



AC-43 MEMS Accelerometer

Overview

The AC-43 sensor package is a triaxial MEMs Force Balance 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. With its proprietary state-of-the-art circuit design, the sensor is a 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 repaired, tilt tested, or recalibrated. 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



Key Features

- ▶ Full scale: ± 2 g (± 0.625 , 1, 4, 5 g optional)
- ▶ Bandwidth DC to 100 Hz
- ▶ MEMS force balance accelerometer
- ▶ High shock survivability
- ▶ Wide temperature range
- ▶ High lifetime stability
- ▶ Low power consumption
- ▶ Simple test and calibration
- ▶ Single bolt mounted enclosure provides up to $\pm 10^\circ$ of levelling adjustment
- ▶ Integrated bubble level

dimensions 195 x 112 x 95 mm. The housing also incorporates a single bolt mount with three levelling screws. Stainless steel outer enclosure options are available.

The AC-43 accelerometer is directly compatible with GeoSIG recorders. It is also designed to be mounted internally in standard GeoSIG recorders. A digital version is also available, which can be used with our Digital Sensor System.

AC-4x MEMS Accelerometer

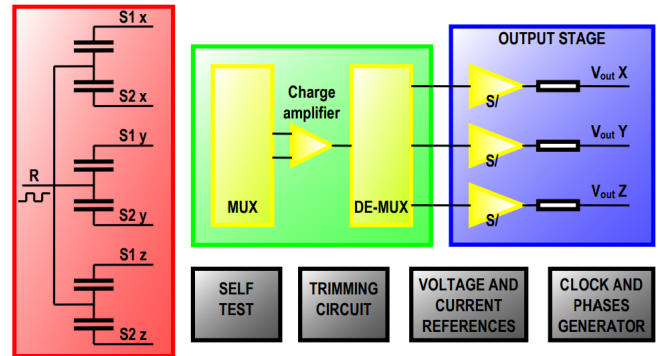
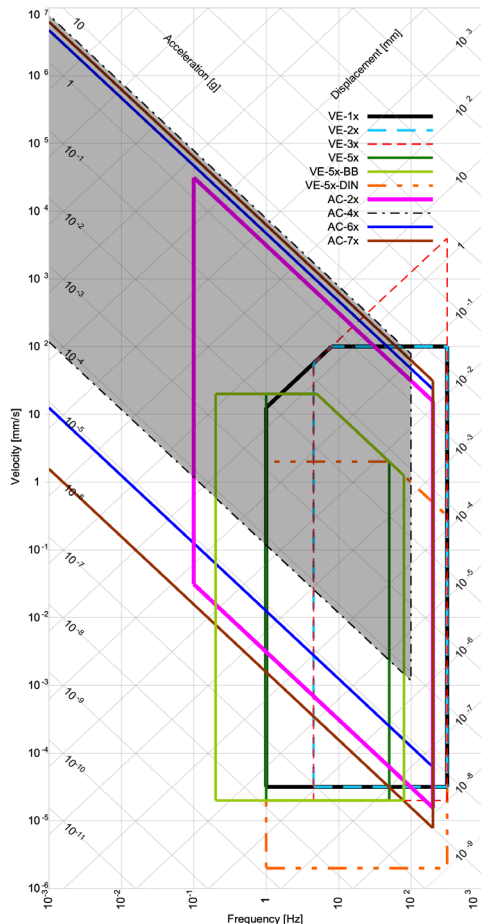
Specifications

General Characteristics

- Applications:**
- Strong-motion earthquake recording
 - Vibration monitoring
 - Alarm / switch systems
- Configurations:** AC-43, AC-43i*, AC-43D**
- * i : Internal sensor ** D: Digital sensor (see separate datasheet)
- Full scale range:** ± 2 g std
Optional ± 0.625, ± 1, ± 4 or ± 5 g

Sensor Element

- Type:** MEMS Force Balance Accelerometer
- Dynamic range:** > 100 dB correlated mean RMS noise amplitude (per-bin) with respect to 5 g full scale
- Noise:** < 110 μg_{RMS} for x and y axis, and < 225 μg_{RMS} for z axis.
- Non-linearity:** < 0.3 % typical, < 0.6 % for vertical
- Cross axis sensitivity:** < 2 % typical
- 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

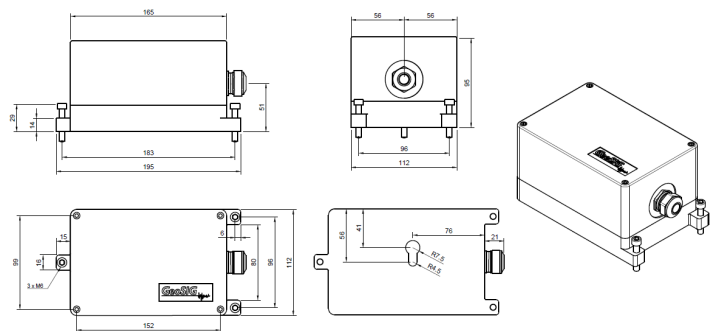
- Supply voltage:** 7 to 15 VDC, single supply
- Consumption:** 75 mA max. @15 VDC
- Connector:** Metallic, shielded, IP67, 12 pins, male
- Mating:** Binder / coniners type RC
- Overvoltage protection:** All pins are protected

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
- Ingress protection:** IP 65
- Temperature range:** - 40 to +85 °C (operating)
- 40 to +85 °C (non-operating)
- Humidity:** 0 to 100 % (non-condensing)
- Mounting:** Single bolt, surface mount, adjustable within ± 10°



Standard AC-43 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:** Frame connector with mating connector, or other options are available
- Housing:** Watertight IP 68 housing
Stainless steel protective enclosure
- Mounting:** As internal sensor or digital sensor
Wall or ceiling mounted