

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 AND MEASUREMENT

Piezo-Driver/Amplifier

Trek has announced its new model PZD700 DC-stable, piezo-driver/amplifier, which is designed to provide precise control of output voltages in a bipolar range of 0 to ± 700 V DC at ± 100 mA, or unipolar ranges of 0 to +1.4 kV or 0 to -1.4 kV DC at ± 50 mA. The PZD700 features an all solid-state design, a slew rate greater than 150 V/ μ s in the bipolar range and greater than 100 V/ μ s in the unipolar range. It operates as a non-inverting or inverting amplifier with an adjustable gain of up to ± 300 V/V and features a small signal bandwidth of greater than 50 kHz for all voltage ranges. The four-quadrant active output stage sinks or sources current into a load that can be capacitive.

The PZD700, available in single- and dual-channel configurations, is protected against overvoltage and overcurrent conditions and provides precision voltage and current monitors that furnish low-voltage replicas of the high-voltage output and load current. *Trek Inc, P.O. Box 728, 3932 Salt Works Road, Medina, New York 14103*

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Digital Delay/Pulse Generators

The model 555 digital delay/pulse generator from Berkeley Nucleonics provides precise delays and widths with 1 ns resolution for times up to 100 s. The pulses can be synchronized to a common trigger or an internal trigger, useful where several pulses or gates need to be delayed and timed with respect to each other or the common trigger. The 555 is available in 2-, 4-, and 8-channel configurations. Each channel may be gated, with gate enabling selectable on a per channel basis; has independent output enable/disable and selectable output polarity, with the output selectable from among fixed or adjustable

level amplitudes to 15 V or an optional 35 V; has an output for every n triggers; supplies 1 to 50 k pulses in a burst with each channel having an independent number of burst pulses; and can operate with a specific on-off duty cycle, terminating operation after k cycles. *Berkeley Nucleonics Corp, 3060 Kerner Boulevard, San Rafael, California 94901*

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Temperature Metrology Bath



Hart Scientific's new model 7380 metrology bath provides ultra-cold temperatures for precision calibrations of all types of temperature sensors. Covering the range from -80 to 100°C , the bath maintains stability and uniformity better than $\pm 0.03^{\circ}\text{C}$ throughout its entire range. A temperature of -80°C is achieved in less than 90 minutes and its two compressors add almost no noise to the working environment. The 7380's access opening is sufficient to allow for the calibration of many thermometers at once; comparison calibrations can be performed with uncertainties better than 0.05°C .

Alcohols such as ethanol or methanol (as well as Halocarbon 0.8 Cold Bath Fluid) may be used in the 1-gallon tank for low temperatures. Other fluids, such as water and silicone oils, may be used at higher temperatures. The 7380 comes with a NIST-traceable certificate showing stability data and set-point accuracy. *Hart Scientific Inc, 799 East Utah Valley Drive, American Fork, Utah 84003*

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For measuring low voltages and low resistances, the new Keithley Model 2182 Nanovoltmeter is an unrivaled value.

Its low noise at fast speeds (3-5 times lower than previous nanovoltmeters at 10 rdgs/s) and affordable price make it outstanding for research and component test applications.

When paired with a current source such as the Model 2400 SourceMeter®, the 2182's "Delta" mode allows fast, synchronized current reversals, dramatically reducing the effect of changing thermal EMFs, while directly calculating and displaying the resultant compensated voltage. For specs, or to talk with an Application Engineer, contact Keithley today.

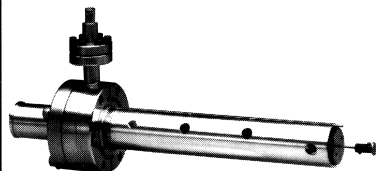
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Digital Color Oscilloscopes

LeCroy has introduced the LC684D family of digital oscilloscopes (DSOs), featuring a 10.4" flat panel color display, 1.5 GHz bandwidth, and 2 gigasamples per second (GS/s) A/D converters in each of four channels (cascadable to 8 GS/s on a single channel). The models LC684D, DM, DL, and DXL provide a memory length per channel of 100, 500, 2000, and 4000 kilobytes, respectively. The oscilloscopes offer the company's analog persistence display mode that emulates the brightness-graded intensity of analog models — even for single-shot signals.

The DSOs include troubleshooting tools such as advanced math and FFT packages, spectrum analysis, parameter analysis, and multiple input-output ports. As an option, the company offers a jitter and timing analysis package, making it possible to determine when timing aberrations occur and track those problems to the source waveform. *LeCroy, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977-6499*

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Frequency Standards

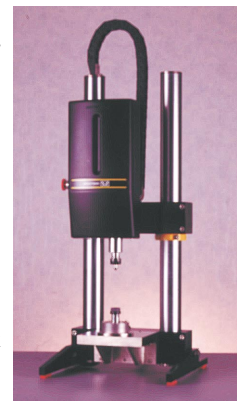
The models 908 and 909 frequency standards from Wavetek can be used as accurate reference clocks in automated test systems and in calibration laboratories. The 908 incorporates a high-stability, oven-controlled SC-cut crystal oscillator, while the 909 includes an ultrastable rubidium timebase. Both instruments provide 5 buffered 10 MHz outputs (10 with option 70) and one 5 MHz output. The rubidium version (model 909) with its aging drift of 5×10^{-11} per month and 1×10^{-9} in 10 years, needs practically no adjustment during its lifetime; the 908 exhibits an aging drift of 3×10^{-9} per month and 2×10^{-8} per year. Both models possess short warm-up times (about 10 minutes), so that for portable applications, there is no need for battery backup during transportation. It is said that laboratories using a central frequency reference — connected to a possibly costly distribution system to several buildings — will find it more cost effective to install a 909 standard at each point of use. *Wavetek, 9045 Balboa Avenue, San Diego, California 92123*

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Materials Testing System

Instron has introduced its new MicroTest materials testing system for performing tensile, compression, flex, shear, and fatigue tests in static, cyclic, or dynamic modes. For monotonic and simple cycle testing, the MicroTest 5548 can be configured with the company's 5500 controller and Merlin application software. For complex cyclic or dynamic testing, the MicroTest 8848 can be used with the company's FastTrack 8800 controller and FastTrack 2 software. We are told that the MicroTest system can accurately test microelectronic and subminiature specimens, including small medical and biomedical devices, because it has a high accuracy for load measurements and submicron accuracy for deformation and elongation measurements. The system's stiff reaction frame construction and the company's wide range of special gripping and test fixtures contribute to such performance. *Instron Corp, 100 Royall Street, Canton, Massachusetts 02021-1089*

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Temperature Controller

Lake Shore Cryotronics has announced the model 331 temperature controllers for most cryogenic and many higher temperature measurement and control applications. The controllers feature two factory-configured sensor inputs, compatible with either diode sensors, negative and positive temperature coefficient resistance temperature detectors (RTDs), or thermocouple sensors. The model 331E offers one, and the 331S offers two control loops, each with a 50 W heater output. Temperature response curves for silicon diodes, platinum RTDs, and most thermocouples are included. Up to twenty 200-point user curves for other temperature sensors can be loaded via computer interface or the instrument front panel. With a range from 0.1 to 100 K per minute, the set point ramp feature allows

smooth continuous changes in set point. The 331S's analog output can provide a voltage proportional to temperature. *Lake Shore Cryotronics Inc., 575 McCorkle Boulevard, Westerville, Ohio 43082*

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Computer-Based Oscilloscope

National Instruments has announced the NI 5112, a two-channel, computer-based oscilloscope for PXI and CompactPCI platforms. It comes with an interchangeable virtual instrument driver and ready-to-run oscilloscope software. The new scope features on-board acquisition memory, wide analog bandwidth, and a large analog input range. Because it's based on the high-speed PCIbus, it is said that the NI 5112 acquires and processes large waveforms 100 times faster than comparable GPIB-based instruments. The oscilloscope features: 100 MHz bandwidth; 100 megasamples/s real-time sampling; 8-bit resolution; 16 megabyte depth per channel; ± 25 mV to ± 25 V input range with up to ± 50 V offset; and a user-selectable input bandwidth limit. The NI 5112 can be used as a single module or in conjunction with the company's NI 2590, a 4:1 high-frequency multiplexer. *National Instruments, 11500 North Mopac Expressway, Austin, Texas 78759-3504*

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Thermometry Bridge

The F300 is a metrology grade AC thermometry bridge from ASL. AC bridges make fast, accurate readings of platinum resistance thermometers. AC excitation eliminates errors caused by thermal emfs generated in DC circuits. The F300 can read and display temperature directly in $^{\circ}\text{C}$ or kelvins; it will also display absolute resistance or resistance ratio. It will operate with any platinum resistance thermometer that has an ice point resistance in the range of 0.25 to 1000 Ω . Accuracy over the entire operating range is $\pm 0.005^{\circ}\text{C}$ and $\pm 0.001^{\circ}\text{C}$ at 0°C ; resolution is 0.0001°C . IEEE-488, RS232C, and analog outputs are provided as standard equipment. The F300 includes LabWindows software for full remote control and thermometer calibration. An optional multiplexer is available to handle up to 60 input channels. *ASL Inc., 100 Brickhouse Square, Andover, Massachusetts 01810*

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RF Power Meter and Power Sensor

Anritsu has introduced the ML2407A (single-channel) and ML2408A (dual-channel) RF power meters for measuring signals used in both digital mobile radio systems and by pulsed RF carriers. When used with the company's MA2469A dual diode power sensor, the power meters can perform accurate measurements on peak and average power, as well as crest-factor measurements on pulse-modulated signals. The MA2469A features a 1.25 MHz video bandwidth, high accuracy and speed, and >80 dB of dynamic range. A built-in sensor EEPROM ensures accuracy by simplifying calibration factor correction, as well as automatically correcting for sensor nonlinearity and temperature. Because the meters can capture and display pulses as fast as $1 \mu\text{s}$, they can provide graphical dis-



plays of pulsed waveforms. *Anritsu Co., Microwave Measurements Division, 490 Jarvis Drive, Morgan Hill, California 95037-2809*

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Direct Digital Synthesizer Module

Novatech Instruments has announced the model DDS7m, a 68 MHz direct digital synthesizer module. It features RS232 or parallel binary control, external clock input, and master clock output. The parallel interface allows frequency and phase updates in less than 400 ns. Used with the master clock output and the external clock input, up to 10 DDS7m's can be phase synchronous in a multiple-phase system. The RS232 control mode features nonvolatile storage of all settings; the internal clock is accurate to 10 ppm. *Novatech Instruments Inc., 17962 Midvale Avenue North, Suite 219, Shoreline, Washington 98133-4925* ■

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