

CMG-3EX



Digital exploration seismometer

The CMG-3EX is a cutting edge broadband seismometer based upon the CMG-3ESP Compact sensor and the CMG-CD24 Digitizer. It is designed specifically for rapid deployment in temporary installations.

Designed for practicality and ease of use, the instrument is packaged in a compact and robust housing and all that is required for field deployment is to plug in a GPS receiver, place the instrument in the desired location and provide power. A large array can be up and running within a couple of hours, with each instrument having enough storage for a month of three-channel data at 100 samples per second. On retrieval, the data can be uploaded immediately onto a disk for rapid processing on a computer.

Key Features:

- Flat, linear response from 1, 30, 60* or 120s to 50* or 100Hz (*standard). Optional hybrid response available.
- Truly portable at less than 9.2 kg, with lifting handle and convenient access to connectors
- RS-232, Ethernet and WiFi output options
- Data transfer via Firewire, RS-232, Ethernet or WiFi
- Robust mass suspension: locking only required for shipping.
- Automatic mass locking /unlocking and centring.
- Lock / Unlock / Center & Data-flush enable buttons on lid, with LED status indicators
- High linearity: >107 dB horizontal, >111 dB vertical
- Over 140 dB dynamic range; low self-noise over a wide frequency band
- Cross-axis rejection > 62 dB; sensor axes orthogonal to within 0.1°
- Adjustable feet allow for up to 4° tilt (8° optional)
- Low power consumption (<1.4W from 10 – 30 V supply)
- Integrated CD24 digitizer.



Specifications



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The sensor response is completely flat and linear across the entire passband. Its high-gain feedback loop eliminates mechanical non-linearity (the overall measured linearity exceeds 95 dB) and minimizes resonances in the spring system.

Low-frequency vibration modes are carefully avoided in the design. The lowest spurious vibration mode of the sensor is a barely measurable resonance above 300 Hz.

Standard velocity output band *60 s – 50 Hz (Optional 1s, 30s or 120s LP and 100Hz HP)*
Mass position output band *DC – 60 s*
Output sensitivity *$2 \times 3 \text{ kV/ms}^{-1}$ (Options from $2 \times 400 \text{ V/ms}^{-1}$ up to $2 \times 10 \text{ kV/ms}^{-1}$)*

Lowest spurious resonance *> 300 Hz (vertical)*
Linearity, vertical (USGS figures) *> 111 dB*
Linearity, horizontal (USGS figures) *> 107 dB*
Cross-axis rejection *> 62 dB*
Dynamic range *> 140 dB*
Self-noise below NLNM *>30 s to 16 Hz*

Data output format *GCF over RS232, Firewire, Ethernet or Wi-Fi*
Sample rates *1 – 1,000 samples per second*
Digitizer resolution at 1 sample per second *21 bits*

Storage capacity *64 Mb internal Flash memory (Options to 16 Gb)*

Operating temperature *–20 to +65 °C (–55 °C optional)*
Optional –20 to +50 °C range without recentring

Mass recentring range *$\pm 4^\circ$ from horizontal*
Mass levelling range *$\pm 4^\circ$ from horizontal (optional feet give additional $\pm 4^\circ$ levelling)*

Materials *Stainless steel base*
Hard anodised Aluminium casing
Mil-spec connector (1500 psi waterproof connector or user connector optional)

Case diameter *168 mm*
Case height (with handle) *317 mm*
Weight *9.2 kg*

Isolating power supply *10 – 28 V DC*
Current at 12 V DC *@115 mA (GPS on duty cycle)*
Mass control *Automatic, remotely operable*
Calibration controls *Sine wave and Step calibration signals.*

