

**Robert Goldberg**

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## Real-Time Oscilloscopes Enable Terabit Innovators to Validate Research in Less Time

Keysight Technologies, Inc. has announced the new Infiniium UXR series, claiming it as the only oscilloscope to support terabit research with real-time bandwidth up to a 110 GHz industry-leading sample rate (256 GSa/s) while providing lowest noise

and jitter.

As the demand for faster and more data continues to surge, digital speeds increase and consequently, margins decrease. Test equipment has struggled to keep up with the cutting-edge researchers who are racing to the next technology breakthrough.

The Keysight Infiniium UXR series offers advanced capabilities that enable leading-edge researchers to accelerate time to market with PAM-4, 5G, and optical solutions, by ensuring signals are clearer, eye diagrams are open, and results are accurate. In addition, when paired with Keysight's new up to 110 GHz Optical Modulation Analyzer frontend and the VSA-based optical modulation software, the Keysight Infiniium UXR series turns into an end-to-end solution for optical research.

The Keysight Infiniium UXR series provides:

- ▶ 10-bit resolution and industry leading signal integrity enables customers to experience superior effective number of bits (ENOB) during characterization of progressively complex modulation standards,
- ▶ four full-bandwidth channels to reduce timing error when working with dual-polarization coherent modulation,



- ▶ full self-calibration which ensures ongoing measurement accuracy while eliminating the need to take the unit out of service,

- ▶ a chipset based on a Keysight-proprietary Indium Phosphide (InP) process that enables exceptionally wide bandwidth and extremely low noise floor.

More information about the Keysight Infiniium UXR Series real-time oscilloscopes is available at [www.keysight.com/find/UXR](http://www.keysight.com/find/UXR).

## 3-Channel Programmable Power Supplies

The series 2230G power supplies from Tektronix provide up to 375 W of power in a compact 2 U



high, half-rack wide enclosure. The 2230G-30-6 offers up to 6 A from two channels; the 2230G-60-3 offers up to 60 V from two channels. Adjustable, independent, and isolated channels can test two single voltage devices or a multiple voltage device with one power supply. Combine 30 V channels in series to increase voltage up to 60 V or connect two or three channels in parallel to output as much as 15 A using the 2230G-30-6.

The 2230G power supplies can power circuits that are optically isolated or transformer-isolated from each other and have different reference points. The isolated channels eliminate the need for a second power supply for powering one of the isolated circuits. Additionally, each channel can be independently controlled and turned on or off at any time; control over each individual channel minimizes noise in the circuit.

Each 2230G channel offers 0.03% basic voltage accuracy and 1 mV resolution setting and measurement, ensuring that the programmed output is accurately applied to the output terminals. Plus, using remote sense leads for each channel compensates for and overcomes voltage drops due to resistances in the test leads, assuring that the programmed voltage is applied to the load.

USB, GPIB, and RS-232 interfaces enable complete control of the 2230G power supplies from a PC.

Summary of features:

- ▶ Power: 195 W or 375 W
- ▶ Maximum Voltage: Up to 60 V
- ▶ Maximum Current: Up to 6 A
- ▶ Interfaces: USB, GPIB, RS-232

Find more information at [www.tektronix.com](http://www.tektronix.com).

## Industrial IoT Starter Kits

HARTING is making it easy to implement Industrial Internet of Things (IIoT) solutions with three new starter kits. Each kit contains the necessary hardware and software for a basic application, removing the risk and guesswork for companies looking to embrace IIoT.



All three kits now are available. The first is the HARTING MICA CISS Complete IIoT Starter Kit for a basic condition-monitoring application. It comes with a sensor that can measure seven different parameters, including vibrations, acoustics, temperature, humidity and more. The sensor is connected to the HARTING MICA, the edge-computing device that processes, computes and visualizes all the data from the sensor. The HARTING MICA comes with pre-installed software that includes an easy to use dashboard that shows all of the sensor readouts.

The HARTING MICA RF-R300 Complete RFID Starter Kit contains everything needed for a basic RFID asset tracking application: industrial RFID tags, the HARTING MICA RF-R300 reader, two antennas and all cabling. The HARTING MICA comes with a pre-installed demo version of HARTING's certified Ha-VIS Middleware, which translates the raw RFID signals formats into modern software protocols.

The third kit is the HARTING MICA Basic Ethernet Starter Kit. This one is ideal for connecting peripheral devices through Ethernet using communications protocols such as Modbus-TCP or OPC UA. The kit contains all of the cabling required to get started and a basic version of the HARTING MICA and software. As with the other two starter kits, this one comes with Fast-Ethernet capabilities, eight digital GPIO ports, and the ability to be powered over PoE or 12 V / 24 V.

To learn more visit: [www.HARTING-usa.com/IIoT](http://www.HARTING-usa.com/IIoT).

## Automotive Radar Echo Generator for Automotive Radar Sensors

As essential components for autonomous driving, radar sensors help keep road users safe. With each stage on the way to fully autonomous driving, the number of radar sensors per vehicle rises significantly. Both OEMs and Tier 1 suppliers need reliable test solutions, suitable for mass production, for the large number of safety-related radar-based driver assistance systems. Rohde & Schwarz developed the new R&S AREG100A automotive radar echo generator in close cooperation with the automotive industry. The T&M expert put its decades of experience in millimeter wave technology into designing



a test and measurement product precisely tailored to the automotive industry's test requirements.

The R&S AREG100A automotive radar echo generator reliably tests radar sensors in the 24 GHz ISM band and in the E band at 77 GHz or 79 GHz. It simulates echoes of up to four artificial target objects at fixed distances. User-configurable Doppler offsets can optionally be applied to simulate radial movement of the objects. Customers can specify desired fixed distances at the time of order. The R&S AREG100A is a future-proof solution for testing advanced long-range and short-range radars. It supports bandwidths up to 4 GHz in the E band and can simulate objects at a minimum distance of 4 m if the distance between the frontend and the DUT is 80 cm.

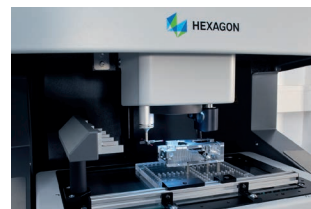
Due to the dramatic rise in the number of vehicles equipped with radar-based safety-related driver assistance systems, the European regulatory authorities have stipulated mandatory tests in the Radio Equipment Directive (RED) to ensure safe operation and coexistence of automotive radar sensors, particularly with respect to autonomous driving. For easy, convenient and cost-optimized execution of the tests specified in the RED standard ETSI EN 303396, the R&S AREG100A provides calibrated input and output ports in the IF band. The immunity of the sensors to interference signals can be checked with a connected RF signal generator. The occupied bandwidth and spurious emissions can be measured easily and conveniently with a connected signal and spectrum analyzer. And the total radiated power (equivalent isotropic radiated power, EIRP) can be determined very precisely using a connected power meter. For high reproducibility of the described test solutions, Rohde & Schwarz offers an anechoic test chamber featuring exceptional compactness without compromising shielding attenuation.

For more information about this and currently available test solutions for automotive radar, visit [www.rohde-schwarz.com/ad/press/areg100a](http://www.rohde-schwarz.com/ad/press/areg100a).

## Benchtop Multi-Sensor Coordinate Measuring Machine

Hexagon's Manufacturing Intelligence division has announced the launch of its Optiv Performance 322 coordinate measuring machine (CMM). The Optiv Performance 322 is a customizable benchtop CMM with a small footprint and convenient upgradability which caters to a variety of applications.

Weighing under 400 lbs., the fixed bridge and moving table-type machine is light enough to be placed directly on existing workbenches and relocated without recalibration by a Hexagon engineer. In addition to saving floor-space, the machine allows



for increased accuracy and repeatability at high speed (300 mm/s) and high acceleration due to the stiffness of its granite construction. The CMM features advanced temperature compensation technology that calculates a correction value for measurement deviations to ensure users get consistently stable results. The Optiv Performance 322 is ideal for the inspection of sheet metal stampings, injection-molded plastic parts, profile scanning, and more applications.

Equipped with PC-DMIS software, the benchtop CMM is designed for flexibility and can measure a range of different parts with minimal turnaround times. The CMM is available in an entry-level vision-only configuration. However, the future-ready machine's 3D accuracy specification and pre-cabling enables easy in-field upgrades to a complete 3D multisensor solution supporting a range of contact and non-contact sensors, reducing customer requirements for multiple products in the inspection area. The system is built on a modular concept, so the sensors, controllers, PC and measuring software can easily be customized and scaled to changing requirements.

More information is available at [HexagonMI.com](http://HexagonMI.com).

## Spectrum and Vector Network Analyzer

Siglent Technologies has announced the new Model SVA1015X Spectrum and Vector Network Analyzer with frequency ranges from 9 kHz to 1.5 GHz, (VNA frequency range is 10 MHz – 1.5 GHz). This next generation test instrument provides exceptional measurement precision with a wide range of RF measurement functions for RF device testing, broadcast evaluation, site surveying, EMI pre-compliance, R&D and many more applications.



Resolution Bandwidth (RBW) from 1 Hz to 1 MHz in 1-3-10 sequence. Phase Noise is less than -99 dBc/Hz @ 1 GHz and Total Amplitude Accuracy is less than 1.2 dB. Optional functions include a Vector Network Analyzer (S11, S21), a Frequency Domain Reflectometry based distance-to-fault locator, and a modulation analyzer. The unit comes standard with a 10.1 inch (1024 × 600 pixels) multi-touch screen, with mouse and keyboard supported. There is a web browser remote control for PC and mobile terminals.

Learn more about the new SVA1015X at [www.siglentamerica.com/spectrum-analyzers/sva1000x-spectrum-vector-analyzer/](http://www.siglentamerica.com/spectrum-analyzers/sva1000x-spectrum-vector-analyzer/).

## Electron Probe Microanalyzer With Touch-Screen Interface

CAMECA announces the launch of SXFive-TACTIS, the newest addition to the CAMECA line of high-end micro-analytical instruments, and, according to CAMECA, the

only Electron Probe Microanalyzer (EPMA) in the world with a touch-screen interface.

SXFive-TACTIS brings together all the best features of CAMECA's earlier electron probe microanalyzers and innovates with a revolutionary dual interface. It is designed to meet a growing demand from multiuser research facilities for instrumentation that combines highly sophisticated analytical options with extreme ease of use.

With SXFive-TACTIS, users can choose between two tool operation modes. In beginner mode, the instrument configuration and operation, as well as basic imaging and data processing, are made easy thanks to a new, intuitive, touch-screen interface that gives immediate access to a wealth of simplified options. In expert mode, the interface is designed for skilled users who can benefit from a full complement of different tool parameters and software options.

Among the other technological advances of the SXFive-TACTIS are an additional backscattered electron (BSE) detector for enhanced imaging especially at low voltage; a fully integrated energy dispersive spectroscopy (EDS) hypermapping module for ultrafast quantitative analysis; and the capability to acquire real-time wavelength dispersive spectroscopy (WDS) and EDS X-ray images. The instrument can be fully remote controlled, allowing users to run experiments from their smart phones, tablets or any remote computer.

The new EPMA platform is available with a W, LaB6 or field-emission source. CAMECA has optimized the performance for challenging microanalytical applications at a sub-micron spatial resolution, extending EPMA capabilities to smaller analyzed volumes.

Find more information at [www.ametek.com](http://www.ametek.com).



## Test and Manufacturing Support Systems

Seica announces their newest Pilot V8 Next> series flying probe system as part of their continuous "road" to innovation. This time it will be managed by Viva Next> 6, Seica's latest evolution of its core management software platform, in a 64 bit version complete with a new graphical interface and a guided environment for creating test programs according to each specific requirement. The new platform continues to leverage its open architecture, further extending the capability of integration with third party software, such



as TestStand™, leaving programmers complete freedom to combine test sequences developed using various platforms in the same test program.

The Pilot V8 Next > series provides up to 20 mobile resources for testing an electronic board, including test probes which can each apply currents up to 2 amps, high-resolution cameras for automatic optical inspection, barcode and data matrix reading capability, laser sensors, capacitive probes, pyrometers, optical fiber sensors for LEDs, mini-fixtures for boundary scan and On Board Programming, and high-frequency probes able to measure signals at frequencies over 1.5 GHz. Engineered for medium/high volume production, the Pilot V8 Next > series is available in a fully-automated version, capable of hosting from 1 to 12 magazines of boards to be tested (even of different types) or for direct connection to board loading/unloading and tilt modules, compatible with any standard assembly line.

The Pilot V8 Next> series has Seica's Industrial Monitoring Solution on board, with the potential for remote monitoring of current and voltage consumption, mains supply, temperature, light indicators and other parameters useful to indicate correct operation, to provide information enabling predictive maintenance and in general to render the systems compatible with today's Industry 4.0 standards. In addition to the Pilot V8 features, Seica will be discussing its embedded components test capability of its Rapid V8 Next> series line where we have probing capability down to targets below 2 mils.

Seica's Compact Slim is the latest addition to the Next> series. A very small (only 300 mm width) yet modular bed of nails tester especially suitable for deployment in a series of equivalent systems in a line, loaded either manually or via a COBOT solution. The system features a 180x300 mm test area with an automated receiver specifically conceived for robotic loading.

Find more information at [www.seica.com](http://www.seica.com).

## Digital Discovery Module

The Digilent Digital Discovery Module is a portable logic analyzer and digital pattern generator module. This module is designed to evaluate the XC6SLX25-2 FPGA (Field Programmable Gate Array) and optimize the channels, speed, and portability. The digital input and output can be connected to a circuit using simple wire probes or breadboard wires. The digital discovery high-speed adapter and impedance-matched probes can be used for the I/O connection of advanced projects. This module features a small form factor for easy storage and allows the user to debug, visualize, and simulate digital signals.



Features:

- ▶ USB bus powered
- ▶ 1.2 V to 3.3 V operating supply voltage
- ▶ Twisted wire high-speed cable option for input channels to ensure signal integrity
- ▶ Free waveforms 2015 software runs on Windows, MacOS, and Linux
- ▶ Cross-triggering between logic analyzer, pattern generator, or external trigger
- ▶ Data file import or export using standard formats
- ▶ Logic analyzer:
- ▶ 24 high-speed input channels accessible through one 2x16 connector
- ▶ 800 MSps input sample rate with maximum 8 inputs with the high-speed adapter
- ▶ 400 MSps with maximum 16 inputs with the high-speed adapter
- ▶ 200 MSps and lower with maximum 32 inputs
- ▶ 100 MHz signal input bandwidth
- ▶ 2 Gb DDR3 acquisition buffer for logic analyzer
- ▶ Multiple trigger options including pin change and bus pattern

The Digilent 410-349 Adapter is a high-speed adapter for Digital Discovery™ module. This adapter provides access up to 24 high-speed logic probes with sample rates of 800 MS/s. The 410-349 adapter is a replacement for 2x16 flywire assembly and comes with a pack of 16 high-speed logic probes. Both the ends of this adapter are designed to connect the 32-pin connector on the Digital Discovery module.

Find more information at [store.digilentinc.com/fpga-programmable-logic/](http://store.digilentinc.com/fpga-programmable-logic/).

## USB Digital Accelerometer Provides High-Quality Vibration Measurements Directly from a PC, Smartphone or Tablet

PCB Piezotronics, Inc. announces the release of a USB digital accelerometer designed for use in predictive maintenance and condition monitoring applications. Model 633A01 is a high-resolution, broad-frequency piezoelectric accelerometer with integrated internal digital data processing for USB plug-and-play capability as well as easy data collection and sharing.

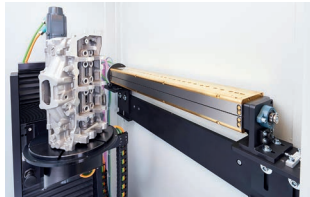
The product features a wide frequency range (1.5-11,000 Hz with a  $\pm 10\%$  tolerance) packaged in a stainless steel, hermetically-sealed housing with integral cable.

Additional information on MTS can be found at [www.mts.com](http://www.mts.com).



## Compact Computer Tomography System Equipped with Newly Developed Line Detector

With the YXLON CTScan 3, Yxlon launches its own completely new line detector and replaces the predecessor Y.LineScan. The new CT Compact computer tomography system will be equipped with the new line detector YXLON CTScan 3 as a standard component. In the future, the YXLON FF85 CT and CT Modular systems will also benefit from its capabilities. Ground-breaking technological advancements and optimized production methods deliver unsurpassed image quality, and significantly reduce susceptibility to noise. Beside the interference-resistant and low-noise electronics, the specially developed photodiodes ensure an extremely uniform signal.



Previously, the crystals had to be manually split by specialists. Production is now machine-supported with the new CTScan 3, resulting in an improvement in crystal uniformity by a factor of 5. This leads to reduced ring artifacts, and the high repeatability of the signal allows optimal calibration. Due to the higher dynamic range and better signal stability, greater material thicknesses can be tested with the same X-ray energy.

Multiple CT projections can be generated in a single test run, each with different parameters for the different object areas. This allows for a much faster testing process with consistent image quality. In addition, more than one component can easily be displayed in each test cycle using the multi-part testing function.

For more information, please visit [www.yxlon.com](http://www.yxlon.com).

## High Current, Low Profile SMT Inductors

Pulse Electronics introduces a new series of high current, low profile SMT inductors. These products offer the highest energy

storage density of any inductor on the market. The inductors have high current ( $>40$  Apk) and low profile (2.1 mm to 5.0 mm) features, and they offer soft saturation, no thermal aging, and industry standard footprints.



The new composite core shielded inductor series is designed for use in a wide range of power topologies, as well as in applications requiring inductances below  $4.7 \mu\text{H}$ .

The PA5001, PA5002, PA5003, PA5004, PA5005, PA5006, and PA5007 series of high current SMT molded power inductors offers five platform sizes ranging from  $4 \times 4$  to  $8 \times 8$  mm, and a low-profile height down to 2.1 mm. In addition, all parts of these composite core inductors offer full shielded construction. The core material makes soft saturation possible, without the detrimental effects of thermal aging.

For more information, visit the Pulse Electronics Power BU website at [www.power.pulseelectronics.com](http://www.power.pulseelectronics.com).

**Robert Goldberg** ([r.goldberg@ieee.org](mailto:r.goldberg@ieee.org)) has over 35 years' experience with over 25 years in management of the design and development of hardware and software for a broad range of military electronic products involving digital, RF/Microwave, electro-optical and electromechanical systems. He is retired from ITT Aerospace Communications Division in Clifton, NJ, where he was responsible for Sensor Communication programs utilizing the application of sensor radios developed by ITT as a result of work with DARPA on the Small Unit Operations Situation Awareness System (SUOSAS). Prior to joining ITT, he held positions in systems test and systems engineering with Northrop Grumman in programs related to RF and IR electronic warfare systems. He is a Fellow of the IEEE and is currently chairman of the Fellows Evaluation Committee of the IEEE Instrumentation and Measurement Society.