

## VE-53 / VE-52 / VE-51-DH Downhole Short Period Seismometer

### Features

- ❑ **Sensitivity** 1000 V/m/s differential
- ❑ **Bandwidth** 1.1 s (0.9 Hz) to 89 Hz
- ❑ **Dynamic Range** > 125 dB (0.9 - 15 Hz)  
> 120 dB (0.9 - 30 Hz)
- ❑ **Robust mechanical design**
- ❑ **Excellent temperature and aging stability**
- ❑ **Low power consumption**
- ❑ **Easy testing, low maintenance**
- ❑ **Fits into small diameter boreholes**



### Outline

The VE-5x is a triaxial short period seismometer designed for seismic monitoring applications.

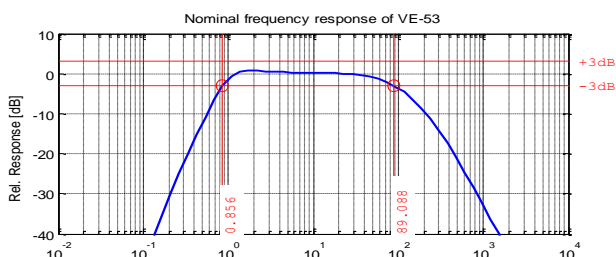
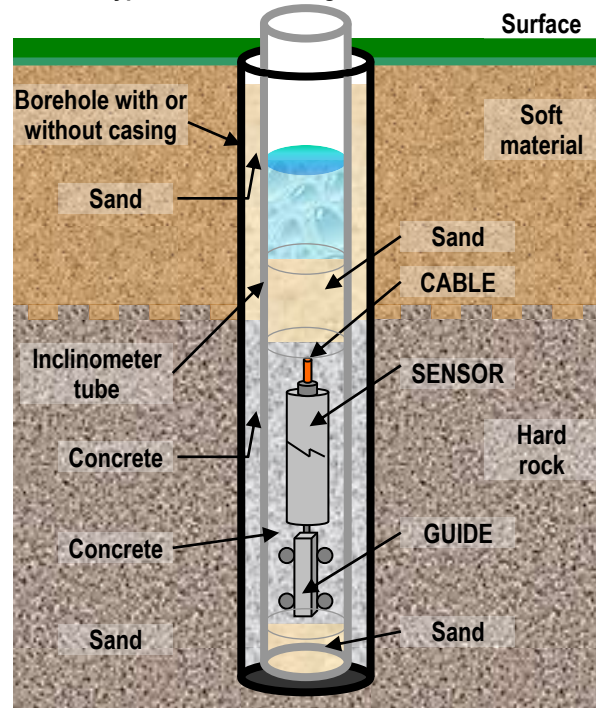
The VE-5x seismometer is based on a state of the art geophone mass-spring system with electronic feedback which offers a remarkable stability under temperature fluctuations or against aging. In addition due to the innovative design of the unit no mass locking is required.

With the help of the TEST LINE the VE-5x-DH seismometer can be completely tested assuring proper operation.

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

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

Typical 100 mm casing or hole diameter



Gain Factor (K)	Poles (P)	Zeros (Z)
9.200e+005	-1.317e+000+0.000e+000i -6.064e+002+0.000e+000i -3.665e+000+5.141e+000i -3.665e+000-5.141e+000i -1.960e-001+0.000e+000i -1.471e+003+0.000e+000i	1.000e+000



# Specifications VE-53 / VE-52 / VE-51-DH Downhole Short Period Seismometer

## General Characteristics

Configurations:

- VE-53-DH:
- VE-52-DH-H:
- VE-52-DH-HV:
- VE-51-DH-H:
- VE-51-DH-V:

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

\*\* H: Horizontal, V: Vertical

Sensitivity: 1000 V/m/s differential  
Full Scale Range: 10 mm/s nominal output

## Sensor Element

Dynamic Range: > 125 dB (1 - 15 Hz)  
> 120 dB (1 - 30 Hz)  
Linearity: ± 0.05 % of full scale maximum  
Cross Axis Sensitivity: ± 1 % typical  
± 3 % maximum  
Bandwidth: 1.1 s (0.9 Hz) to 89 Hz  
flat response within -3 dB crossing points  
Damping: 0.7 critical  
Full Scale Output: 0 ± 10 V differential  
optional 0 ± 5 V pseudo-differential  
Measuring Range\* (see plot): > M1 (Local - 10 Km) and  
> M1.5 (Regional -100 Km)

## Power

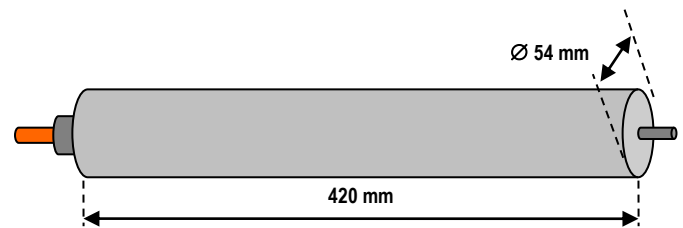
Supply Voltage: 9 to 18 VDC  
Consumption: 70 mA at 12 VDC  
Overvoltage Protection: All pins are protected

## Testing

Test input: Activated by applying a 12 VDC voltage to generate an output of a pulse with an amplitude of 50% of the full scale

## 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 bar water pressure  
Temperature Range: - 40 to 85 °C (operating)  
- 40 to 85 °C (non-operating)  
Humidity: 0 to 100 %  
Orientation: Using 3" inclinometer casing (Photo 1) with included guidewheels (Photo 2).  
Cable & connector: See separate document (GS\_Sensor\_Connector\_Options)



## Standard VE-53-DH

User specified cable already mounted, includes recorder mating connector if delivered with a GeoSIG recorder

## Accessories

### DH-TUBE

3" inclinometer casing as in Photo 1 in sections of 3 meters with coupling elements.

### Installation kit:

All required tools and fixation consumables for up to 100 meters of casing.

## Ordering Information

Please specify the depth of borehole and total cable length, required accessories, and other applicable options

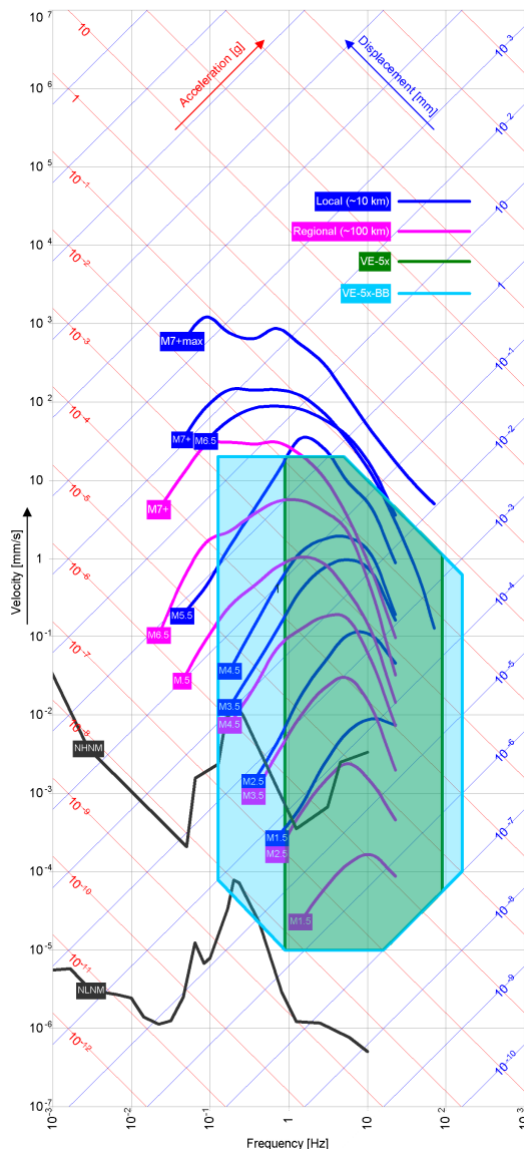


Photo 1  
DH TUBE



Photo 2  
Guidewheels

\* The BB version is not available as downhole version.