ISSUE 29
Spring / Summer 2017

TechniTalk

This Issue

The latest by email

To ensure you always get the latest news on products and innovations we offer our popular updates by email option which includes the biannual TechniTalk.

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www.technimeasure.co.uk

Techni Measure Bristol Office

Techni Measure are excited to open our new sales and support office in Bristol as part of our continued commitment to customer service, being strategically located to provide local service and support to our customers across the South of the UK.

within the Frenchay campus of the University of the West of England, which aims to connect entrepreneurs and tech innovators with scientists, researchers and graduate talent, inspiring fresh thinking and collaboration – perfectly suited to Techni Measure as we work to configure measurement solutions to your vast

and continually challenging range of applications. Easily accessible from the motorway network and national public transport links and close to some of the UKs largest Engineering firms, we have access to meeting rooms, a café and hot desk facilities, so do let us know if you are in the area or passing through.

As some of our customers will already know, Andrew Ramage has been based in Bristol since the move of our Head Office to Doncaster during 2016, and we are also delighted to announce that we are currently recruiting an additional Technical Sales Engineer to join the Techni Measure team and work alongside Andrew in the Bristol office. The new office is at FutureSpace, a brand new development

New Introduction to Piezo-electric Accelerometers

Instead of our regular Technical Note, we would like to draw attention to a publication that we have recently added to the resources section of our web site. This is the Introduction to Piezo-electric Accelerometers that informs readers about the main points of accelerometer design and describes the various specifications that should be considered in choosing the right sensor for any application.

The full article can be found in the resources section of our website.

Online Store Expansion

Our new online store has so far been a success and we are adding to the range of items available to allow a much broader range of accessories for piezoelectric transducers, including mounting studs, adhesive/magnetic bases and cables.

store.technimeasure.co.uk

CoreSens Electronics for Fibre-optic Sensors

New from Opsens Solutions is the CoreSens electronic unit that is a versatile, scalable system which includes a control unit and modular signal conditioner unit (WLX-2 module) that supports a variety of fibre optic sensors. Each WLX-2 module has two channels to optimise the number of sensors per chassis. The new CoreSens is designed for the most demanding applications requiring synchronised high speed measurement.

Available in rackmount or stand-alone configurations, these units have Ethernet and analogue outputs, and offer excellent linearity, precision and resolution. The rackmount system offers up to 26 channels in 13 modules, and also offers a SDHC memory capability to store data locally. At the heart of the CoreSens is the Opsens Solutions' White Light Polarization Interferometry (WLPI) technology which provides a means for making accurate and reliable measurements of physical parameters such as temperature, strain, pressure, and displacement. Through its EtherCAT® capability (available soon), the system will offer a larger quantity of measuring channels working simultaneously at sampling speeds up to 1 kHz. The CoreSens unit chassis can be easily stackable for applications involving hundreds of measuring points, and in this chassis configuration, an embedded web server application allows configuration and control of the system. Applications include simultaneous measurements of temperature, pressure, strain and displacement, synchronized monitoring for multiple measuring points, military and aerospace applications, dynamic surveillance of civil engineering and geotechnical infrastructures, and structural health monitoring.

New G-Link-200 Wireless Accelerometer

LORD MicroStrain have recently introduced the new G-Link-200-8G ruggedized high-speed triaxial accelerometer node with user settable ± 2 to ± 8 g measurement range. The G-Link-200-8G includes an on-board triaxial accelerometer that allows high-resolution data acquisition at noise levels as low as 25 µg/√Hz, and the accelerometers have a bandwidth from DC up to 1kHz.

The lossless data transmission and node-to-node synchronized sampling at ±50 microseconds help make the G- Link- 200- 8G ideal for vibration monitoring in a wide variety of vehicles, including high-speed transportation. A user-configurable low pass filter is standard and a high pass filter is also available, to remove the DC signal if required. Users can easily programme nodes for data logging, continuous, and periodic burst sampling with the SensorConnect software. The web based SensorCloud interface optimizes data aggregation, analysis, presentation, and alerts for gigabytes of sensor data from remote networks. High resolution data is achieved with a 20-bit A/D converter, and the unit is powered by three non-rechargeable ½ AA batteries. The sensor is 46.6mm high with a 43mm diameter across the flats of the stainless-steel base which has a ¼-28 threaded hole mounting. A polycarbonate screw on cover offering IP-67 protection fits onto the base. Later models should allow measurements up to 40g. Typical applications include health monitoring of rotating components, aircraft, structures, and vehicles, as well as general condition-based vibration monitoring, and product testing. We would be very pleased to discuss any application that you may have for wireless or general vibration measurements.

Two new Triaxial Accelerometers from Dytran

High Sensitivity, 160°C IEPE Triaxial Accelerometers

Dytran have recently introduced a 100mV/g, isolated triaxial accelerometer, able to withstand temperatures up to 160°C for continuous use. The model 3543A case isolated sensor can be placed in the hotter sections under the car bonnet, and are ideal for the general measurement of vibration in all types of hot test conditions. Additionally, this sensor eliminates the need for a charge mode sensor which results in a more straightforward setup because of IEPE power and standard cables.

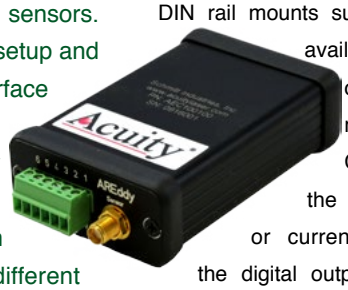
The 3543A features a 10-32 stud mount, a 1/4-28 4-pin industry standard connector and is offered in an acceleration range of 50g's. Other applications include modal and structural analysis, NVH, squeak and rattle, and general purpose high temperature triaxial vibration measurements.

Ultra-Miniature Triaxial Accelerometer

Dytran have recently introduced a new series 3133D, ultra-miniature hermetically sealed IEPE triaxial accelerometers This new range of sensors are 6 x 6 x 5.8mm high, which allows it to be mounted in spaces that are inaccessible to other types of triaxial accelerometers. It features a hermetically sealed titanium case suitable for adhesive mounting, and weighs only 0.8 grams. It is offered with a sensitivity that ranges from 0.25mV/g to 10mV/g, and an integral 3 ft. long cable with a 4-pin connector, which is designed to mate with several models of extension cables for connection to IEPE power sources. Unique features of the 3133D series include its low frequency response and low base strain sensitivity. The series 3133D is ideal for shock and vibration testing of small, lightweight specimens such as printed circuit boards, board-mounted components, and other miniature products. It is capable of operating in a variety of application environments including Environmental Stress Screening (ESS), HALT/HASS, modal and structural analysis, product response testing and general purpose triaxial vibration testing.

Eddy Current Sensor Electronics

New from ACUITY is the AR-Eddy, which is a digitally corrected eddy current signal conditioner designed to work with a wide variety of eddy current sensors. The AR-Eddy is easy to setup and calibrate via a USB interface and the provided software. The AR-Eddy can used to achieve high performance from sensors provided by different manufacturers. Once the AR-Eddy has been configured, only power is required from the USB connection, so any USB adaptor can be used. Both the electronics and sensor can also be independently temperature compensated in-situ to reduce any temperature sensitivity. Built into a 54mm x 80mm x 26mm housing, with DIN rail mounts supplied, it is also available in an OEM configuration with no enclosure.



Connect either the analogue voltage or current output, or for the digital output use the USB interface. The analogue outputs are selected from 0-5V, ±5V, 0-10V, ±10V, 0-20mA, or 4-20mA using the front panel connections. A programmable digital filter is available, and the AR-Eddy also contains a solid-state relay connected to pins 6 of the terminal block. This relay has a 40 Ohm closed impedance and is rated for 60V and 100mA. The relay is controlled by the limit settings and is set up as a window comparator. As with all eddy current type sensors, the performance will vary depending on the material of the target, with the best performance being against an aluminium target. The AR-Eddy will work with many off the shelf sensors from various manufacturers, and it is also possible to make a DIY sensor.

TML Triaxial Load Cell

We can now offer a 3 component load cell with simultaneous measurement in three mutually perpendicular axis, suitable for use in robotics or windtunnel applications. Four models are available to cover a full scale range between 100N and 1kN.

Stock Clearance

Since our relocation to Doncaster we have sorted through our UK stock inventory and we can offer a variety of now obsolete strain gauges and load cells, in new and unopened condition, from just £10+VAT per pack. Please ask for a list of what is available.

Techni Measure Product Guide

The latest edition of our newly formatted product guide is now available in both print and PDF format. Recent changes include our offerings now organised by measurement parameter and technology to assist with selection of the correct items. For more details and to request your copy please contact us.

ISO 9001

Techni Measure is proud to be ISO 9001 accredited to help us ensure the best possible quality of service to all our customers. More information along with a copy of our latest certificate is available on our website.

ISOQAR REGISTERED
UKAS MANAGEMENT SYSTEMS 0026

Cert Number 1960
ISO 9001

Traceable Accelerometer Calibration at Temperature

Many vibration tests are carried out under the influence of temperature, whereby accelerometers are attached to the vibration exciter and/or to the device under test. These are thus exposed to temperatures which can be far above or below room temperature, which is where the sensors are usually calibrated. Calibration of the sensors in the temperature range of the application is therefore essential, to correct for the influence of temperature on sensor sensitivity, which can be significant. SPEKTRA has developed a calibration method which, in addition to the temperature range from -55°C to 120°C, can also cover the wide frequency range from 10 Hz to 10 kHz. The method is based on a comparison calibration against a reference acceleration sensor according to ISO 16063-21, where the vibration exciter with reference sensor is integrated into a temperature chamber. Thus, it is possible to calibrate not only at room temperature but over the entire temperature range mentioned above. The reference sensor can be calibrated for this purpose by means of a combination of highly accurate primary calibration at room temperature and additional primary and comparative calibrations under the influence of temperature, whereby a complete traceability of the measuring chain to national standards is still ensured. In particular, consideration is also given to the difficult mechanical conditions which arise as a result of the necessary thermal barrier between the table of the vibration exciter and the reference sensor, and which thus so far have restricted the frequency range to a few kHz.

Migrating from GX4 to GX5 Inertial Sensors

The 3DM-GX5 is the latest generation of the LORD MicroStrain 3DM-GX series of IMU, VG, AHRS, and GPS-INS sensors. This is truly a “drop-in” replacement for the previous-generation GX4 inertial sensors, making it extremely simple to upgrade. The GX5 shares the same extended temperature range operation, footprint, rugged aluminium case, reliability, low power, broad voltage supply, power/communication cabling, weight, and MIP API as the 3DM-GX4, making it a true drop-in replacement. However, there are many new improved features of the GX5 series and some MIP API commands have been expanded, whilst others have been added. The most significant sensor improvement in the GX5 is the accelerometers. The accelerometers now have a bias instability of <±0.04 mg and a noise density which is an industry leading 25 µg/√Hz for the 2g version. This noise density is only slightly higher for the 8g version (35 µg/√Hz). These improvements, combined with the associated improvements in the Kalman Filter result in extremely accurate position, velocity, and attitude accuracy even with aiding anomalies and outages. The gyros used in the GX5 are the same high performance gyros used in the GX4 series, however better performance in the GX5 is achieved by moving to an ultra-high performance 24-bit ADC and adding other improvements to the data conditioning circuit. The room temperature bias instability has improved from 10°/hour to 7°/hour and overall bias drift is half of what it was in the GX4.The GX5-45 and GX5-35 include a state-of-the-art multi-constellation GNSS receiver that can simultaneously track up to 32 satellites from various constellations, whereas the GX4 tracked 16 satellites in the GPS constellation only. This increased access to positioning information makes the performance in areas of restricted sky view such as urban canyons much more reliable and accurate. There are other changes to consider, and for more information on these, a LORD MicroStrain Technical note is available at .

TECHNI MEASURE

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