

## LEADING TECHNOLOGY

### Time Synchronism with Ultra High Precision (< 1µs)

GS201 adopts clock data recovery technology and phase-locked loop technology to achieve global clock distribution and command synchronization compensation. We can achieve synchronous acquisition errors of less than 1µs for large detector arrays. This technology is globally leading and has been published in top academic journals.

## 32-bit ADC and Low Noise Circuit Design Techniques

Compared to 24 bit A/D type acquisition stations, our equipment with 32 bit  $\Sigma$  -  $\triangle$ ADC have higher conversion accuracy, lower noise, higher dynamic range, and smaller distortion in the acquisition of weak seismic waves.

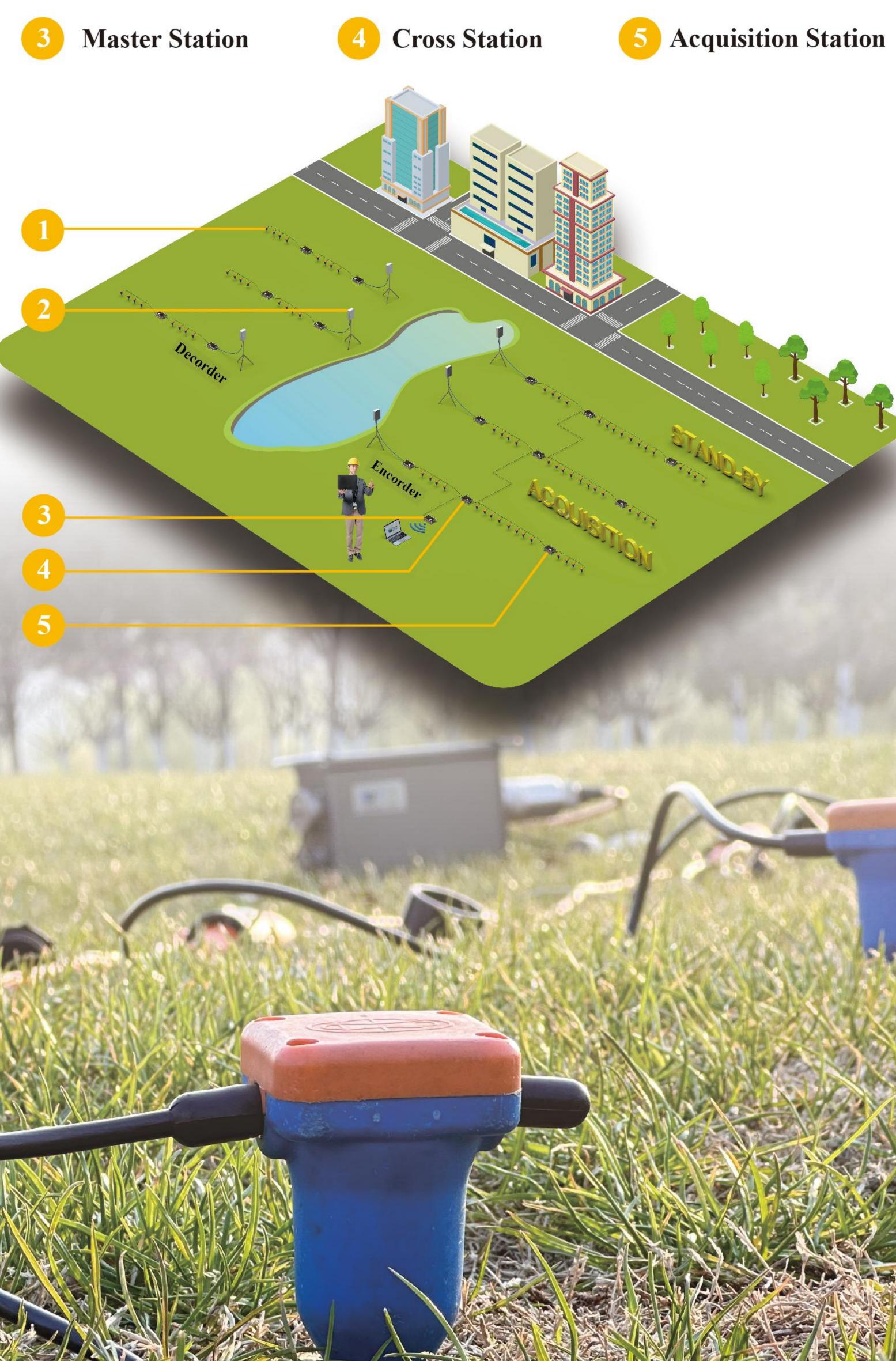
### Adapted Multiple Sensors And Compatible With Nodes

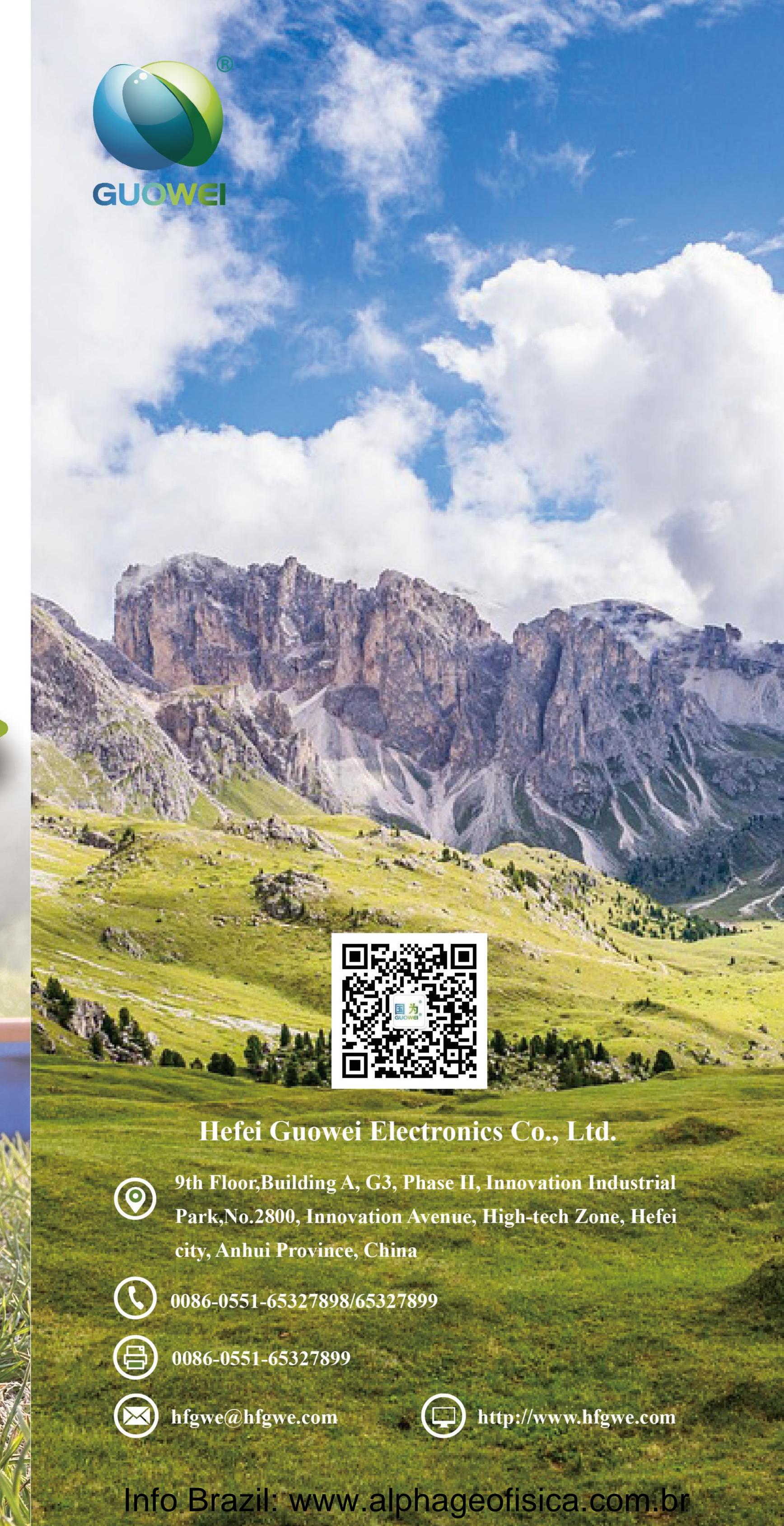
GS201 can use multiple sensors like geophone strings, 3 channels downhole geophone, etc. Fully supporting the combined acquisition of cable and nodal seismograph. Equipped with winding network function, complex terrain can transmit data through wireless relay and playback single shot records.

## ACQUISITION SYSTEM





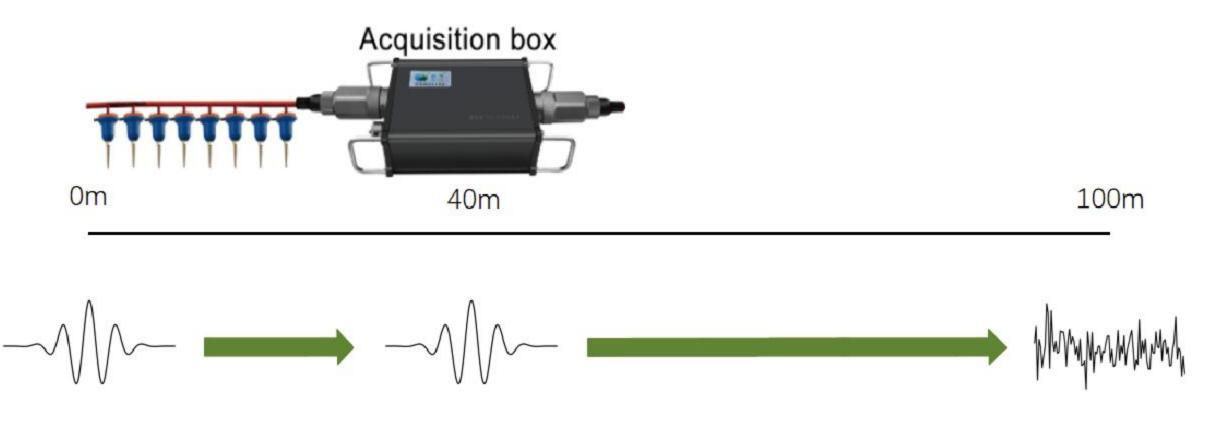




# COMPARISION BETWEEN CENTRALIZED SEISMOGRAPH

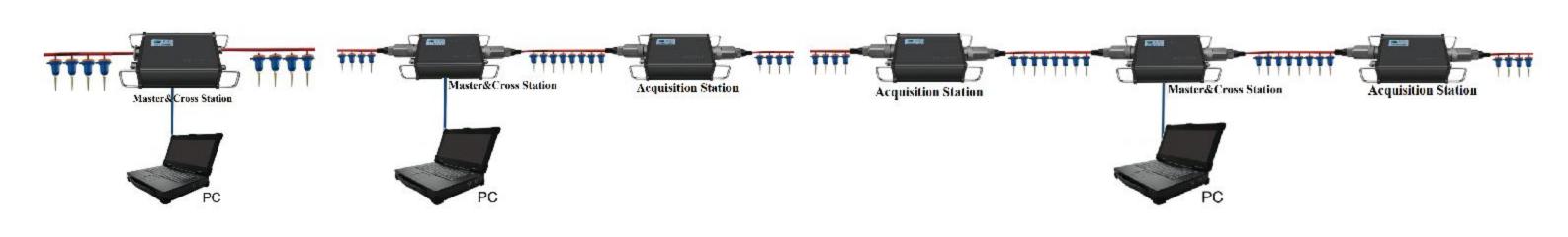
### Less Signal Attenuation

The design of distributed seismograph adapt 8 channels for per acquisition which can decrease signal attenuation through transmission in maximum extent.

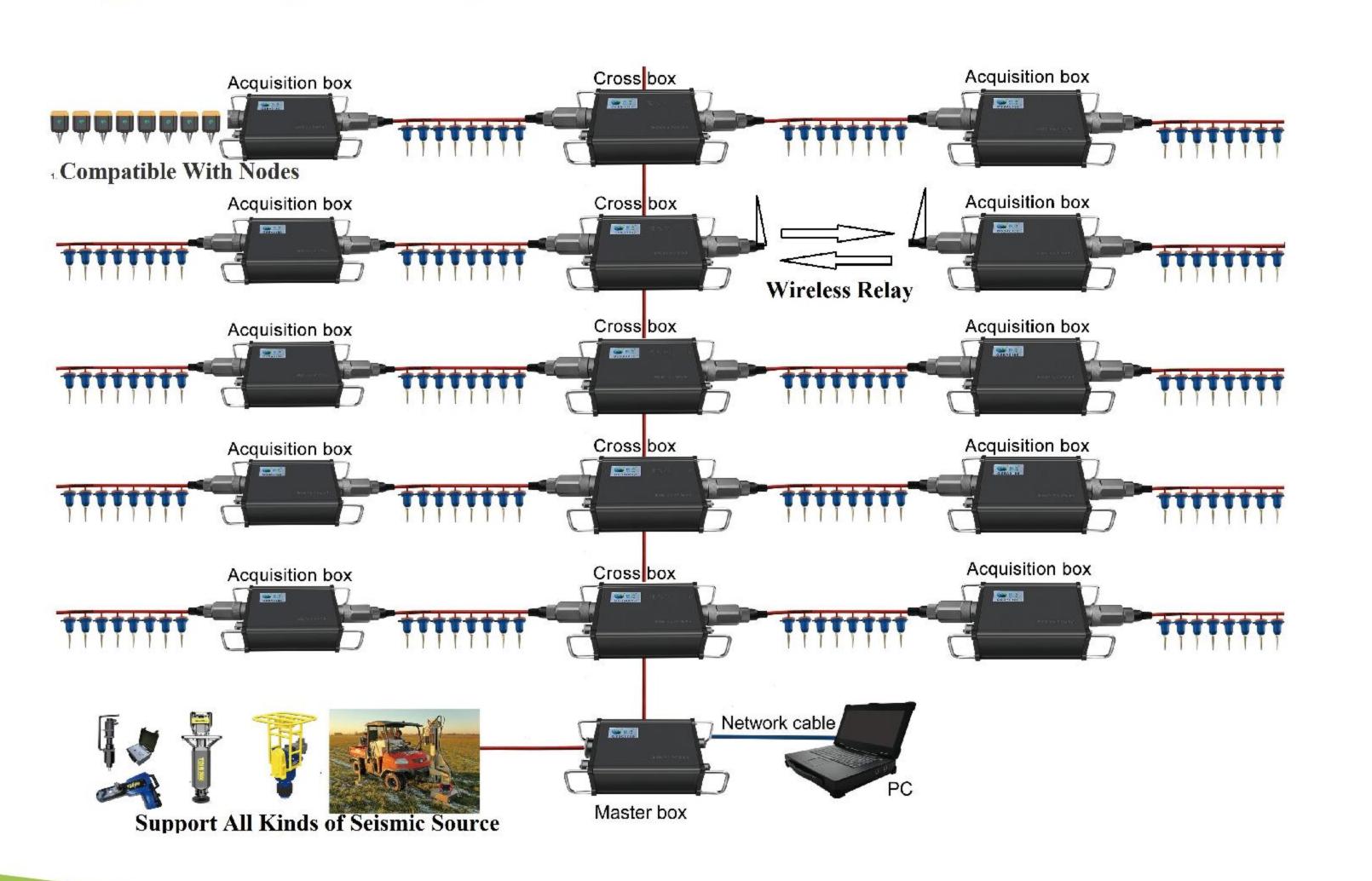


## Flexibility and Scalability

The instrument can be expanded in units of 8 channels, making it convenient and flexible. It can be configured as a single station(Master&Cross Station) with 8 channels, add one Acquisition Stations with 16 channels, add two Acquisition Station will be 24 channels.



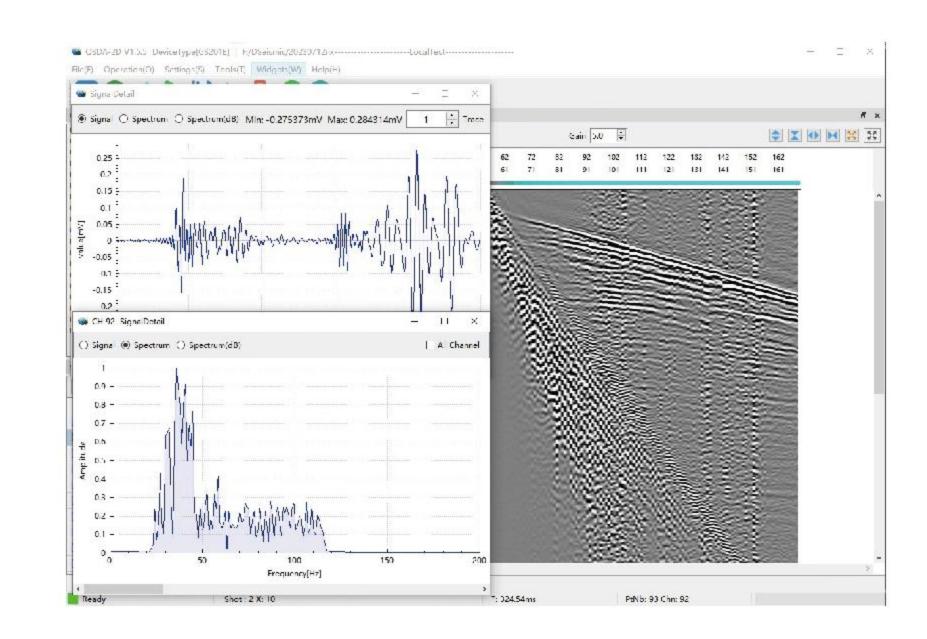
## **High Compatibility**



## COMPARISION BETWEEN NODAL SEISMOGRAPH

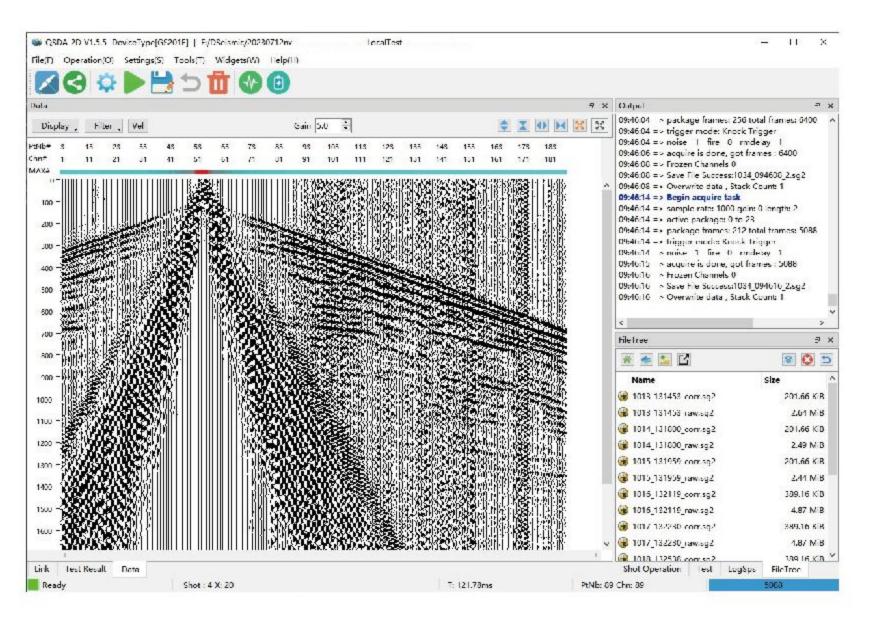
#### **Transmission Stability**

Compared to nodal seismograph reply on WIFI or 4G signal quality, cable seismograph use cable to transmit the data. Data transmission will not be influenced by signal quality which makes cable seismograph can adapt operation in non signal covered area.



#### **Cost-efficient Solution**

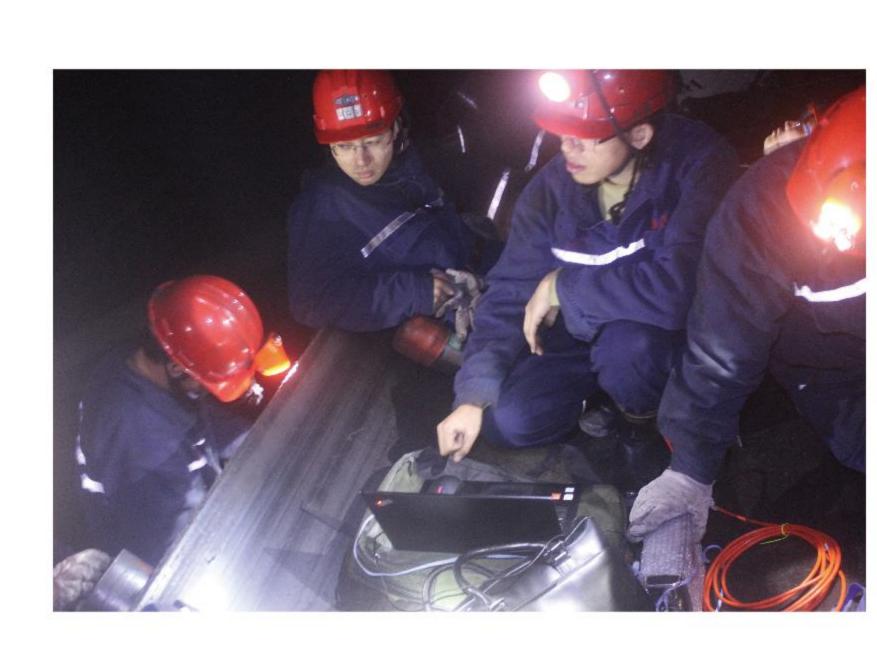
Cable seismograph is not as convenient as nodal seismograph, but regrading to single channel cost, it is less than most of real-time nodal seismographs.



## Downhole Application

Due to the wireless transmission need of nodal seismograph, it can't work in downhole monitoring applications because of non GPS timing underground.

Relatively cable seismograph can do such applications better.



# COMPARISION BETWEEN OTHER MANUFACTORS

**Instrument:** GS201 High Precision Distributed Land Seismic Exploration Instrument

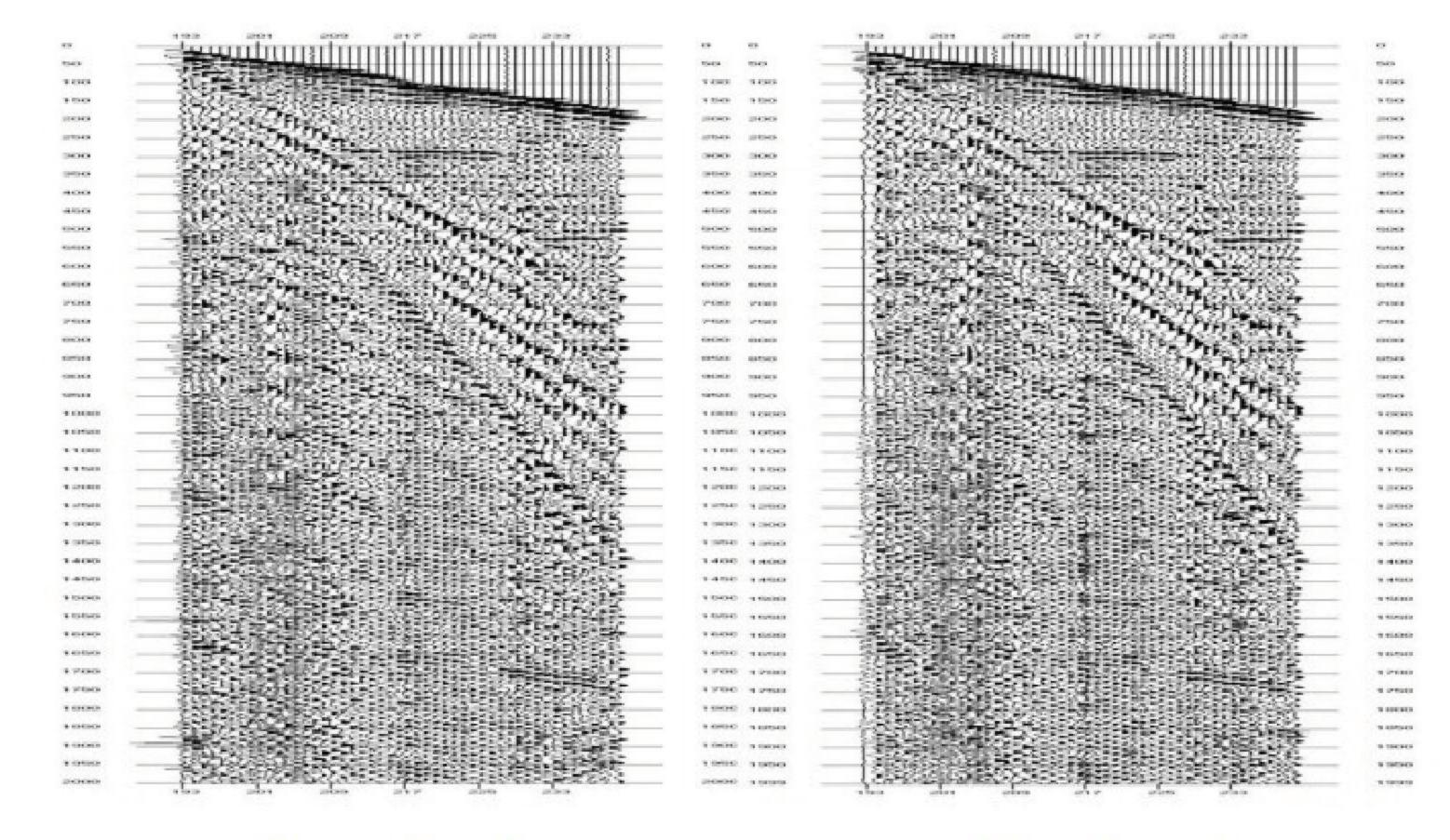
Purpose: Comparison test with a French brand instrument (two sets of instru-

ments buried at the same point, synchronous shooting, synchronous acquisition)

Parameters: sampling rate of 1ms, collection time length of 1s, and channel spacing of 10m; 48 channel reception; Two series and two parallel detectors;

Sensor Type: natural frequency 10Hz dynamic coil detector; Explosive source and well cannon excitation, with a depth of 3m and a dosage of 1.5-2kg.

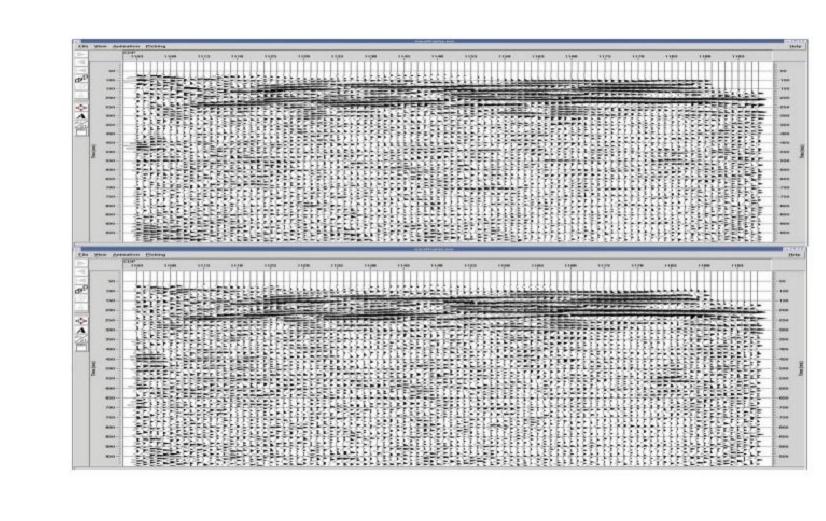
Comparison of Original Single Shot Records of GS201 Excited at the Same Point and Received at the Same Section:



France Brand

China Guowei

Comparison of data acquisition, imaging, and processing profiles: French Brand (top) and Guowei GS201 instrument (bottom)



From the original single shot recording and processing results, it can be seen that the signal-to-noise ratio (SNR) and visual resolution are basically the same, and local domestic instruments perform slightly better.

## DATA SHEET

GS201 distributed high precision land seismograph can support 4000 channels under 1 ms sampling interval which contains industry PC, master station, cross station, acquisition station. The connection structure is very flexible and light. Exploration depth can reach from several meters to thousands of meters.

It supports seismic methods such as reflection, refraction, surface wave studies(MASW, ESPAC, H-V spectral ratio, etc.), pile foundation inspection, pulse, seismic imaging, vibration measurement, microseismicity and velocity (shear wave) test etc.

It has been widely used for different areas of geological exploration such as water conservancy, electricity, roads, railways, bridges, urban construction, transportation, groundwater and resources exploration such as oil, coal, coal-bed methane, shale gas, metals and non-metallic mineral.

AD Converter	32 bit $\Sigma$ - $\triangle$ ADC
Sampling Interval	4.0, 2.0, 1.0, 0.5, 1/4, 1/8, 1/16ms
Preamplifier Gain	0, 6, 12, 18, 24, 30,36dB
Noise	1.2 μ V (sampling interval 1ms, preamplifier gain 0dB)
Single Channel Power Consumption	working mode 0.25W, standby mode 0.10W
Dynamic Range	> 123dB (sampling interval 1ms, preamplifier gain 0dB)
Inter Channel Suppression	<-123dB (sampling interval of 1ms, preamplifier gain of 0dF
Harmonic Distortion	<-120dB (sampling interval 1ms, preamplifier gain 0dB)
Gain Accuracy	<0.1% (sampling interval 1ms, preamplifier gain 0dB)
Common Mode Rejection Ratio	>125dB (sampling interval of 1ms, preamplifier gain of 0dI
Rated Differential Input Impedance	20ΚΩ
Full Amplitude Input	± 2.5 V
Working Voltage Range	10-15V, internal battery or external battery
Working Temperature Range	-40~85°C
Inventory Temperature Range	-40~85°C
Station Size	200×150×70 mm
Station Weight	≤ 2.5 kg