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VE-53 / VE-52 / VE-51-DH Downhole Velocity Sensor

Features

- Full scale 2 x 500 V/m/s, DIN 2 x 50 V/m/s
- Bandwidth 1 to 80 Hz, 0.2 to 80 Hz or DIN 1 to 315 Hz.
- Dynamic range > 120 dB
- 20 Vpp full differential signal output
- Excellent temperature stability
- Seismic activity monitoring, Civil Engineering, Vibration, Blast applications
- High shock survivability
- High lifetime stability
- Cost effective sensor
- Low power consumption
- Simple test and calibration
- Strong mechanical design
- Fits in 3 inch casing

Outline

The VE-53-DH sensor package is a triaxial velocity sensor designed for field or industrial survey and monitoring applications concerning vibration or explosion, such as civil engineering.

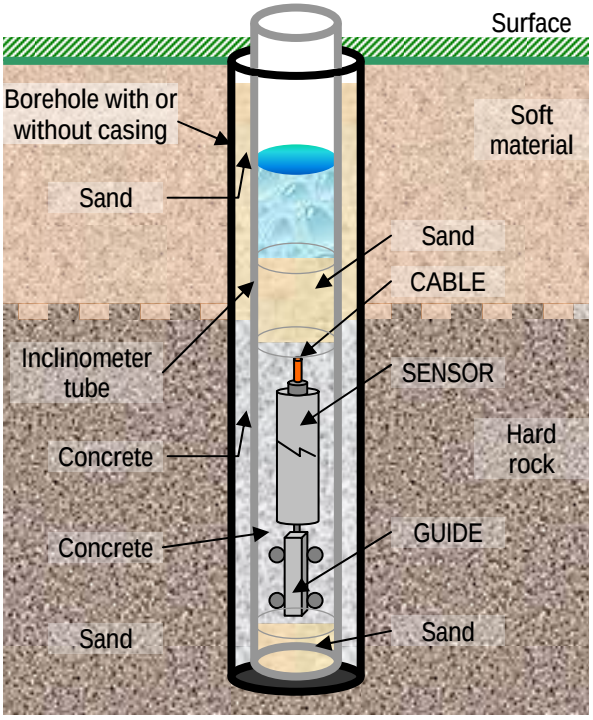
The VE-5x-DH sensor is based on a standard exploration geophone mass-spring system with electronic feedback. This type of sensor yields a very good stability under temperature changes or aging effects because of the very unsophisticated principle.

With the help of the TEST LINE the VE-53-DH velocity sensor can be completely tested assuring proper operation.

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.

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

Typical 100 mm casing or hole diameter



Specifications VE-53 / VE-52 / VE-51-DH Downhole Velocity Sensor

General Characteristics

Application: Seismic activity monitoring, Vibration and Explosion Data Acquisition Systems, Civil Engineering

Configurations:	Triaxial	Biaxial	Uniaxial	Axes	Alignment**
VE-53:	■			X – Y – Z	H – H – V
VE-52-H:		■		X – Y	H – H
VE-52-V:		■		X (or Y) – Z	H – V
VE-51-H:			■	X (or Y)	H
VE-51-V:			■	Z	V

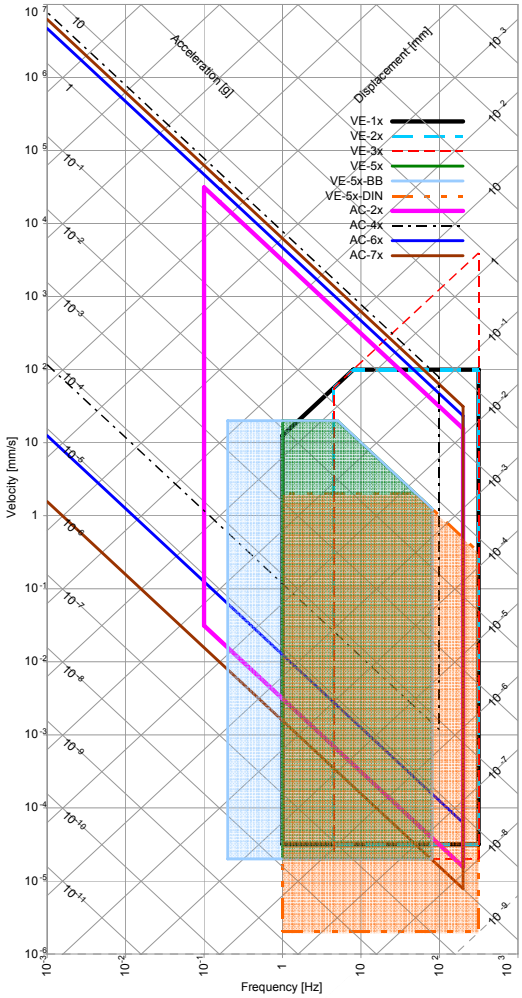
** H: Horizontal, V: Vertical

Sensitivity: 2 x 500 (1000) V/m/s (Std. And BB)
Optional DIN: 2 x 50 (100) V/m/s

Full Scale Range: 10 mm/s (Std. And BB)
Optional DIN: 100 mm/s

Sensor Element

Type: Over damped geophones
Dynamic Range: > 120 dB (1 to 30 Hz)
Linearity: ± 0.05 % of full scale maximum
Accuracy: ± 0.2 dB max over the bandwidth
Cross Axis Sensitivity: ± 1 % typical
± 3 % maximum
Bandwidth: 1 to 80 Hz (-3 dB)
optional DIN: 0.8 to 315 Hz
optional BB: 0.2 to 80 Hz
Damping: 0.7 critical
Full Scale Output: 0 ± 10 V differential
optional 0 ± 5 V pseudo-differential
Measuring Range: See plot



Power

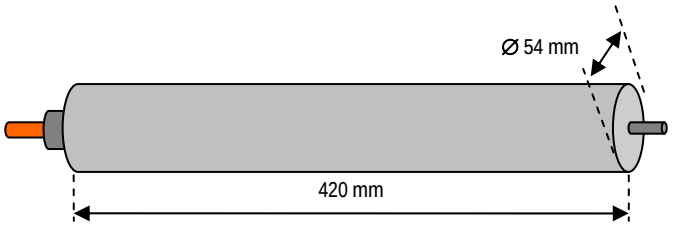
Supply Voltage: 10 to 15 VDC
Consumption: 45 mA at 12 VDC
Connector: Metallic, Shielded, IP67, 12 pins, male mounted at end of cable, optional MIL.
Mating: Binder / Coninvers type RC
Overvoltage Protection: All pins are protected

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 not connected
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: - 40 to 85 °C (operating)
- 40 to 85 °C (non-operating)
Humidity: 0 to 100 %
Orientation: Using 3” inclinometer casing (Figure 1) with included guidewheels (Figure 2).

Standard VE-53-DH Sensitivity 1000 V/m/s, full scale 10 mm/s, bandwidth 1 to 80 Hz, sensor mating connector and user manual.

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: Any variant of VE-53-DH (-BB or -DIN for bandwidth and sensitivity), depth of borehole and total cable length.

Figure 1

Figure 2