GUOWEI

UGL-3C Real-time Monitoring Seismograph

UGL-3C&MRMS

Advanced Nodal Seismograph and High Effective Micro Seismic Positioning System

UGL-3C is a three-component, intelligent node seismograph designed by our company.

The main advantages of this product are 4G remote real-time transmission, high sensitivity sensor, compact and portable, which can realize intelligent data acquisition, transmission, download and distribution in real-time.

Widely used in real-time monitoring of geological disasters, long-term real-time monitoring of earthquakes and oil&gas, CCUS fracturing.

4G/5G Real-Time

Seismic data and node situation are remotely transmitted through 4G or 5G signal in real-time.

Long-term Operation

With our remote wake-up and sleep function, UGL-3C can achieve more than 30days monitor work in 4G mode.

Accurate Motion Location

In 4h fracking operation, our system can monitor 300-500 events, min -2.3mag max 4500m depth.

Anti-Interference

MRMS can reduce the probability of false picking by setting picking parameters to eliminate ground noise events with limited impact, such as traffic and industrial machinery.

HIGH QUALITY SUSTAINBILITY

BATTERY LIFE

Built in battery, ultra-low power consumption

45days in normal mode

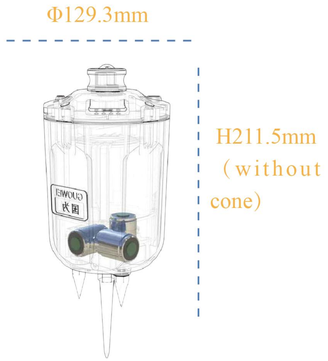
10-15days in 4G real-time mode

SENSOR

Built-in Three Components

High Sensitivity 190V/m/s

Bandwidth 5s-200Hz

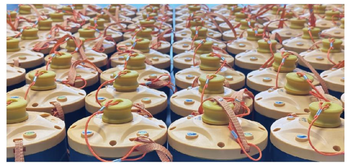


PRODUTCIVITY

Support 50000 nodes per year

Daily productivity 200 nodes

(8h working time)

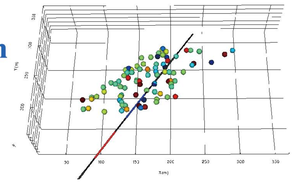


ACCURATE MOTION LOCATION

MRMS: Micro Seismic Monitor&Locate System

Artificial Intelligence Pick

Unique Phase Net based artificial intelligence phase picking method significantly improves the accuracy of phase picking



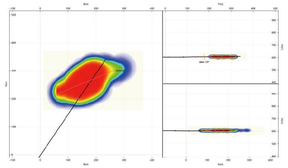
Motion Event Color Time Gradient

Real Time High-Precision Positioning

The combination of real-time absolute positioning and high-precision double difference positioning makes the positioning process fast and accurate

Analysis Of Crack Parameters

Perform crack analysis on micro seismic event clouds to obtain the size and orientation of cracks.



Probability Density Distribution Map Of Cracks

MAJOR FUNCTION

1.Automatic planning of work area setting function

2.Support speed analysis and calibration function for external import of logging curves

3.Customizable data preprocessing and noise reduction function

4.Signal overlay enhancement function

5.Micro earthquake automatic monitoring and positioning function

6.Source mechanism inversion function

7.Analysis function of crack parameters and renovation volume

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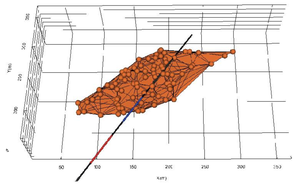
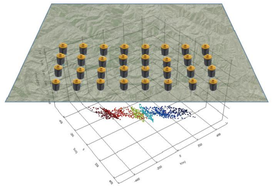


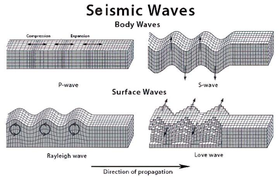
Crack Transformation Volume 3D Figure



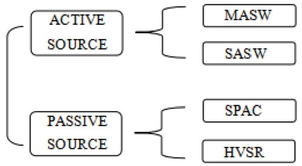
EFFECTIVE DATA COLLECTION

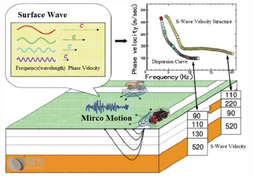
Multi Wave Acquisition

Three component sensors can simultaneously collect both P-wave and S-wave seismic phases, providing richer information when earthquakes occur. Compared to single component sensors, the signal-to-noise ratio improvement caused by the superposition of seismic phases in three component sensor data is more significant.



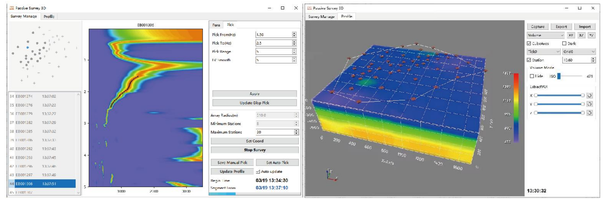
Multi-Seismic Method





Real-time Data Process

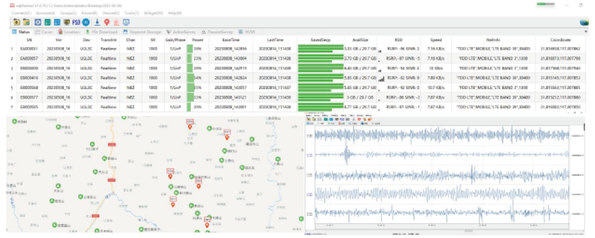
Acquisition software EQ Tools support processing seismic data into 2D/3D figure in real-time.



4G/5G REAL-TIME MONITORING

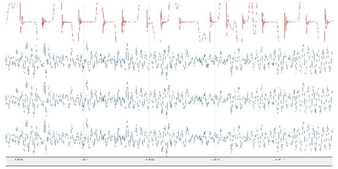
Data Transmission&Status Control

Node status, location and seismic data can be transmitted through 4G or WIFI signal in real-time.



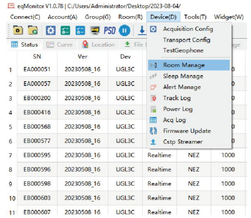
Anti-theft Alarm

If the seismic wave turns into red as showed, it means this node is moved by others.



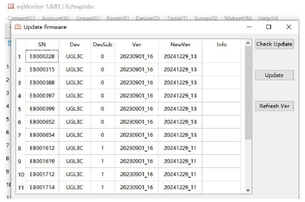
Remote Wake up/Sleep

With our remote wake-up and sleep function, UGL-3C can achieve more than 30days monitoring work in 4G mode.



OTA Update

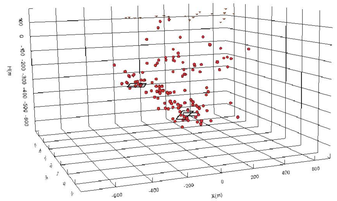
Version of UGL-3C acquisition module can be updated remotely automatically



HIGH COST-EFFECTIVE SOLUTION

Reduce 60% Device Cost

Compared with traditional cable seismograph which need more than thousands of channels to do the large scale frack or other motion monitor case, we only need 15-200 nodes of UGL-3C combined with MRMS location software can get same or even better result.



Save 80% Time and Labor

In traditional survey solutions, they need much more time and labor to set the seismic monitor system and can only get the data in site, while our nodes are wireless, our data are real-time transmitted. 80% time and labor cost can be saved and we can complete the project much more effective than other solutions.

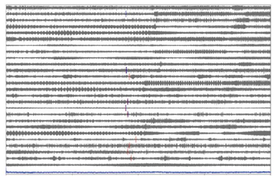
Better Data Quality

Waveform Filtering

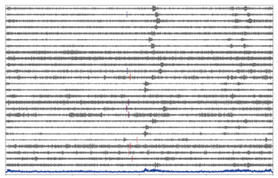
MRMS can customize various filter combinations including low-pass, band-pass, high pass, and notch filters, and can perform targeted denoising processing according to specific noise sources.

Spectral Whitening And Noise Reduction

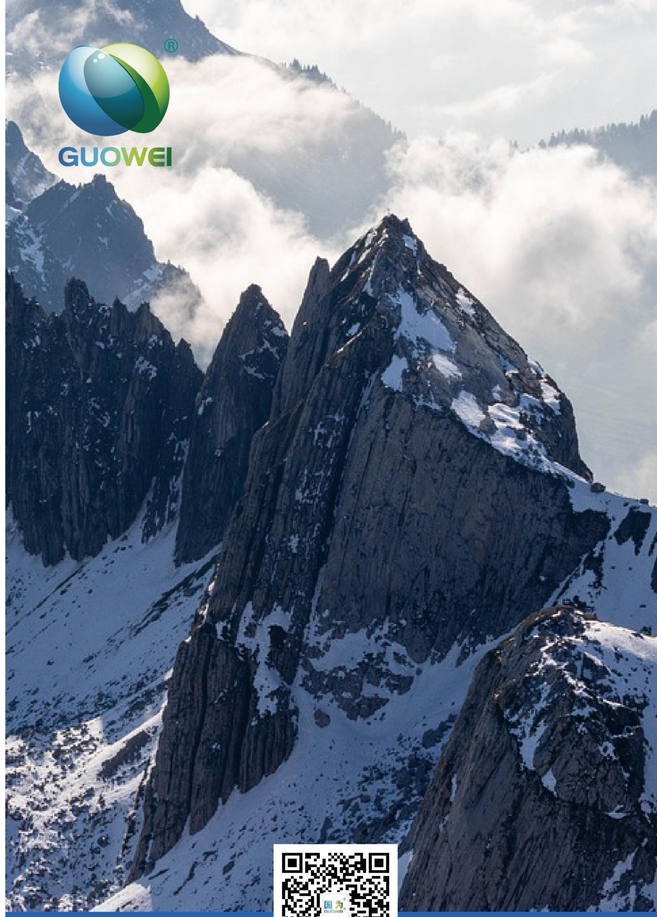
MRMS adopts a special spectral whitening denoising algorithm for non fixed frequency random noise sources to suppress narrowband noise, while shaping the waveform to improve the data signal-to-noise ratio.



Before Spectral Whitening



After Spectral Whitening



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