



Land cased geophone are widely used in deep and shallow soil exploration from decades. We can supply a variety of different kind of sensors according to the user's needs.

Standard Sensitivity or High Sensitivity sensors can be supplied depending on final use and different type of seismographs available. DoReMi seismograph, being a digital-telemetred instrument allow use of High Sensitivity sensors that are sometime not suitable for old analogue seismographs.

Applications

The land cased geophone are used for shallow and deep soil exploration. Depending on the field setup and energization of the ground, different signal can be recorded obtaining information on the subsoil structure. Here a number of different exploration applications.

Refraction

This survey usually take benefit of geophones of 10Hz or higher resonance frequency (eigenfrequency) for their feature to cancel lower frequencies not useful for refraction.

Refraction for V_p measurement

Vertical sensors can be used, good stratigraphic investion can be achieved.

Refraction for V_s measurement

Horizontal sensors must be used, with horizontal energization, good V_s determination can be used (like V_s30) if enough space is available for the seismic line, 10Hz sensors or higher are recommended.

Reflection

This survey usually take benefit of geophones of 10Hz or higher resonance frequency (eigenfrequency) for their feature to cancel lower frequencies not useful for reflection. Higher frequencies geophones can also be used if the goal is a shallow exploration.

MASW (radial Rayleigh waves)

Geophones with 4.5Hz are recommended. Usually vertical type are used. Horizontal sensitivity geophones can be used placing the sensors in axis with the survey line.

Microtremor, ESAC, SPAC, etc.

Geophones of 4.5Hz high gain are recommended for microtremor use. They can resolve deeper structures usually involving lower frequencies detection.

Sensors typical specifications

Eigenfrequency	Hz	4.5	8	10	14	40
Useable band	Hz	0.2--240	0.5--240	1--240	2--250	10--380
Tilt tolerance (V)	deg°	5	8	10	15	20
Tilt tolerance (H)	deg°	2	4	5	8	10
Damping	h	0.6	0.3/0.6	0.3/0.6	0.2/0.5	0.2/0.5
Sensitivity o.c.	V/m/s	28	28	28	28	42
Sensitivity damp.	V/m/s	--	24	22	20	30
High-gain Version	V/m/s	78	--	--	--	--
Coil resistance	ohm	375	375	375	395	575
Inertial mass	g	11	11	11	11	8
coil motion p-p	mm	4	2	2	2	1.5
Weight (V sens)	g	275	275	275	275	275
Weight (H sens)	g	238	238	238	238	238

* By useable band we mean the capability of the sensor to resolve useful signals within the Peterson curves (USGS-NLNM) when used with the SRxx series seismograph, with the DoReMi system the lower side of the band could be reduced of 1/2 due to the highpass filter of the DoReMi pre-amplifier.

The sensors could be used with a wider bandpass with digitizers with better noise and sensitivity features; they might not give acceptable results with digitizers with a lower sensitivity and resolution.

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Available accessories for land cased sensor



PVC geophone holder



Coated steel tripod



Coated steel geophone carrying hasp

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