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GeoSIG
swiss made to measure

AC-43 / AC-42 / AC-41 MEMS Accelerometer

Features

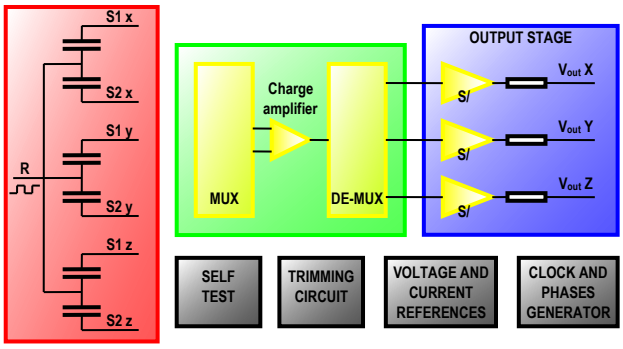
- ❒ **Full Scale: ± 2 g (± 0.625, 1, 4, 5 g optional)**
- ❒ **Bandwidth DC to 100 Hz**
- ❒ **MEMS Accelerometer**
- ❒ **High accelerations measurement**
- ❒ **High shock survivability**
- ❒ **Large temperature range**
- ❒ **High lifetime stability**
- ❒ **Cost effective sensor**
- ❒ **Low power consumption**
- ❒ **Simple test and calibration**
- ❒ **Single Bolt Mounted Enclosure provides up to ± 10° of Leveling Adjustment**
- ❒ **Integrated Bubble Level**

Outline

The AC-43 sensor package is a triaxial accelerometer designed for urban and industrial applications regarding strong motion earthquake survey and vibration monitoring as well as alarm and switch systems.

All these applications require rugged sensors with minimum maintenance and a simple method for periodic testing.

The AC-43 accelerometer is based on the modern MEMS (Micro Electro-Mechanical Systems) technology, consisting of sensing cells assembled in a way that optimizes their performances. This combined with the state of the art proprietary circuit design yields this cost effective and reliable accelerometer.



MEMS cells include linear accelerometer sensing elements which measure the capacitance variation in response to any movement or inclination and a factory trimmed interface chip that converts the capacitance variations into analog or digital signal proportional to the motion.

The DC response allows the sensor to be easily repaired, tilt tested or recalibrated in the field. With the help of the TEST LINE the AC-43 accelerometer can be completely tested assuring proper operation.

The AC-43 is typically housed in the standard GeoSIG sealed cast aluminium housing with dimensions of 195 x 112 x 95 mm. The housing also incorporates a single bolt mount with three levelling screws. Stainless steel packaging options are available.

The AC-4x accelerometer is directly compatible with the GeoSIG recorders. It is also designed to be mounted internally in standard GeoSIG recorders.

Specifications AC-43 / AC-42 / AC-41 MEMS Accelerometer

General Characteristics

Application:
- Strong-Motion earthquake recording
- Vibration monitoring
- Alarm / Switch systems

Configurations:

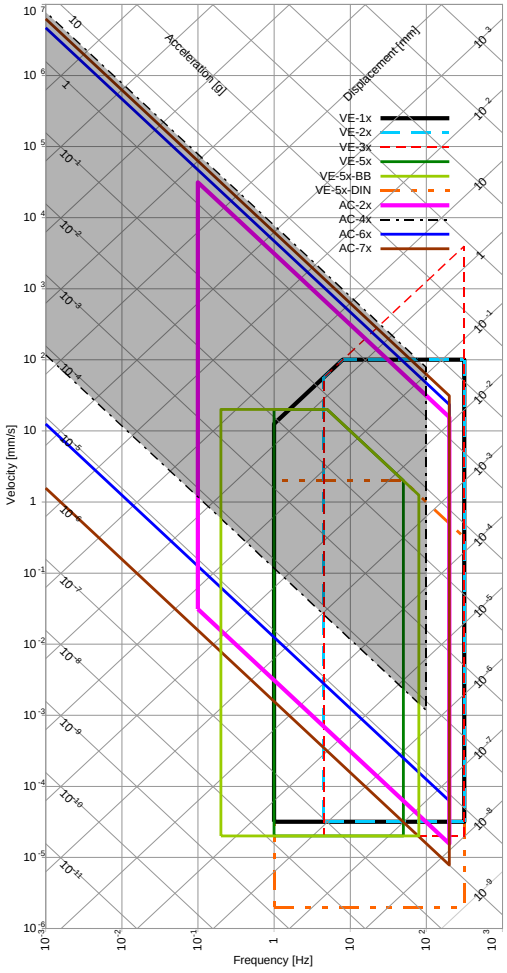
	Triaxial	Biaxial	Uniaxial	Axes	Alignment**
AC-43 or AC-43i*:	■			X – Y – Z	H – H – V
AC-42-H or AC-42i-H*:		■		X – Y	H – H
AC-42-HV or AC-42i-HV*:		■		X (or Y) – Z	H – V
AC-41-H or AC-41i-H*:			■	X (or Y)	H
AC-41-V or AC-41i-V*:			■	Z	V

* i : Internal sensor ** H: Horizontal, V: Vertical

Full Scale Range: ± 2 g Std
Optional ± 0.625, ± 1, ± 4 or ± 5 g

Sensor Element

Type: MEMS Accelerometer
Dynamic Range: > 120 dB correlated mean RMS noise amplitude (per-bin) with respect to 5 g full scale
Noise: < 110 ug_{RMS} for x and y axis, and < 225 ug_{RMS} for z axis.
Nonlinearity: < 0.3 % typ., < 0.6 % for vertical
Cross Axis Sensitivity: < 2 % typ.
Bandwidth: DC to 100 Hz
Span drift: 100 ppm/°C
Offset Drift: ± 0.8 mg / °C
Full Scale Output: 0 ±10 V differential (20 Vpp)
optional 2.5 ± 2.5 V single-end (5 Vpp)
0 to 20 mA current loop
Measuring Range: See plot



Power

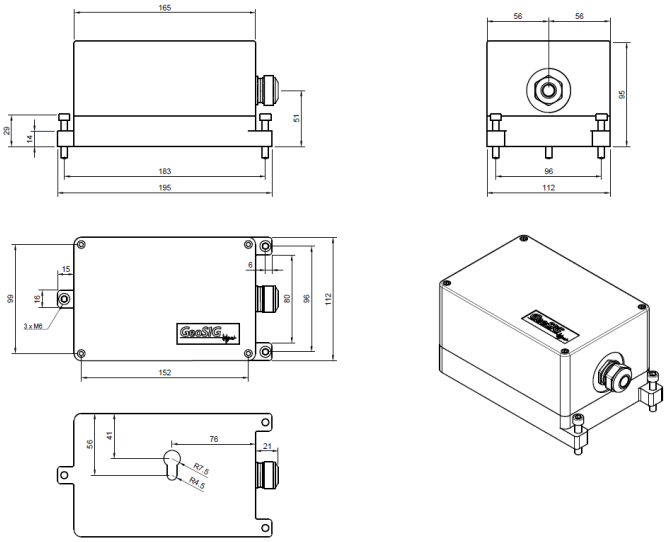
Supply Voltage: 7 to 15 VDC, single supply
optional, 7 to 30 VDC
Consumption: 75 mA max. @15 VDC
Connector: Metallic, Shielded, IP67, 12 pins, male
optional MIL, Bendix PT07A 14-19P
Mating: Binder / Coninvers type RC
Overvoltage Protection: All pins are protected

Connector Pin Configuration

Pin 1-6 Signal output for axis X, Y, Z
Pin 7,8 Test Input
Pin 9-10 + 12 VDC power supply
Pin 11-12 Not used
Case Shielded Ground

Environment/Housing

Housing Type: Cast aluminium
Sealed access cover
Housing Size: 195 x 112 x 95 mm
Weight: 2.0 kg
Index of Protection: IP 65
optional IP68
Temperature Range: - 40 to 85 °C (operating)
- 40 to 85 °C (non-operating)
Humidity: 0 to 100 % (non-condensing)
Orientation: Can be configured for mounting in any position.
Mounting: Single bolt, surface mount, adjustable within ± 10°



Standard AC-4x Floor mounted, Full scale ± 2 g,
2 m cable with cable inlet and recorder mating connector, concrete anchor bolt and user manual on CD

Options

Cable & connector: Cable connector
Metallic, Shielded, IP67, 12 pins, male
optional MIL, Bendix PT07A 14-19P
Cable with shielded twisted pairs for any length (including mating sensor connector) with open end
Cables for connection to GeoSIG recorder
Connector on user specification mounted at cable end
Housing: Watertight IP 68 housing
Downhole housing (AC-4x-DH)
Stainless steel protective housing
As internal sensor
Mounting: Wall mounted