

NEW PRODUCTS

Focus on test, measurement, quantum metrology, and analytical equipment

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



High-speed oscilloscope

Pico Technology designed its PicoScope 6428E-D oscilloscope for applications that require superior performance in signal analysis. It extends the capabilities of the existing PicoScope 6000E series and thus is suitable for users working in high-energy physics, lidar, visar, spectroscopy, accelerators, and other high-speed applications. The PicoScope 6428E-D offers up to 16 digital channels, 4 analog channels, and a maximum 3 GHz bandwidth with up to a 10 GS/s sampling rate in 8-bit mode. In dual-channel mode, the sample rate reduces to 5 GS/s and 2.5 GS/s on all four analog channels. It offers flexible resolution up to 12 bits (using the company's FlexRes technology), capture memory up to 4 GS, and a data transfer rate exceeding 300 MS/s. A streaming mode allows for continuous data capture directly to a PC's RAM or hard disk. Featuring four ranges between ± 50 and ± 500 mV, the compact PicoScope 6428E-D integrates into various systems that require 50 Ω measurements. *Pico Technology, 320 N Glenwood Blvd, Tyler, TX 75702, www.picotech.com*

Python driver for measurement automation

Tektronix has introduced an open-source Python instrument driver package, called `tm_devices`, for its test and measurement instrumentation. Available free of charge, `tm_devices` provides a native Python user capability for fast, seamless instrument automation. It works across a wide range of Tektronix and Keithley devices to facilitate ongoing development and updates. By integrating `tm_devices` into daily workflows and using it with a preferred IDE (integrated development environment), users can access auto-complete, precise type hinting, comprehensive built-in help, real-time syntax checking, and efficient debugging capabilities. According to Tektronix, its Python package simplifies instrument setup and use while other companies' packages often require users to install complex driver software and interface layers. The `tm_devices` is available via the Python Package Index at <https://pypi.org/project/tm-devices>. *Tektronix Inc, 14150 SW Karl Braun Dr, PO Box 500, Beaverton, OR 97077, www.tek.com*



RF signal-source analyzer

Keysight's SSA-X signal-source analyzer portfolio now extends to 26.5, 44, and 54 GHz. The integrated, one-box series provides comprehensive signal-source analysis for advanced wireless communications, radar, and high-speed digital applications. Those include phase and residual noise measurement, transient measurement, spectrum and network analysis, and voltage-controlled oscillator characterization. The platform features a clean signal that is enabled through a direct digital synthesis source and proprietary cross-correlation channels. According to the company, the SSA-X offers best-in-class phase noise sensitivity. The built-in signal source and two RF inputs enable residual-noise measurements without additional equipment and reconfiguration. The application software has been enhanced to address more measurement needs, including precision clock jitter analysis. With sensitivity of 2 fs at 10 GHz, the SSA-X is suitable for advanced high-speed digital communications applications. *Keysight Technologies Inc, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com*



Electronics for scalable quantum computing

Quantum Machines has made two additions to its quantum electronics product family. Designed for quantum computing at scale, the low-frequency voltage generator and the breakout box support high channel density. The QDAC-II Compact is a versatile, stable, ultralow-noise, 24-channel voltage source for tuning superconducting and spin qubits for optimal performance. It offers all the features of the company's QDAC-II model but fits into one-fourth the space. The QSwitch is an easy-to-use, software-controllable breakout box with 240 relays. It saves time for researchers and R&D users by preprogramming experiments and quickly switching between setups and instruments. The QDAC-II

Compact and the QSwitch can be used stand-alone or connected in series via a single 24-pin cable. Because they can be stacked and operated with multiple units of the company's OPX1000 ultrahigh-speed quantum controller, they allow for the expansion of control systems. *Quantum Machines, HaMasger St 35, Tel Aviv-Yafo, 6721407, Israel, www.quantum-machines.co*

NEW PRODUCTS

System for high-fidelity qubit control

Zurich Instruments has launched a new system for the control and readout of superconducting qubits. The SHF+ product line includes the SHFSG+ signal generator, the SHFQC+ qubit controller, and the SHFQA+ quantum analyzer. The SHF+ products deliver high-fidelity qubit control and quality performance. They allow for the reliable manipulation of fragile quantum states, let users run more powerful algorithms, and accelerate the development of longer-coherence-time qubits and scaling up of quantum processing units. The SHFSG+, SHFQC+, and SHFQA+ offer among the highest signal-to-noise ratios (SNRs) available on the market, according to the company. The high SNR reduces thermal qubit excitation and maximizes quantum computing algorithm fidelity. The improved phase noise allows for the suppression of phase errors in the control of long-lived qubits. In addition to a noise-optimized signal chain, the SHF+ products offer the ability to mute the output for measurements on even the most sensitive qubits. *Zurich Instruments AG, Technoparkstrasse 1, 8005 Zürich, Switzerland, www.zhinst.com*



Analyzers for measurement characterization

A new family of Rohde & Schwarz power analyzers, now available in three compact models, meets the requirements for measuring voltage, current, power, energy, and total harmonic distortion on DC and AC sources. The R&S NPA101 power meter provides all basic measurements; the R&S NPA501 power analyzer adds enhanced measurement functions and graphical analysis; and the R&S NPA701 compliance tester includes evaluation functions in line with IEC 62301 and EN 50564 standards for power consumption and EN 61000-3-2 for EMC harmonic emission testing. All R&S NPA models perform power measurements at levels from 50 μ W to 12 kW, at potential differences from 1 mV to 600 V, and at currents from 1 mA to 20 A. To detect even the shortest transient ripples in output, they have a high sampling rate of 500 ksample/s. The 16-bit resolution A/D convertor ensures an accuracy of $\pm 0.05\%$ for current and voltage readings. *Rohde & Schwarz GmbH & Co KG, Mühldorfstrasse 15, 81671 Munich, Germany, www.rohde-schwarz.com*

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