Industry's first MEMS vibration analysis system in compact 15mm3 package, enables more accurate vibration profiling

Medical Design Technology

Analog Devices, Inc. (NYSE: ADI) is helping industrial equipment designers improve system performance and maintenance costs through vibration detection/isolation/correction. With today's announcement of the new ADIS16227 iSensor® vibration monitor, equipment designers have a fully integrated vibration analysis solution capable of autonomous operation. This enables the earliest detection, identification, and isolation of possible vibration sources from equipment and bearing wear that can lead to less precise operation or equipment downtime. By embedding these small vibration monitors, applications ranging from wind turbines to precision factory automation and assembly equipment will benefit from automatic vibration profiling.

MEMS accelerometers are well suited for vibration monitoring, but are typically at a low level of integration. With decades of integrated sensor processing experience, Analog Devices transformed a MEMS accelerometer into a 3-axis vibration analyzer with programmable embedded processing. The ADIS16227 iSensor vibration monitor eliminates the complexity and risk of developing with multiple components and enables a much wider application base.

"*For the first time, industrial equipment designers have an easy-to-use, affordable and complete sugar-cube sized vibration analyzer,*" said **Bob Scannell**, iSensor business development manager, MEMS/Sensors Group, Analog Devices. "*With the ADIS16227, developers have access to proven 4th-generation vibration sensing capability with frequency domain processing programmability and tuning that greatly improves the ability to isolate the vibration source quickly.*"

Key High-Performance Features and Benefits:

* Embedded frequency domain processing, 512-point real value FFT, and on-board storage provides the ability to identify and classify individual sources of vibration, monitor their changes over time and react to programmable threshold levels.

* Configurable spectral alarm bands and windowing options allow analysis of the full frequency spectrum with the configuration of 6 bands, Alarm1 (warning threshold) and Alarm2 (fault threshold) for earlier and more accurate detection of problems.

* Compact 15-mm cube, fully embedded and programmable, enables placement close to vibration source and early detection of small signals in a repeatable way, avoiding data discrepancies due to differences in location/coupling from measurement-to-measurement using handheld devices.

* Configurable input range (dynamic range) with four range options (0-1g, 0-5g, 0-20g, 0-70g) allows easy programming to support multiple operational scenarios, improves precision of FFT and aids in observing lower-level signals.

* Tri-axis wide-bandwidth (22-kHz resonance) acceleration sensing with configurable sample rate (up to 100 kHz) and averaging/decimation options allows more accurate assessment of even subtle vibration profile changes.

More About The ADIS16227 iSensor Digital Vibration Monitor
The ADIS16227 iSensor® is a tri-axial, digital vibration monitor that combines an industry-leading iMEMS® sensor, data conversion and sensor processing technologies with convenient data capture and a serial peripheral interface (SPI). The SPI and data buffer structure provide access to wide-bandwidth sensor data. The 22-kHz sensor resonance and 100-kSPS sample rate provide a frequency response that is suitable for wide-bandwidth vibration monitoring applications. The ADIS16227 samples, processes and stores x, y and z acceleration data into the FFT (fast Fourier transform) buffer and FFT records (if selected), including time stamp. The programmable digital filter offers low-pass configuration options and an internal clock drives the data sampling system during a data capture event, which eliminates the need for an external clock source. The data capture function has three different modes that will accommodate the needs of many different applications. The ADIS16227 also offers an integrated digital temperature sensor and digital power-supply measurements, as well as a digital self-test feature that enables reliable embedded operation within the targeted applications. The extended operating temperature range for the device is −40°C to +125°C. For more information, download the data sheet.
Pricing and Availability

The ADIS16227 is available in a 15 mm x 15 mm x 15 mm module with a threaded hole for stud mounting. The dual-row, 1-mm, 14-pin, flexible connector enables simple user interface and installation.

Product: ADIS16227
Availability: In production now
Operating Temperature Range: -40°C to +125°C
Price Each Per 1,000: $174.00
Packaging: 15 mm x 15 mm x 15 mm 14-pin flex connector for electrical; threaded mechanical stud mount

About Analog Devices
Innovation, performance, and excellence are the cultural pillars on which Analog Devices has built one of the longest standing, highest growth companies within the technology sector. Acknowledged industry-wide as the world leader in data conversion and signal conditioning technology, Analog Devices serves over 60,000 customers, representing virtually all types of electronic equipment. Celebrating over 40 years as a leading global manufacturer of high-performance integrated circuits used in analog and digital signal processing applications, Analog Devices is headquartered in Norwood, Massachusetts, with design and manufacturing facilities

throughout the world. Analog Devices' common stock is listed on the New York Stock Exchange under the ticker “ADI” and is included in the S&P 500 Index.

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