MS2002+ Acceleration Sensor

The micromachined capacitive accelerometer has become an attractive alternative against traditionally used FBAs.

It's small dimensions, rugged construction and excellent reliability makes it especially suitable for unattended free-field instruments and instrumentation of structures, such as nuclear power plants, dams and seismic alerting systems.

Sensor MS2002+ to be linked to motion recorders such as

- MR2002-SM16-K
- MR2002-SM24-K

SYSCOM Instruments

MS2002+ Acceleration Sensor

The well proven technology of silicon micromachined capacitive sensors has been further improved by optimizing the sensor structure. Integration of electronics into an application specific IC results in a small high precision accelerometer which shows environmental and reliability performance similar to integrated circuits. This accelerometer, built as triaxial device, suits ideally into seismic instrumentation.

The DC coupled output in combination with the very low shortand long-term drift provides true engineering data that require no post-processing. The micromachined capacitive accelerometer has become an attractive alternative against traditionally used Force Balanced Accelerometers. It's small dimensions, rugged construction and excellent reliability makes it especially suitable for unattended free-field instruments and instrumentation of structures, such as nuclear power plants, dams and seismic alerting systems. The sensors are factory calibrated and require no re-calibration. They are equipped with a fully comprehensive self-test function.

MS2002+ with LEMO connector

Technical Specifications

Principle

The acceleration sensing element is based on a micromechanical silicon chip, an ASIC for signal conditioning, and an EEPROM for storage of the calibration data. The micromechanical capacitive chip is manufactured using a 3-wafer silicon bulk-micromachining fusion bonding process. The signal conditioning IC translates the capacitance variation of the sensor chip into a calibrated output voltage. The gain, offset and nonlinearity corrections are programmed digitally during manufacturing.

Hysteresis	None
Noise	Typ. 18 µV/√Hz
Shock survival	6000 g (0.5 ms half sine)
Vibration survival	20 g RMS (random noise 20 - 500 Hz, 30 minutes)
Operating temperature	-40 to 70 °C
Offset (at 0g)	2.5 V ± 200 µV/°C
Cross axis sensitivity	0.030 V/g
Orientation	Triaxial, horizontal (floor) mounting or vertical (wall) mounting
Non-Linearity	< 0.8 % of full scale
Frequency response	Linear 0 to 150 Hz (accuracy ±1%)
Dynamic range (RMS)	> 84 dB (DC to 50 Hz)

MS2002+ triaxal Sensor (unipolar)

Measuring range	± 1 g
Sensitivity	2 V/g ± 400 ppm/°C
Supply voltage	+ 12 V (+10 % / -30 %)
Current consumption	Typ. 6 mA @ 12 V
Output voltage	2.5 V ± 2 V

MS2002+ triaxial Sensor (bipolar)

Measuring range	± 1 g ± 2 g ±10 g	
Sensitivity	2 V/g 1 V/g 0.2 V/g	±400 ppm/°C
Supply voltage	± 5 V (± 5%)	
Current consumption	Typ. 6 mA @ 5V	4 mA @ -5 V
Output voltage	0 V ± 2 V	

Physical Characteristics

Housing	Aluminum, 80 x 75 x 57 mm (W x L x H)
Connector	Metallic self-latching push-pull connector with LEMO
Weight	0.5 kg
Protection degree	IP 65 (splash-proof)
Optional	Mounted inside MR2002 recorder

Ordering Information

MS2002+ triaxial, horizontal mounting	1 g FS	14112001
MS2002+ triaxial, horizontal mounting	2 g FS	14112002
MS2002+ triaxial, horizontal mounting	10 g FS	14112003
MS2002+ triaxial, vertical mounting	x = g FS, see above	1411201x
MS2002+ uniaxial, horizontal mounting, vertical axis	x = g FS, see above	1411221x
MS2002+ uniaxial, horizontal mounting, horizontal axis	x = g FS, see above	1411220x

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