Geode
Exploration Seismograph

GEOMETRICS
Innovation • Experience • Results

Geode는 다재다능하고 유연하게 사용할 수 있는 장비로 전 세계에서 많이 사용하고 있습니다. 작고 가벼운 무게로 운반에 편리하고 쉽게 2D, 3D 탐사로 확장시킬 수 있습니다. 반사법, 굴절법, MASW/MAM, 토모그래피에 사용할 수 있을 뿐만 아니라 지진을 모니터링하는 데 이용할 수 있습니다. Geode는 프로파일링 또는 지속적인 기록을 통해 해양탐사에도 적용할 수 있습니다. 세계에서 가장 인기있는 지진계로 학문과 연구에서도 널리 쓰이고 있습니다.

쉽고 편리한 작업을 위해 노트북을 이용해 데이터를 확인하고 기록하며, 프로세싱할 수 있도록 제작되었습니다. Geode 간의 연결을 통해 1,000개의 채널까지도 확장하여 사용할 수 있습니다. Geode는 충격에 강하고 먼지, 침수, 극단적인 온도 변화까지 이겨낼 수 있습니다.

15년이 지난 지금, Geode가 Geometrics가 만든 가장 신뢰할 수 있는 지진계라고 확신합니다. 이에 Geometrics는 3년의 Warranty를 제공하고 있습니다.

FEATURES & BENEFITS

- **Bulletproof** - Not really, but almost. Survives 1.5m drop onto concrete in 14 orientations. The Geode comes standard with a 3-year warranty.
- **Distributed architecture** - Use standard 24-pair geophone cables, no matter how many channels.
- **Ultra-wide bandwidth** - Useful for everything from crosshole surveys to earthquake monitoring.
- **Geophone and line testing** - No need for time-consuming "tap test".
- **Versatile** - Configure systems ranging from 8 to 1000 channels.*
- **Waterproof and dustproof** - No need to pick up the system in a sudden rain or dust storm.
- **High temperature range** - Use in the Sahara, Amazon or at the North Pole.
- **GPS synchronization** - Sub-sample timing accuracy so you know exactly when an event occurs.

* Systems can be expanded temporarily via Geometrics' rental pool or existing loaner networks.

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SPECIFICATIONS | Geode Exploration Seismograph

Configurations: 8, 12, 16, or 24 channels in weatherproof field-deployable Geode module. Geode is operated from either Windows XP/7/8-based laptop or by Geometrics' ruggedized StrataVisor NZ field computer/seismograph. Basic operating software controls one Geode. It can also be optionally expanded to control multiple Geodes, as well as do marine surveying, continuous recording, GPS synchronization, and seismic surveillance.

A/D Conversion: 24-bit result using Crystal Semiconductor sigma-delta converters and Geometrics proprietary over sampling.

Dynamic Range: 144 dB (system), 110 dB (instantaneous, measured) at 2 ms, 24 dB.

Distortion: 0.0005% @ 2 ms, 1.75 to 208 Hz.

Bandwidth: 1.75 Hz to 20 kHz. 0.6 and DC low frequency option available.

Common Mode Rejection: > 100 dB at <= 100 Hz, 36 dB.

Crosstalk: -125 dB at 23.5 Hz, 24 dB, 2 ms.

Noise Floor: 0.20 µV, RFI at 2 ms, 36 dB, 1.75 to 208 Hz.

Stacking Trigger Accuracy: 1/32 of sample interval.

Maximum Input Signal: 2.8 V PP, 0 dB.

Input Impedance: 20 kOhm, 0.02 µf.

Preamplifier Gains: Standard factory configuration is 24 and 36 dB. Optional configurations include 12 and 24 dB or 0 dB.

Anti-alias Filters: -3 dB at 83% of Nyquist frequency.

Acquisition and Display Filters:

- **Low Cut:** OUT, 10, 15, 25, 35, 50, 70, 100, 140, 200, 280, 400 Hz, 24 or 48 dB/octave, Butterworth.
- **Notch:** 50, 60, 150, 180 Hz and OUT, with the 50 dB rejection bandwidth 2% of center frequency.
- **High Cut:** OUT, 32, 64, 125, 250, 500 or 1000 Hz, 24 or 48 dB/octave.

Sample Interval: 0.02, 0.03125, 0.0625, 0.125, 0.25, 0.5, 1.0, 2.0, 4.0, 8.0, 16.0 ms.

Correlation: Optional (with SGOS, standard with MGOS) high-speed hardware correlator available in each Geode for fast cycle time with vibrators and pseudo-random sources. Correlates 16K record, unlimited channels, in under 1 second.

Record Length: 16,384 samples standard, 65,536 samples optional.

Pre-trigger Data: Up to full record length.

Delay: Full record length to +100 sec.

Data Transmission: Uses Ethernet transmission standard over CAT-5 copper or multimode fiber-optic cable. Distance between boxes: CAT 5 cable up to 0.25 km; fiber-optic cable up to 1.5 km.

Event Trigger: Based on seismic event; criteria set by user.

Continuous Recording (optional): Record GPS-synchronized, gapless data in SEG-2 format.

Auxiliary Channels: All Geode channels can be programmed as either AUX or DATA.

Roll-along: Built-in, no external roll box required.

Geophone Testing: Pulse test measures resistance, sensitivity, natural frequency, and damping.

Instrument Tests: Optional analog testing available. Measure noise, crosstalk, CMR, dynamic range, gain similarity and trigger accuracy. Additional built-in oscillator required.

Data Formats: SEG-2 standard. SEG-D and SEG-Y available as options.

System Software: Basic operating software includes full compliment of acquisition, display, plotting, filtering and storage features. Numerous optional features available; see SCS data sheet.

Bundled Applications Software: SeisImager/2D Lite refraction analysis software from OYO.

Data Storage: Stores data locally in SEG-2 on laptop/PC media. Drivers available for tape/disk storage in SEG-2/D/Y.

Plotters: Drives any Windows-compatible plotter or printer.

Triggering: Positive/negative TTL or contact closure, software adjustable threshold. STA/LTA-like algorithm for triggering on seismic waveform.

Power: Requires 12V external battery. Uses 0.5 W/channel during acquisition (0.25 ms sample rate). A single 12 Amp-hour battery is sufficient for a typical day of data acquisition; standby mode reduces power consumption by 70%.

Environmental: Operates from -50ºC to +70ºC (-58ºF to +158ºF). Waterproof and submersible. Withstands a 1m drop onto concrete on 6 sides and 8 corners. Passes MIL810E/F vibration.

Physical: L: 25.4 cm; W: 30.5 cm; H: 17.75 cm; Weight: 3.6 kg (10x12x7 in; 8 lb). Uses waterproof Bendix 61-pin connector for geophone input.

Operating System: Windows XP/7.

Warranty: Three years standard, extended warranty available.

Optional Built-In Test Functions

Instrument:

- Noise
- DC Offset
- Gain Accuracy
- Gain and Phase Similarity
- Distortion
- Crossfeed
- CMR
- Bandwidth
- Timing Accuracy

Geophone:

- Natural Frequency
- Resistance
- Damping
- Sensitivity

Specifications subject to change without notice. GeodeDS_v1 (1216)

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