture and analyze long events or sequences, the standard acquisition memory has been increased to 100 megapoints per channel; 3 gigapoints per channel is optional. The R&S RTP-K39 user-defined math option expands the possibilities for analysis of captured data. Users can call a Python script for complex calculations and display the results as a math signal on the oscilloscope. **Rohde & Schwarz GmbH & Co KG**, Mühldorfstraße 15, 81671 Munich, Germany, www.rohde-schwarz.com

Arbitrary waveform generator

The latest addition to Siglent's Performance Series, the SDG7000A, is the company's most powerful family of arbitrary waveform generators to date. Excellent output performance and flexibility make the SDG7000A suitable for use in the development of embedded electronics. The generators are offered in three bandwidths: 350 MHz, 500 MHz, and 1 GHz. Their two independent channels can be combined to simulate interference on the main signal or easily generate complex modulated signals. In addition to standard waveforms such as sine, square, triangle, and pulse, the SDG7000A generators can output Gaussian noise with device-specific or limited bandwidth. All are equipped with 512-megapoint memory for creating custom signals. User-defined signals can be generated with Siglent EasyWave software or directly on the device display; arbitrary curves can also be imported from text or comma-separated-values files. **Siglent Technologies America Inc**, 6557 Cochran Rd, Solon, OH 44139, <https://siglentna.com>



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Average*	9 471	August** 9 382
C. Total paid distribution (sum of B1–B4)		
Average*	59 200	August** 58 602
D. Free or nominal rate distribution		
1,2. Free or nominal rate mail copies		
Average*	10 723	August** 10 769
3,4. Free or nominal rate copies mailed at other classes or other distribution		
Average*	2 748	August** 2 879
E. Total free or nominal rate distribution (sum of D1–D4)		
Average*	13 471	August** 13 648
F. Total distribution (sum of C and E)		
Average*	72 671	August** 72 250
G. Copies not distributed (office use, leftovers, and spoiled)		
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H. Total (sum of F and G—should equal net press run shown in A)		
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I. Percent paid (C/F × 100)		
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Average*	110 876	August** 112 291
D. Percent paid (both print and electronic copies) (B/C × 100)		
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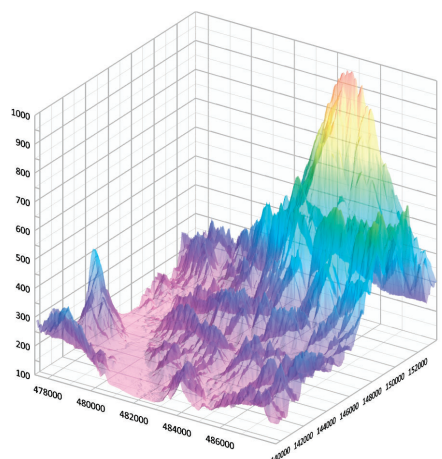
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Richard Fitzgerald, Publisher

NEW PRODUCTS



Scientific graphing software

Golden Software has released the latest version of its Grapher software for visualizing and analyzing diverse data sets. Grapher is used by scientists and engineers in academia, climate research, environmental services and consulting, and exploration. Enhancements to the software include improvements in axes and plots: Users can now add as many breaks as needed to a single axis, format the breaks with various symbols, and position them as desired on the axis. Inverse relationships, such as the Arrhenius plot relationship between temperature and activation energy, can now be plotted by linking the axes to each other. To easily compare distributions between data sets, such as changing patterns on periodically collected data, users can plot multiple histogram sets together by means of stacked or adjacent bar charts. To improve the appearance of exported 3D graphs, plot transparency is now supported in all 3D plot types, including surface and bubble. **Golden Software LLC**, 1301 Arapahoe St, Ste 105, Golden, CO 80401, www.goldensoftware.com

Data loggers

CAS DataLoggers has made available the sq16 and sq16-plus from Grant Instruments. They build on the capabilities of the previous Squirrel data loggers and feature updated SquirrelView software, a built-in Bluetooth communications interface, and the new SquirrelView mobile app. The data loggers provide universal analog input channels to measure current, voltage, resistance, temperature, humidity, pressure, flow, wind speed, and concentration of species. Digital channels can be set to automatically trigger or stop logging if an event occurs. Both the sq16 and the sq16-plus offer eight differential channels that can accept up to 16 sensors. The sampling rate is up to 8 Hz in the sq16 and 100 Hz for two channels in the sq16-plus. The sq16 provides support for two-wire resistance measurements; the sq16-plus offers three- and four-wire resistance. Multiple loggers may be linked, which saves space and enables measurement and monitoring of up to 128 channels of data at once. **CAS DataLoggers**, 8437 Mayfield Rd, Unit 104, Chesterland, OH 44026, www.dataloggerinc.com



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