GN309 High-resolution Intelligent Nodal Seismograph

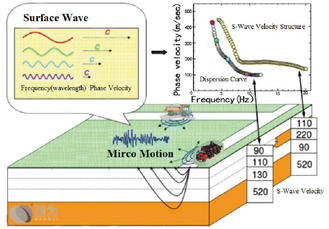
Surface Wave Detection Method

Combined with High-precision Nodal Seismograph and 2D/3D Processing Software

Surface Wave Detection

is a geophysical exploration method that utilizes wave dispersion characteristics of surface waves (mainly Rayleigh waves) to detect the thickness of various layers.

Can be roughly divided into two types:
Active Source Detection
and **Passive Source Detection.**



Active Source Detection, such as **MASW**, detect seismic wave signals propagating along underground propagation paths by applying small vibrations to the surface. This exploration method is suitable for detecting shallow geological layers (less than 15m), commonly used in urban engineering, infrastructure construction, pipeline detection etc.

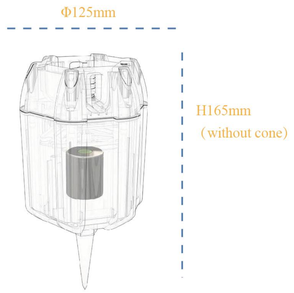
Passive Source Detection, such as **ESPAC**, use surface wave signals from the natural vibrations of the ground surface to detect underground structures and geological information. This exploration method is one of the most effective methods for obtaining S-wave velocity structures. It can be used for detecting mid to deep strata (max over 10km) which is commonly used in finding mineral resources or oil reservoirs.

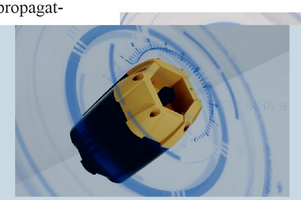
GN309 Intelligent Node

High-resolution Acquisition System

HIGH-RESOLUTION

Built-in Single Component
2Hz 260v/m/s Geophone
High-SNR Data Quality
Bandwidth 5s-200Hz
High-precision 32Bit ADC
Ultra Low-noise level



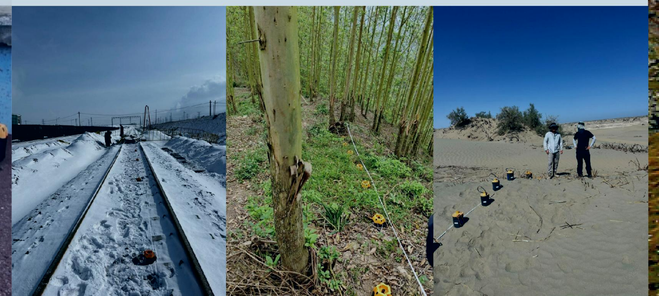


ADAPTABILITY

Built in battery work 30days in normal mode, 7-10days in 4G mode.
Support extra three components
Support various of seismic source.

APPLICATIONS:

1. **Engineering exploration**: urban underground space, roadbed boulders, urban drainage pipelines, detection of engineering crack.
2. **Resources exploration**: lithology mutation (aquifer), coal and oil and gas exploration, etc.
3. **Structural exploration**: karst, fault fracture zone, collapse column, goaf, real-time monitoring of overburden thickness.



Hefei Guowei Electronics Co., Ltd.

9th Floor,Building A, G3, Phase II, Innovation Industrial Park,No.2800, Innovation Avenue, High-tech Zone, Hefei city, Anhui Province, China

0086-0551-65327898/65327899

0086-0551-65327899

hfgwe@hfgwe.com

http://www.hfgwe.com

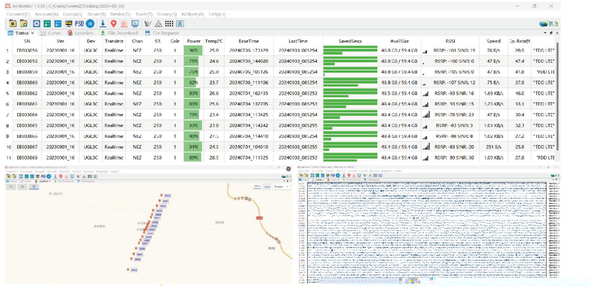
EQ Monitor

REAL-TIME PROCESSING

When using 4G mode GN309, the user

- can remotely adjust field parameters according to ground situation;(i.e., sampling rate, gain,and array arrangement)
- can use remote wake up and sleep function to start or end the data acquisition anytime;
- can use anti-theft alarm function and GPS location to search lost node in time;
- can upload data to cloud and download the data via mobile phone
- EQ Monitor supports active, passive, passive, HVSR, and real-time 3D-3D processing

Real-time Data Transmission&Node Status Control



Ground Subsidence Detection 3D Map (China)

ESPAC Surface Wave Detection Method
GN309 4G Nodal Seismograph (2Hz 260V/m/s)
GeoTremors Professional Processing Software

Large area geological subsidence suddenly occurred on the ground after drilling, causing obvious cracks in municipal facilities and buildings.

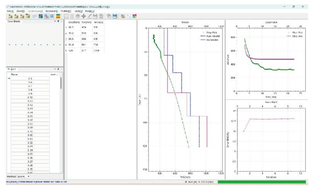
From the contour map, it can be seen that the low-speed zone in the target area is distributed in a multi-point dispersed manner, corresponding to the rich water zone and cavities generated after drilling.

Anti-theft Alarm Function

Remote Wake up / Sleep Function

GeoTremors Professional

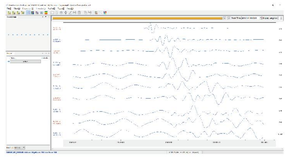
SURFACE WAVE PROCESSING SOFTWARE



Stable and Efficient Dispersion Inversion

The inversion of dispersion curves uses an efficient iterative algorithm, which can quickly and stably achieve the underground velocity structure.

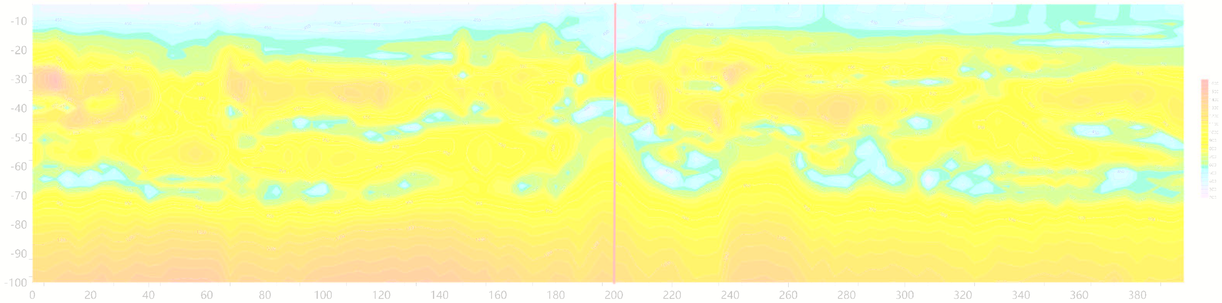
Its automatic batch calculation capacity



Active Source Dispersion Spectrum Analysis

Surface wave dispersion spectrum analysis also supports active and dual source surface wave data, and can combine active source high-frequency data with passive source low-frequency data to reduce shallow blind spots and improve shallow surface detection accuracy.

Passive Source Dispersion Spectrum Analysis

Support H/V Method

Support Vs30 Vs100 Calculation