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GeoSIG
swiss made to measure

AC-23 / AC-22 / AC-21-DH Downhole Accelerometer

Features

- ❒ **Full Scale ± 0.1, 0.2, 0.5, 1, 2 and 4g jumper selectable**
- ❒ **Bandwidth 0.1 Hz to 100 Hz (optional 200 Hz)**
- ❒ **Dynamic range > 125 dB**
- ❒ **Excellent temperature stability**
- ❒ **Strong-Motion, Free field and Industrial applications**
- ❒ **No field adjustment required**
- ❒ **Strong mechanical design**
- ❒ **Fits in 3 inch casing**

Outline

The AC-23-DH sensor package is a triaxial accelerometer designed for borehole applications regarding Strong Motion earthquake survey and monitoring.

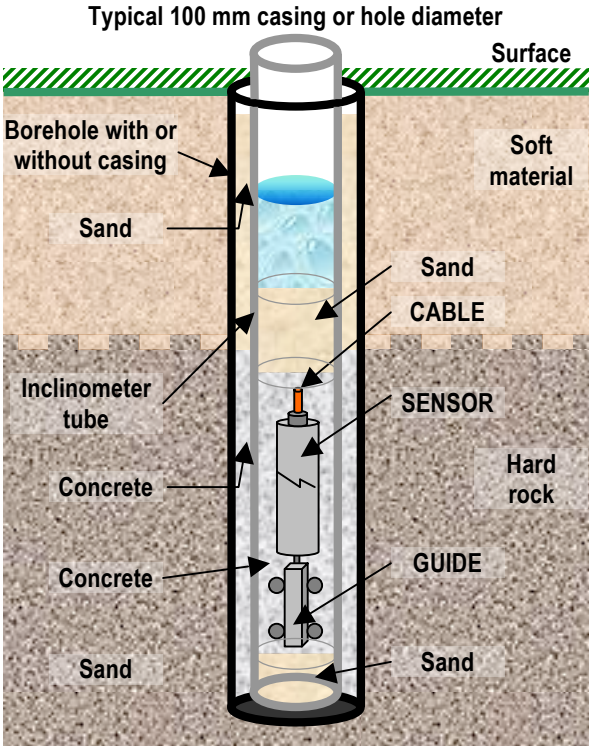
The AC-2x-DH sensors are servo-accelerometers based on a standard exploration geophone mass-spring system with electronic feedback. This type of sensor gives a very good stability versus temperature or aging because of the very simple principle.

The sensor does not require maintenance and has very low aging drift. With the help of the TEST LINE the sensor can be easily, completely tested.

The family of AC-2x-DH accelerometer is directly compatible with the GeoSIG recorders.

The downhole casing contains the entire sensor system. The sensor is connected through Overvoltage Protection stage to the recorder at the surface with a cable.

Using inclinometer tubes and the provided guiding wheels, the sensor can be oriented before insertion in the tube.



ISO 9001 REGISTERED FIRM

Specifications AC-23 / AC-22 / AC-21-DH Downhole Accelerometer

General Characteristics

Application: Strong Motion earthquake survey, Industrial applications requiring high sensitivity.

Configurations:

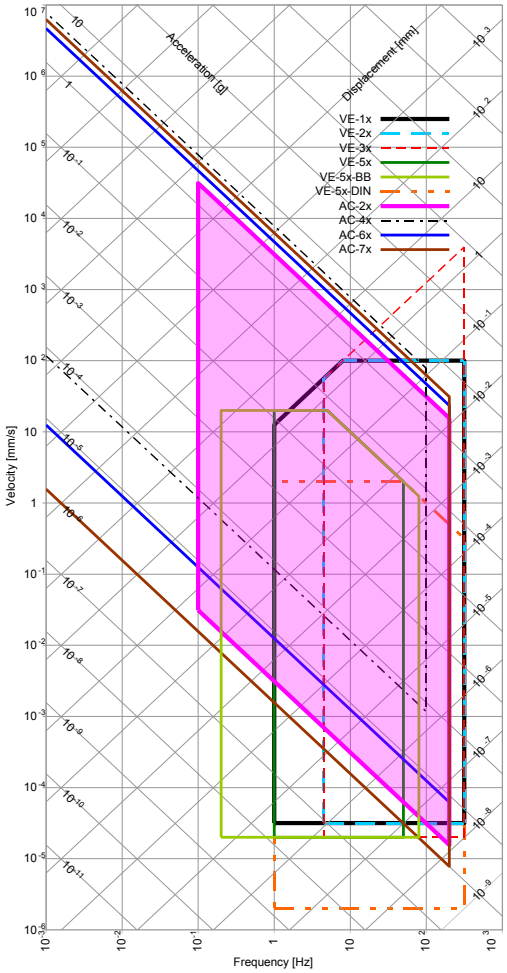
	Triaxial	Biaxial	Uniaxia	Axes	Alignment**
AC-23:	■			X – Y – Z	H – H – V
AC-22-H:		■		X – Y	H – H
AC-22-V:		■		X (or Y) – Z	H – V
AC-21-H:			■	X (or Y)	H
AC-21-V:			■	Z	V

** H: Horizontal, V: Vertical

Full Scale Range: Factory configurable to:
± 0.1, ± 0.2, ± 0.5, ± 1, ± 2 and ± 4g
for ± 10 V diff at output
AC-23 NPP: ± 0.5, ± 1 and ± 2g

Sensor Element

Type: Servo-accelerometer based on geophones with feedback
Dynamic Range: >125 dB effective at ±2 g full scale
Linearity: 0.1 %
Accuracy: ± 0.4 dB max over the bandwidth
Cross Axis Sensitivity: 1 %
Bandwidth: 0.1 Hz (1 pole) to 100 Hz (1 pole) optional 200 Hz
Damping: 0.7 critical
Offset Drift: < 1 mV/^{0}C
Span drift: < 200 ppm/^{0}C
Full Scale output: 0 ± 10 V differential (20 Vpp)
Measuring Range: See Plot



Interface

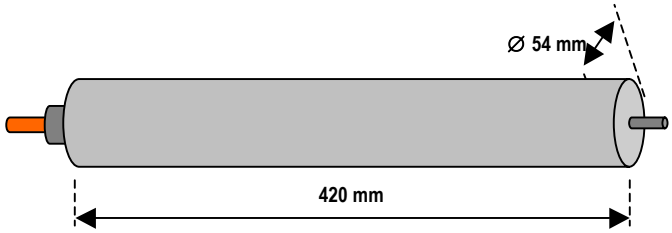
Power supply voltage: 12 VDC regulated (10 to 15 V)
Consumption: 40 mA @ 12 V
Connector: Metallic, Shielded, IP67, 12 pins, male mounted at end of cable.
Other connectors on request.
Mating: Binder / Coninvers type RC
Overvoltage Protection: All pins are protected

Connector Pin Configuration

Pin 1-2, 3-4, 5-6 Signal output for axis X, Y, Z
Pin 7-8 Test input, Digital test-pulse (0 / 12 V)
Pin 9-10 +12 VDC Power Supply
Pin 11-12 Auxiliary input (unused)
Case Shielded Ground

Environment/Housing

Housing Type: Aluminium cylinder, fully sealed
Housing Size: Diameter 54 mm, length 420 mm
Weight: 3.5 kg



Index of Protection: IP 68, up to 10 bars water pressure
Temperature Range: - 20 to 70 °C (operating)
- 40 to 90 °C (non-operating)
Humidity: 0 to 100 %
Orientation: Using 3" inclinometer casing (Figure 1) with included guidewheels (Figure 2).

Standard AC-23-DH Full scale ± 2 g, recorder mating connector and user manual on CD. Borehole cable length to be defined.

Optional Accessories

DH-TUBE 3" inclinometer casing as in figure 1 in sections of 3 meters with coupling elements.
Installation kit: All required tools and fixation consumables for up to 100 meters of casing.
DH-BALL Glass Balls for settlement of downhole sensor (25 kg bag)

Ordering Information

Specify: Type of AC-2x-DH, acceleration full scale, depth of borehole and total cable length.

Figure 1

Figure 2