

new products

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Lawrence G. Rubin

Focus on test and measurement

Pulse generator with optical outputs

Berkeley Nucleonics Corp has introduced the model 565, a digital pulse and delay generator with up to eight channels that offers optical outputs for distribution over longer distances and can trigger, delay, gate, and synchronize multiple devices for use in high RF interference and EMI environments. Properties of the 565 include 500 ps resolution; independent channel gating, amplitude, and polarity; the control of both the delay and width of each channel; and the ability to sum the timing of the various channels to any other channel and to select timing references for each channel. Gate, burst, delayed enable, and divide by N modes are included. The 565's optical options allow users to combine both optical and electrical outputs in pairs. For example, on a four channel device, two or four of the outputs can be optical. *Berkeley Nucleonics Corporation, 2955 Kerner Boulevard, San Rafael, CA 94901, <http://www.berkeleynucleonics.com>*
See www.pt.ims.ca/12304-131

Microwave counter/analyzer

Pendulum Instruments has announced the CNT 90XL family of microwave frequency counter/analyzers. The instrument includes an integrated power meter and provides CW and burst measurement of frequency and power. Four models cover frequencies to 27, 40, 46, and 60 GHz; each offers a measuring speed of 250 000 frequency samples/s, a 14 digit display, and sensitivity better

than 33 dBm. The basic models include a standard time base; options are offered that extend the time base stability to as high as 0.003 ppm/month. The CNT 90XLs statistical processing capability includes numerical stability data and frequency distribution histograms for analysis of frequency, power, and modulation. Its graphical display shows frequency changes over time directly on screen, for example, for fast power switching or FM. *Pendulum Instruments Inc, 5811 Racine Street, Oakland, CA 94609, http://www.pendulum_instruments.com*
See www.pt.ims.ca/12304-132

Vector signal analyzer

The model 2810 vector signal analyzer from Keithley Instruments combines high performance, complex signal analysis capability for measurement needs on wireless devices, transceiver modules, and RF components. Standard features include electronic attenuation and a sweeping CW source. The new instrument uses an advanced software defined radio architecture with a 500 MHz digital signal processor that enables fast data acquisition and processing. For example, the 2810 can perform a 200 MHz span sweep in approximately 15 s using a narrow resolution bandwidth of 100 Hz.



It also provides greater than 30 MHz of 3 dB measurement bandwidth with 20 MHz of flatness within 1 dB; wide bandwidth signals can be captured in one acquisition. The 2810 can decompose digitally modulated signals into their in phase and quadrature phase components. *Keithley Instruments Inc, 28775 Aurora Road, Cleveland, OH 44139, <http://www.keithley.com>*
See www.pt.ims.ca/12304-133

Signal generator

Novatech Instruments has developed the model 409A, a four channel, direct digital synthesizer signal generator that features four phase synchronous sine or cosine outputs from 0.1 Hz to 171 MHz



pco.
imaging

pco.2000



Highlights

- excellent resolution 2048x2048pixel
- 14bit dynamic range
- image memory in camera up to 4GB
- low noise of 10e⁻ rms @ 10MHz
- 14.7fps at full resolution
- standard interfaces (IEEE 1394, camera link)

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See www.pt.ims.ca/12304-44

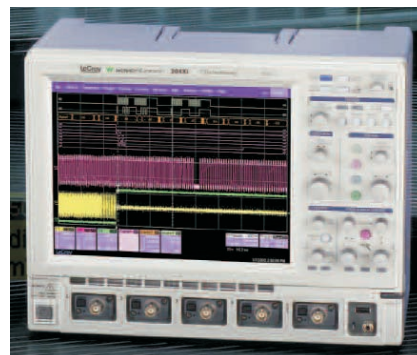
with 0.1 Hz frequency resolution and ± 1.5 ppm accuracy. The frequencies of the four outputs can be independently set and can be offset by a controllable phase. All output frequencies (32 bits), amplitudes (10 bits), and phases (14 bits) are independently controlled by an RS 232 serial port at 19.2 kbaud. The 409A can store up to 33 000 profile points consisting of phase, frequency, dwell time, and amplitude settings. It is equipped with a ± 1.5 ppm onboard clock and can accept an external clock source up to 500 MHz. When used with the external clock, all 409A units can be synchronized to a systemwide frequency standard. *Novatech Instruments Inc.*, P.O. Box 55997, Seattle, WA 98155 0997, http://www.novatech_instr.com
See www.pt.ims.ca/12304-134

Single-photon counter

SUI, a part of Goodrich Corp, is offering the SU 02 SPC NIR photon counter, designed for single photon counting in the spectrum from 0.9 to 1.6 μm . The module incorporates circuits for discrimination of avalanche photodiode output pulses at very low current levels and active quenching circuitry with response times under 10 ns. In combination, these features provide the least time jitter and afterpulsing said to be available in commercial indium gallium arsenide/indium phosphide photon counting technology. The SU 02 SPC single photon detection tool offers user control over a broad range of such parameters as gate duration, repetition rate, detection probability, and dead time. Applications for the new module include ultrasensitive Raman spectroscopy and quantum key distribution. *SUI, Goodrich Corporation*, 3490 Route 1, Building 12, Princeton, NJ 08540 5914, <http://www.oss.goodrich.com/sui>
See www.pt.ims.ca/12304-135

Oscilloscopes

LeCroy Corp has added three new oscilloscope models, two to its WaveRunner Xi and one to its WaveSurfer Xs product lines. The WaveRunner 104Xi provides a 1 GHz bandwidth, an upgrade from the 400 MHz and 600 MHz models; the 204Xi offers a bandwidth of 2 GHz. Sampling rates for both are 5 gigasample/s on four channels, interleaved to 10 GS/s. The model 104Xi increases the WaveSurfer oscilloscope line to 1 GHz of bandwidth with a sample rate of 2.5 GS/s on four channels, to 5 GS/s interleaved. All WaveRunner Xi



models will now be supplied with 10 megapoints/channel of memory, interleaved to 20 Mpts/ch. The increased memory will enhance analysis tools and application programs, such as histograms, long memory FFTs, user defined functions, jitter and timing analyses, and mixed signal options. *LeCroy Corporation*, 700 Chestnut Ridge Road, Chestnut Ridge, NY 10977 6499, <http://www.lecroy.com>
See www.pt.ims.ca/12304-136

AC power source

Associated Research's model AC1000 is a 1 kVA single phase AC power source that is provided as a companion instrument to the company's OMNIA 8100 series of electrical safety compliance analyzers. The source can be used for line leakage testing when an isolation transformer adjustable to 110% line voltage is required. The AC1000 can also be used to simulate various utility power configurations. The instrument's output covers a frequency range of 45 500 Hz and provides two voltage ranges, 0 150 V with a maximum current of 8.4 A and 0 300 V with a maximum current of 4.2 A. The programmable overcurrent fold back feature maintains constant output current with a varying load, and high/low voltage and frequency limits are also programmable. Three memory locations allow for storing current limits and voltage and frequency settings. *Associated Research Inc.*, 13860 West Laurel Drive, Lake Forest, IL 60045, <http://www.asresearch.com>
See www.pt.ims.ca/12304-137

Spectrum analyzer

Anritsu has introduced the MS2724B portable spectrum analyzer, which covers the frequency range from 9 kHz to 20 GHz and is designed to conduct accurate analysis on the new wave of wireless LAN and cellular signals and medical patient monitoring systems. Several smart measurements are built into the instrument, including channel power, adjacent channel power ratio,

carrier to interference ratio, and field strength. The MS2724B has an average noise level of less than 159 dBm, typically in a 1 Hz resolution bandwidth at 1 GHz, has a resolution bandwidth and a video bandwidth range of 1 Hz to 3 MHz, and offers quasi peak detection. The analyzer can internally store 1000 test setups and 1000 measurement traces, but Compact Flash memory modules and USB Flash Drives allow an unlimited number of setups and traces to be stored. *Anritsu Company, 1155 East Collins Boulevard, Richardson, TX 75081, <http://www.us.anritsu.com>*

See www.pt.ims.ca/12304-138

Laser synchronizer

Toptica Photonics has announced the PLL option, which adds phase locked loop synchronization electronics to match the low noise of its FemtoFiber laser. The new equipment makes it possible to synchronize the laser pulses to other pulsed instruments, such as synchrotrons, accelerators, and pulsed magnets, for use in pump probe spectroscopy and optical sampling. The PLL option also enables synchronization to



highly stable RF oscillators, such as those referenced to atomic clocks, to generate frequency combs. It includes a phase delay input port that provides users with a means to scan laser pulses with respect to a reference signal. The variable delay ranges from 400 ps to +400 ps and thus is equivalent to an optical delay line of 12 cm. *Toptica Photonics Inc, 61 Union Street, Westfield, MA 01085, <http://www.toptica-usa.com>*

See www.pt.ims.ca/12304-139

TWT microwave amplifiers

AR Worldwide has added two new traveling wave tube (TWT) microwave amplifiers to provide users a wider choice of power options. The two models achieve their rated 125 W power output by efficiently combining the outputs from four 50 W (nominal) microwave tubes that are factory matched in gain

and phase. The model 125T18G26 covers the 18 26.5 GHz frequency range; the 125T26G40 covers 26.5 40 GHz. Both models exhibit an output flatness over the respective frequency ranges of ± 8 dB maximum and require 1.0 mW input for rated output. The amplifiers include VSWR protection and gain control and provide a front panel display that shows forward and reflected output and extensive system status information. The new TWTs are designed for applications for which wide instantaneous bandwidth, high gain, and high power output are required. *AR Worldwide, RF/Microwave Instrumentation, 160 School House Road, Souderton, PA 18964 9990, <http://www.ar-worldwide.com>*

AFM/SPM system

Agilent Technologies has introduced the Agilent 5400 atomic force microscope/scanning probe microscope system, which includes an open loop x y and z scanner (ranges 9 or 90 μm), a controller, contact mode, acoustic AC mode, and phase imaging. The scanner, which can scan as many as eight images simultaneously at speeds up to 48 Hz, can be positioned in z to accommodate larger samples up to 21 mm thick. The 5400 uses a low coherent laser with a small spot size for low interference imaging and has open access to the sample plates and simple alignment of optics; it uses PicoView software, a new design with streamlined graphic user interfaces. To increase its appeal as a teaching instrument, the company is including undergraduate curriculum materials with each system. *Agilent Technologies Inc, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.agilent.com>*

See www.pt.ims.ca/12304-141

Pulse generator

Quantum Composers has developed programming enhancements for its 9500+ pulse generator. Additional clock inputs and outputs can now be added to enable phase locking up to 20 MHz to a common signal, a feature that is helpful in applications in which several pieces of equipment work in concert under one time frequency, thus eliminating timing phase shift. The generator can multiplex signal outputs together to form complex waveforms. Options such as optical output, input, and communication packages are important to trigger, delay, gate, and synchronize multiple devices for use in high RF interference and EMI

environments. Other features include pulse incrementing that allows the width and delay of each channel to be incremented at the end of pulse bursts. *Quantum Composers Inc.*, P.O. Box 4248, Bozeman, MT 59772, <http://www.quantumcomposers.com>
See www.pt.ims.ca/12304-142

AFM system accessory

Anasys Instruments has expanded the imaging capability of its nano TA atomic force microscopes with a heated tip accessory. By controlling the heat at the end of a probe tip, users can image a surface to study its topography as the surface undergoes physical change, including a glass transition, a recrystallization, or a melt. The nano TA accessory provides users with local thermal analysis measurements in which the probe is parked on top of a feature and then heated. The deflection of the probe will then follow the behavior of the sample; for example, it may show initial expansion, then undergoes a glass transition, causing the probe to appear to sink into the surface, indicating the free volume change at that temperature. *Anasys*

Instruments, 3944 State Street, Suite 345, Santa Barbara, CA 93105, <http://www.anasysinstruments.com>

See www.pt.ims.ca/12304-143

Wind tunnel

The WT4401 from Omega Engineering is a benchtop wind tunnel designed to give a highly uniform flow rate over a 6 in. long test section (4 in. $\times$ 4 in. chamber). A motor that varies from 0 to 10 000 rpm is adjusted by a precise motor control unit to give a particular flow rate, determined by monitoring a highly repeatable differential pressure sensor that has been calibrated to an accuracy of 1% of reading to an individual wind tunnel in a system. Each WT4401 is supplied with two restrictive plates for achieving optimum low flow rates. The established differential pressure measurements versus flow rates are listed from 25 to 9000 feet/min. An optional deluxe instrumentation package is available for monitoring temperature, barometric pressure,



humidity, and differential pressure. *Omega Engineering Inc.*, One Omega Drive, Stamford, CT 06907 0047, <http://www.omega.com>

See www.pt.ims.ca/12304-144

Thin-film deposition controller

INFICON has announced the XTC/3, a thin film deposition controller that uses the company's ModeLock technology to prevent film thickness errors caused by mode hopping. The XTC/3S single layer model operates with up to nine films, two sensors, and two sources. The XTC/3M for multiple layers provides up to 99 processes, 999 layers, 32 films, two sensors, and two sources. The new controllers support INFICON's Crystal 12, Crystal Six, and dual sensor automatic crystal switching for continuous deposition rate monitoring and enable films and processes to be assigned unique, descriptive names for easy retrieval. The XTC/3 models are free standing (no computer necessary), but optional Microsoft Windows software is available for PC operations. *INFICON*, Two Technology Place, East Syracuse, NY 13057, <http://www.inficon.com> ■
See www.pt.ims.ca/12304-145





The CS110 lightning warning system combines an electric field meter with a strike detector. It measures the first strike and last strike potential

KNOW YOUR LIGHTNING

of storms developing within 6 miles and detects lightning strikes in storms up to 20 miles away. The system can be configured to trigger audible or visual alarms.

Learn from our experts at www.campbellsci.com/cs110

See www.pt.ims.ca/12304-47



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Visit us at:

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DPG meeting (March 26-30) Booths 1+2

CMMP meeting (April 11-13) Booths 9+10

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