

new products

The descriptions of the new products

listed in this section are based on information supplied to us by the manufacturers.

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Lawrence G. Rubin

Focus on test and measurement

Time-to-digital converter

Agilent Technologies has announced an expansion of its U1050A line of Acqiris time-to-digital converters. The U1050A-002 TDC has a unique 5-ps timing resolution and a wider measurement range of up to 20 s, a ratio of $1:4 \times 10^{12}$. It is ideal for applications in communications, nuclear research, and time domain transmission reflectometry. The new model has 13 identical hardware channels, of which 12 are independent stop inputs; the 13th is the common start. It can operate in either single-start or multistart acquisition modes and allows the recording of start and stop events separated by as much as 20 s. The internal buffer enables the recording of up to 128 stops. The converter can measure the time of the rising or falling edge of very fast trigger events. Time measurement on the U1050A-002 can be based on either the internal clock source or an external 10-MHz reference input. *Agilent Technologies Inc, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.agilent.com>*

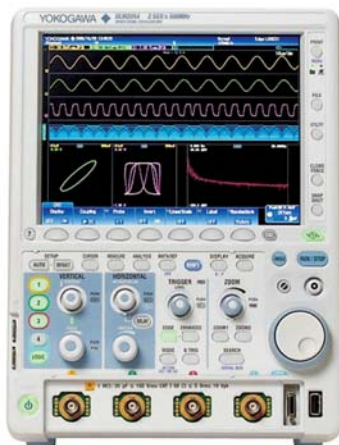
Mobile spectrum analyzers

Rohde & Schwarz is presenting its FSH4 and FSH8 handheld models for mobile spectrum analysis. They cover the frequency range from 9 kHz to 3.6 or 8 GHz and, depending on the options installed, can also be used as two-port vector network analyzers. Their battery can power up to 4.5 hours of operation, and their compact size and weight of only 3 kg (including battery) make them ideal for portable use. The FSH4 and FSH8 have outstanding RF characteristics, with an average noise level, for

example, of -163 dBm (1Hz) at 2 GHz, and a preamplifier that can be activated on all models to reliably measure very low signals. In the presence of multiple strong signals, the instruments' high signal immunity helps prevent internal interference. Models are available with a built-in tracking generator; sensors to convert the analyzers to high-precision power meters also are an option. *Rohde & Schwarz Inc, 8661A Robert Fulton Drive, Columbia, MD 21046-2265, <http://www.rohde-schwarz.com/us>*

Mixed-signal oscilloscopes

The Yokogawa DLM2000 series is a new family of mixed-signal oscilloscopes, a type that represents the fastest-growing sector of the oscilloscope market. The new instruments provide 2 gigasamples/s sampling speed up to 500 MHz bandwidth, and have a large memory—up to 125 megapoints—and a fast update rate. They feature histogram and trending functions, up to 20 000 history memories, digital filtering, zoom windows, and user-defined mathematics.



The DLM2000 series consists of three two-channel models and three four-channel ones, each covering the bandwidths 200, 350, and 500 MHz, respectively. The oscilloscopes have various easy-to-configure triggers. Mixed-signal operation is enabled on the four-channel models by converting the fourth channel of analog input to 8-bit logic. *Yokogawa Corporation, Test and Measurement Division, 2 Dart Road, Newnan, Georgia 30265, <http://www.yokogawa.com/tm>*

Temperature controller

Lake Shore Cryotronics has introduced the model 336, a new temperature con-

troller with four standard inputs, four control outputs, intelligent autotuning, and 150 W of low-noise heater power. Two independent heater outputs provide 100 W and 50 W, can be associated with any of the four sensor inputs, and are programmed for closed-loop control in PID mode. The instrument supports an advanced line of temperature sensors, including diodes, RTDs, and thermocouples, all available from Lake Shore. The controller's zone-setting feature enables the seamless measurement and control of temperature from 300 mK to more than 1500 K, minimizing errors of overheating or underheating, over or under errors, and errors in measurement continuity. Model 336 offers the ability to custom label sensor inputs to reduce guesswork in determining the location with which a sensor is matched. *Lake Shore Cryotronics Inc, 575 McCorkle Boulevard, Westerville, OH 43082, <http://www.lakeshore.com>*

Digital NMR magnetometer

Metrolab's PT 2026 digital NMR Tesla-meter, distributed by GMW Associates, is the successor to the company's PT 2025. The new instrument incorporates digital signal processing, supports two channels, and provides 10 times the frequency range, 6 times the measurement rate, 3 times the acceptable field inhomogeneity, and 4 times the tracking rate. Highly reliable solid-sample proton probes enable the measurement of magnetic fields up to 20 T, with a field range of as much as 10:1, a measurement resolution of ± 0.01 ppm, and a display resolution of 0.01 ppm. USB and Ethernet interfaces allow convenient local or remote measurement for ramping, stability, mapping, and calibration applications. For the longer term, the new instrument's hardware has been shown to work well for pulsed-waveform probes, but those probes are still under development. *GMW Associates Inc, 955 Industrial Road, San Carlos, CA 94070, <http://www.gmw.com>*

Precision lock-in amplifier

Signal Recovery has developed the model 7124 precision lock-in amplifier, which uses a unique analog fiber-optic link to a remote control unit, to which the experiment is connected, and a main instrument console. In normal operation, the RCU gives out no digital



clock signals, so it can emit no switching noise. This architecture gives the 7124 the advantages of the latest digital signal detection and processing technology, along with the low-noise performance associated with instruments of all-analog design. The fiber bundle between the RCU and main console carries the applied signal and oscillator outputs in analog form; control signals to the RCU and the reference signal from it are in digital form. Model 7124 includes the extended operating modes used in some of the company's other lock-ins. *Signal Recovery*, 801 South Illinois Avenue, Oak Ridge, TN 37831-2011, <http://www.signalrecovery.com>

High-bandwidth digital oscilloscopes

LeCroy Corp has released the Wavemaster 8 Zi series, digital oscilloscopes that combine the highest bandwidth and sample rate with the superior performance and fast throughput of the company's X-stream architecture to maximize speed. The new instruments feature 4- to 30-GHz bandwidth, up to 80 gigasamples/s sample rate, and up to 512 megapoints of analysis memory. Both 50 Ω and 1 M Ω inputs are available on the four channels. The oscilloscopes include custom-designed silicon-germanium high-speed components with fifth-generation digital bandwidth interleave technology. The Wavemaster 8 Zi incorporates the Eye Doctor II ad-

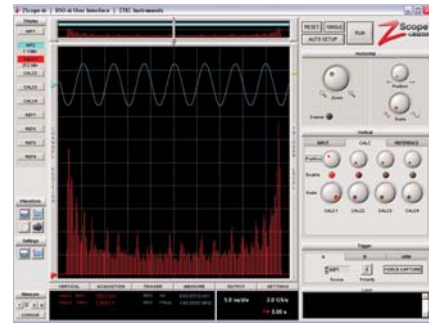
vanced signal integrity tools, which add measurement precision, and SDA serial data analysis software. The series contains eight models spanning the 4- to 30-GHz range. *LeCroy Corporation*, 700 Chestnut Ridge Road, Chestnut Ridge, NY 10977-6499, <http://www.lecroy.com>

Reference thermometers

Hart Scientific, a division of Fluke Corp, has announced models 1523 and 1524 handheld reference thermometers for platinum resistance thermometer, thermistor, and thermocouple temperature measurement. The instruments use current reversal to minimize thermal emfs and offer accuracies of ± 0.002 $^{\circ}\text{C}$ for precision thermistors, and ± 0.011 $^{\circ}\text{C}$ for PRTs; those capabilities are virtually insensitive to environmental temperature. The 1523 is a single-channel thermometer that measures, graphs, and records three sensor types with one tool. The 1524 two-channel thermometer can measure temperature differences directly and offers data logging with up to 15 000 time- and date-stamped measurements for later retrieval. The thermometers use INFOCON connectors, in which a memory chip keeps calibration information for the attached probe. *Fluke Corporation, Hart Scientific Division*, 799 East Utah Valley Drive, American Fork, UT 84003-9775, <http://www.hartscientific.com>

PC oscilloscope software

ZScope 2.0 software from ZTEC Instruments runs on a PC and interfaces with



the company's M-Class PCI, PXI, VXI, and LXI modular oscilloscopes. With the software, users can control the scopes during acquisition and load, and view and zoom; they can also analyze previously saved waveforms whether the scopes are connected to an instrument or not. ZScope 2.0 has dedicated controls for changing position, and time and volts per division. It also has buttons for starting and stopping the acquisition, for adjusting input settings and acquisition modes, and for triggering waveform measurements. The software enables operators to use a mouse to control many of the scope's functions, including waveform position, trigger level, and the location and magnification of the zoom window. The large screen on ZScope 2.0 allows display of multiple waveforms. *ZTEC Instruments*, 7715 Tiburon Street NE, Albuquerque, NM 87109, <http://www.ztecinstruments.com>

Arbitrary waveform generator

Berkeley Nucleonics Corp is offering an arbitrary waveform generator, their

model 645, that delivers 50-MHz sine waves and 1- μ Hz to 10-MHz arbitrary waveforms, including pulse, square, ramp, triangle, noise, and DC. Also available are AM, FM, PM, PSK, and PWM modulations and linear and logarithmic sweeps and bursts. The pulses are variable-edge-time with variable period, pulse width, and amplitude. The generator uses 14-bit resolution and a 125 megasamples/s sampling rate, can store up to five waveforms (4×256 kpoints), four in nonvolatile memory. In graph mode, the user can see the selected function on the display to visually verify signal settings. The company's WaveCrafter editing software enables users to create, edit, and download complex waveforms into the 645 generator. *Berkeley Nucleonics Corporation, 2955 Kerner Boulevard, San Rafael, CA 94901, <http://www.berkeleynucleonics.com>*

Low-noise temperature instrument

Data Translation has introduced an ultraquiet version of its TEMPoint temperature measuring instrument. Two models are available, the DT9871U for USB interface and DT8871U for Ethernet (LXI); each offers less than 1.5 μ V of noise and a temperature accuracy of ± 0.15 $^{\circ}$ C. The instruments use low-level signal conditioning while maintaining a 3-Hz bandwidth and a 10-Hz sampling rate. They offer automatic linearization of eight standard thermocouple types for as many as 48 input channels—expandable to hundreds by adding instruments to the network. The TEMPoint instruments incorporate 24-bit A/D converters for each input and provide 1000-V channel-to-channel galvanic isolation. The company's software, Measure Foundry, allows users to acquire, analyze, display, and save data to disk. *Data Translation, 100 Locke Drive, Marlboro, MA 01752-1192, <http://www.datatranslation.com>*

Logic analyzer module

Tektronix is presenting the TLA7BC4 logic analyzer module for the company's portable and benchtop mainframes. The new 136-channel device complements the recently introduced TLA7BBx modules and advances the state of the art in logic analysis. It offers 20 ps (50 gigasamples/s) timing resolution and up to a

128 megabyte record length; it is ideal for leading-edge computer applications such as Intel's QuickPath Interconnect technology. The timing resolution of the new modules enables designers to troubleshoot difficult problems and verify tight timing margins across hundreds of channels. The high performance of the new modules is partially due to enhancements in the company's MagniVu technology, which gives the user more resolution on digital data and more visual detail. *Tektronix Inc., 14200 SW Karl Braun Drive, P.O. Box 500, Beaverton, OR 97077, <http://www.tektronix.com>*

DC electronic load

B&K Precision Corp has developed the 8540 DC electronic load, which operates

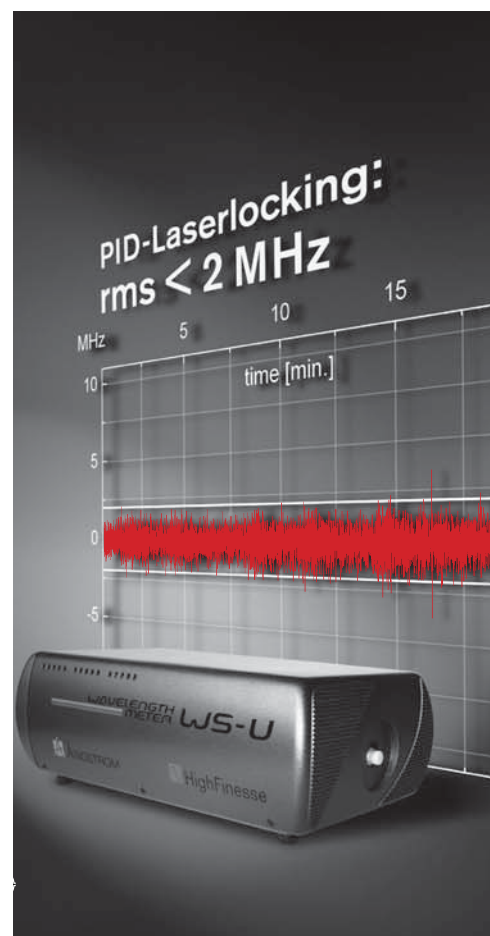


on 0–60 V, has two current ranges—from 0 to 3 A with 1 mA resolution and 0 to 30 A with 10 mA resolution—and can continuously test a 5-V power supply to 30 A (150 W maximum power). It is suitable for testing and characterizing various power sources, including DC power supplies, batteries, fuel

cells, and solar cells. Unlike passive resistive loads, electronic DC loads can operate under multiple modes, such as constant current, constant voltage, and constant resistance, and across a wide variety of voltage and current ranges. The 8450 can run in those modes while voltage/current or resistance/power values are measured and displayed in real time. The instrument has over-current and over-voltage protection and includes a mode to simulate short circuits. *B&K Precision Corporation, 22820 Savi Ranch Parkway, Yorba Linda, CA 92887, <http://www.bkprecision.com>*

New literature

AR RF Microwave Instrumentation has published comprehensive information on its innovative test systems for conductive immunity and automotive transient generator testing. The brochure includes the company's CI and TGAR systems. *AR RF Microwave Instrumentation, 160 Schoolhouse Road, Souderton, PA 18964-9990, <http://www.arww-rfmicro.com>*



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