HOLI3C geophone

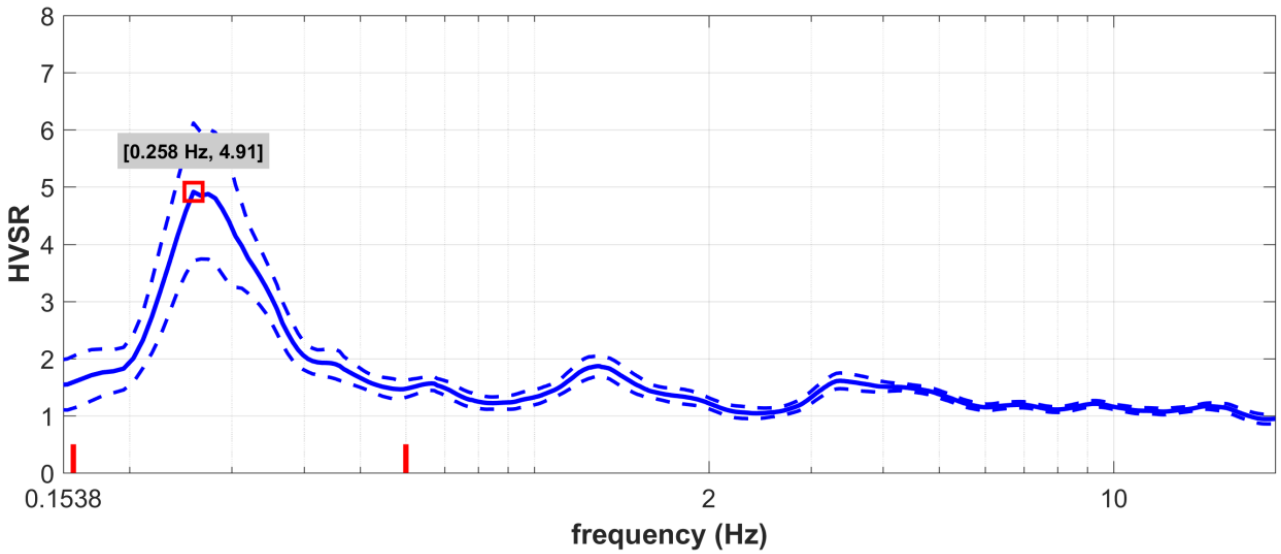
The ***Holi3C*** geophone is a three-component velocimeter designed by *Eliosoft* and realized by *Geospace* with the aim of fully meet the requirements necessary to acquire active and passive data useful for a large number of applications.

The basic model is equipped with a **Cannon NK-27 connector** (on the left) but it is also possible to have a model with **three split spring connectors** (on the right).

The NK-27 connector can be connected directly to the seismograph we recommend (see photo on the left) or to the final connector or the 9 channel cable we provide in particular (but not only) for the *HoliSurface*® method (see section "Holi3C for the acquisition of active data").

A video introduction to the *HoliSurface*® way of working: **https://youtu.be/hqjJvAxL6xQ**

While recording the passive data with your seismograph, do not forget to activate the "high-gain all geos" option. In the following image an example of HVSR peak identified at a very low frequency (0.258 Hz) using HOLI3C.

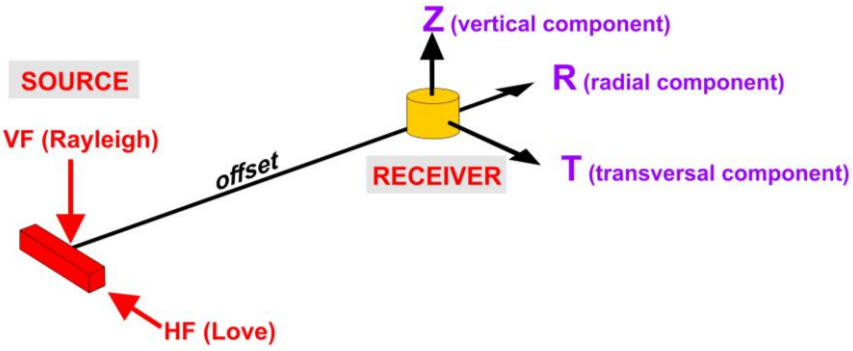


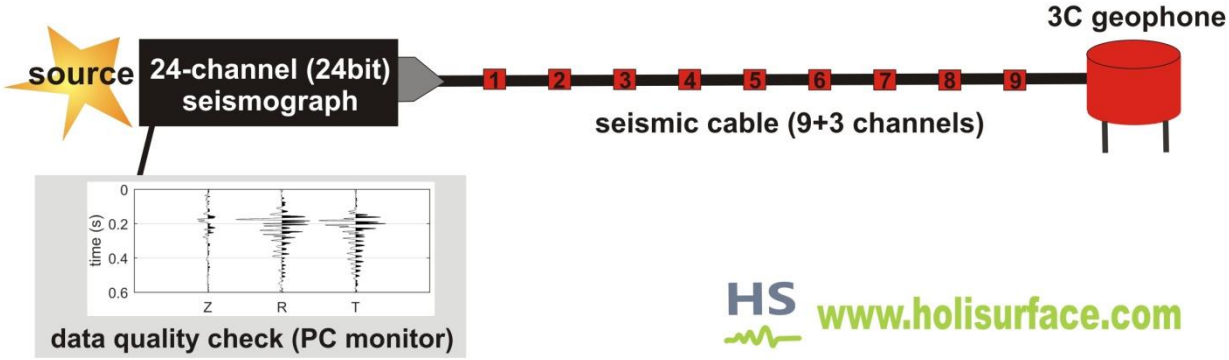
Holi3C for the acquisition of active data (*HoliSurface*® method) and synchronized vibration data

A 3-component geophone can be used for several purposes and HVSR is only one of them. It can be used for the analysis of vibrational data (see e.g. Dal Moro et al., 2018) as well as for the analysis of dispersion according to the HS (*HoliSurface*®) method (e.g. Dal Moro, 2018).

Setting of the source and geophone during an HS acquisition: only one source and one 3-component geophone.

This way we can jointly analyse up to five "objects" also adding the HVSR (joint analysis of six objects so to significantly reducing the non-uniqueness of the solution).





The orange cable is the *holi seismic cable* that ends with a Cannon connector that can be used to connect the **Holi3C** geophone.

If you have two HOLI3C geophones and one of our 9-channel cable, you can also record synchronous data useful for the classical approach to the characterization of a building (see Dal Moro et al., 2018).

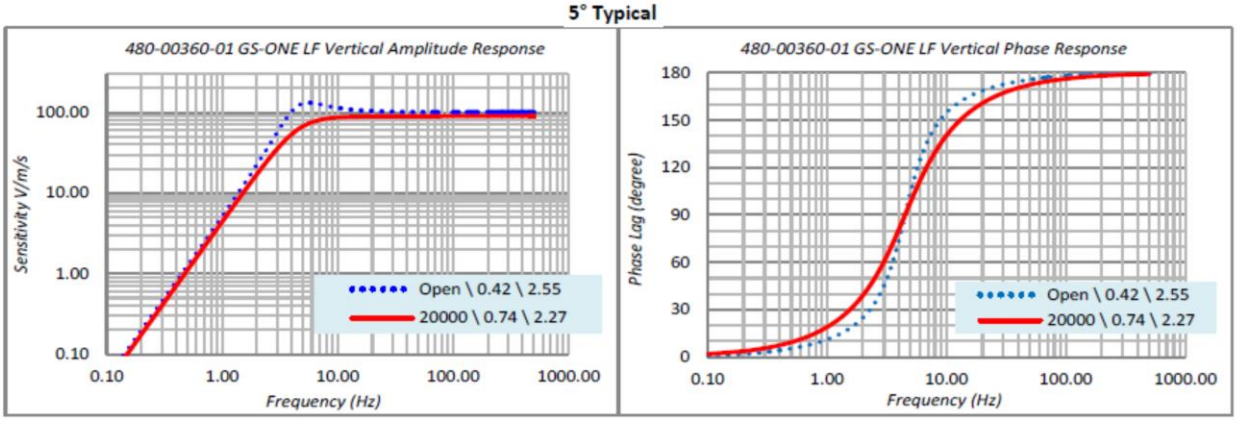
Main technical specs

Specifications at 25 °C at operating Orientation			*Tolerances*
Natural Frequency	**4.50**	Hz	**±0.75 Hz**
Coil Resistance	**2450**	Ohm	**±5%**
Sensitivity	**2.550**	V/in/s	**±10%**
	100.4	V/m/s	
Open Circuit Damping	**0.42**		**±0.10**
Distortion (measured at 12 Hz and 0.7 in/s pk-pk)	**0.25% Typical**		
Spurious	**120 Hz. Typical**		

Mass	**25.2**	g		
Tilt angle when coil hits end stop	**Z 24° Typical**	**H 5° Typical**		
Coil Excursion pk-pk	**3.05**	mm	**0.120**	in

Diameter	**30.5**	mm	**1.20**	in
Length	**40.6**	mm	**1.60**	in
Weight	**131**	g	**4.62**	oz
Operating & Storage Temperature	**-40° to +80°**	C	**-40° to +176°**	F

5° Typical



Total Load Resistance	**Open**	**20K**	**22810**	Ohm
Damping	**0.420**	**0.735**	**0.700**	
Sensitivity	**2.550**	**2.272**	**2.303**	V/in/s
	100.4	**89.4**	**90.7**	V/m/s

Please, notice that data are equalized via software down to about 0.2 Hz (see previous pages).

Suggested readings

Dal Moro G., 2020. *On the identification of industrial components in the Horizontal-to-Vertical Spectral Ratio (HVSR) from microtremors.* Pure and Applied Geophysics (in press)

Dal Moro G., Al-Arifi N., Moustafa S.R., 2019. *On the efficient acquisition and holistic analysis of Rayleigh waves: Technical aspects and two comparative case studies*. Soil Dynamics and Earthquake Engineering 125 (2019) 105742, https://doi.org/10.1016/j.soildyn.2019.105742

Dal Moro G., 2018. *Effective Active and Passive Seismics for the Characterization of Urban and Remote Areas: Four Channels for Seven Objective Functions.* Pure and Applied Geophysics. On-line: https://doi.org/10.1007/s00024-018-2043-2

Dal Moro G., Weber T., Keller L., 2018. *Gaussian-filtered Horizontal Motion (GHM) plots of non-synchronous ambient microtremors for the identification of flexural and torsional modes of a building*, Soil Dynamics and Earthquake Engineering, 112, 243–255

A new and very comprehensive book (focused on the methodologies implemented in the *HoliSurface*® software) will be published in May 2020 by Springer:

Efficient Joint Analysis of Surface Waves and Introduction to Vibration Analysis: Beyond the Clichés

Our social media - News and small case studies

https://www.facebook.com/HoliSurface

https://twitter.com/winmasw

https://www.youtube.com/user/winMASW/videos

https://www.researchgate.net/profile/Giancarlo_Dal_Moro

www.winmasw.com

ELIOSOFT geophysical software & services
33057 Palmanova (UD) - Italy
P. IVA IT01111260327 | www.winmasw.com | winmasw@winmasw.com