Terraplus
empowering discovery

Atom-3C
Passive Seismic System

FEATURES & BENEFITS

- **Passive microtremor data acquisition** - No hammers or weight drops.
- **Simple set-up and flexible geometries** - No PC controller or spread cables.
- **GPS synchronization** - No trigger switches or shot cables.
- **Built-in WiFi** - Wireless setting of acquisition parameters and data downloading.
- **Low-power consumption** - Internal battery pack lasts up to 50 hours between charges.

We are pleased to announce the new wireless Atom Passive Seismic System, now with a 3-channel option. The Atom-3C is designed to obtain 3-component microtremor measurements for HVSR surveys, as well as for joint Rayleigh-Love wave analysis. The HVSR system consists of one Atom-3C Acquisition Unit (AU) and one 2 Hz triaxial geophone. For joint Rayleigh-Love wave analysis, multiple units are set up in the same configurations as those used for vertical-component microtremor array measurements. Each AU features state-of-the-art 24-bit A/D conversion, GPS-controlled timing, and an internal battery pack, all in a lightweight and rugged waterproof box. The AUs are also equipped with WiFi for communications and data retrieval.

Operation in the field is simple – power on the boxes and after achieving GPS lock, the AUs automatically begin recording. LEDs inform the operator of GPS lock, geophone and battery status, and network state. Retrieving data is quick and easy using WiFi and a Windows PC loaded with the Atom Downloader software. Data is downloaded from multiple boxes simultaneously, either in the field or office, for immediate processing.
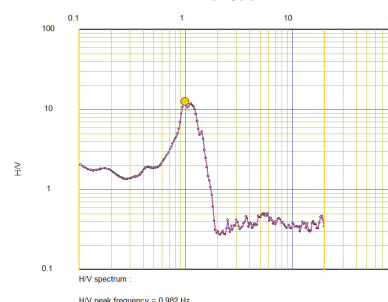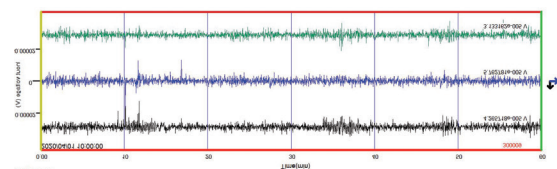
With the standard 8GB internal storage and 4 ms sample interval, data can be recorded for up to 45 days at 8 hours per day. For extended recording, an optional 32GB of memory increases recording time to several months.

Atom-3C with 2 Hz triaxial geophone.

Three-component ambient noise data and calculated HVSR peak frequency for microzonation studies.

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SPECIFICATIONS | Atom-3C Passive Seismic System

ATOM-3C ACQUISITION UNIT (AU)

Configurations: one or multiple AUs; each AU is a self-contained, three-channel data acquisition unit that records geophone output.

Channels: 3 channels per AU.

A/D: 32-bit (24-bit result).

Dynamic Range: 128 dB measured at 2 ms, 12 dB.

Bandwidth: 0.2 to 200 Hz.

Distortion (THD): <0.001% at 2ms, 0.2 to 25 Hz.

Common Mode Rejection: >114 dB at 60 Hz.

Noise Floor: 0.11 µV, RFI at 2 ms, 12 dB.

Maximum Input Signal: 1.6 V, 12 dB; 100 mV, 36 dB.

Input Impedance: 20 kOhm, 0.01 µf.

Preamplifier Gains: 0, 12, 24, or 36 dB.

Sample Intervals: 2, 4, and 10 ms.

Data Transmission: Standard 802.11g WiFi via access point (supplied separately); each AU appears as a DHCP client.

Data Format: Common Time Blocks (CTBs) saved in proprietary ATM format, ASCII, or SEG-2; miniSEED, SAC, and SAF coming soon.

Data Storage: 8GB standard; expandable to 32GB.

Geophone Test: Tap test with LED indicator.

Ports: One 10-pin connector for geophone input, one 10-pin connector for battery charger.

Power: Internal 9Ah NiMh battery pack.

Charger: Single cable for one AU or multi-port charger for 6 AUs (both supplied separately); charging current of 1.5 Amps per AU, 9 hours for full charge.

Environmental: Operates from -20°C to +55°C (-4°F to +131°F). Waterproof and dustproof. Passes MIL810E/F vibration test and 14-point drop test.

Physical: L: 142 mm; W: 140 mm; H: 102 mm (5.6 by 5.5 by 4.0 in). Weight: 1.6 kg (3.5 lbs).

System Software: Atom Downloader for setting acquisition parameters and downloading data and SeisImager/AT for viewing data and creating CTBs.

Applications Software: SeisImager/SW Plus for extended SPAC and HVSR analysis and SeisImager/SW-3C for joint Rayleigh-Love wave analysis (both supplied separately).

Warranty: 12 months.
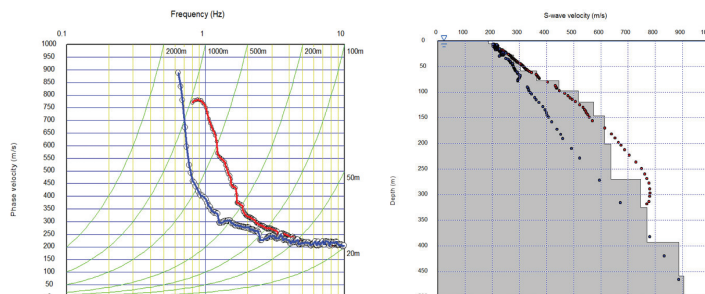
Rayleigh wave (red) and Love wave (blue) dispersion curves and Vs model calculated from a 14-station Atom-3C circular array. Incorporating Love wave dispersion into Vs models helps reduce error and improves accuracy and reliability.
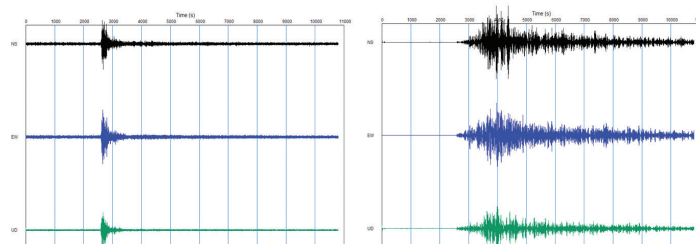
Teleseismic records of M7.7 earthquake in the Aleutian Islands acquired with the Atom-3C for earthquake monitoring.
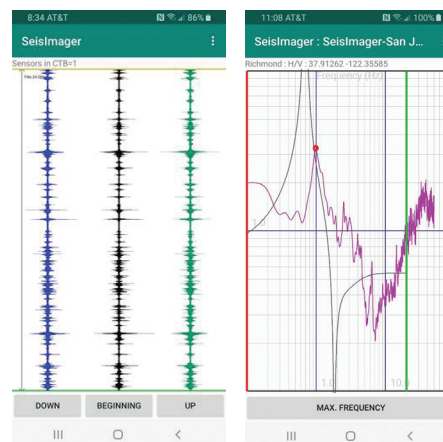
Mobile HVSR apps for Android and iOS coming soon!

Specifications subject to change without notice.   Atom-3C (0420DU)

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