

DIGITAL SEISMOMETERS AND ACCELEROMETERS BY R-SENSORS

R-sensors' digital seismometers and accelerometers are cost effective and more reliable solution in comparison with stand-alone digitizers and seismometers.

A digital seismometer means a molecular-electronic seismometer and a digitizer (data logger) inside. Molecular-electronic seismometers are extremely durable and therefore not equipped with locks and other special devices for carrying, packaging, unpacking and transportation. The seismometer does not need a mass centering and does not require a level adjustment – it operates correctly at installation tilts of up to 15°.

A digital accelerometer means a molecular-electronic accelerometer and a data logger inside.

More technical parameters are presented in datasheets or on Geoarmatech' website at www.Geoarmatech.com.

R-sensors' digital broadband seismometers include the following models:

CME-4x11ND models are digital 3-component compact-size broadband seismometers. The following modifications are available:

- **CME-4211ND** is a digital 3-component broadband seismometer. The rugged case includes a broadband seismometer and a 24-bit autonomous data acquisition system. With its small size and light weight, easiness in operation, mechanical reliability and low energy consumption, this seismometer can be an irreplaceable instrument for field geophysical surveys. While equipping permanent seismic stations, a reasonable price combined with capability to record broadband signals of long-distance earthquakes will be attractive.
- **CME-4311ND** is a digital 3-component low-noise broadband seismometer. A bandwidth of up to 60 sec provides recording the most remote teleseismic events. This model is excellent not only for permanent installations but also for field seismological surveys through its integrated digital recording system, compact size, light weight, rugged case, easiness in operation and low power consumption.

CME-6x11ND models are digital 3-component low-noise broadband seismometers with a force feedback.

The following modifications are available:

- **CME-6011ND** is a digital 3-component low-noise broadband seismometer with a force feedback. A bandwidth of up to **30 sec** provides recording of the remote seismic events. This seismometer combines the low-noise molecular-electronic sensing element

Some of presented features and parameters apply to specific versions of the seismometer. Specifications are subject to change without notice.

(transducer) and the electrodynamic feedback that result in a very flat response over a wide frequency range, a high dynamic range and a greatly improved time and temperature stability of the parameters. This seismometer can be used in various applications including seismic observatories, seismological surveys, seismic microzoning and passive broadband seismic exploration.

- **CME-6111ND** is a 3-component low-noise broadband seismometer with a force feedback. The seismometer has a bandwidth of up to **60 sec**, a high dynamic range and a greatly improved time and temperature stability of the parameters.

R-sensors' digital accelerometers include the following modifications:

- **MTSS-1033ND** is a 3-component digital compact-size accelerometer. It is designed for strong motion measurements, **industrial vibrations** monitoring and analysis. It also can be used as a component of a seismic alarm system. The three identical sensors furnished with a strong electrodynamic force feedback ensure second-to- none input range, precision and high stability. This model features $\pm 3g$ input signal range and a self-noise level of $130 \text{ ng}/\sqrt{\text{Hz}}$ at 10 Hz.
- **MTSS-1043ND** is a 3-component digital compact-size light-weight accelerometer. It is designed to measure **seismic signals** and can be used for earthquake measurements, active seismic, structural health monitoring of high-rise buildings and so on. The electrodynamic feedback provides a high precision level and stability of the sensors parameters. This model has a self-noise level of $70 \text{ ng}/\sqrt{\text{Hz}}$ at 10 Hz.

Some of presented features and parameters apply to specific versions of the seismometer. Specifications are subject to change without notice.

DIGITAL SEISMOMETER CME-6011ND



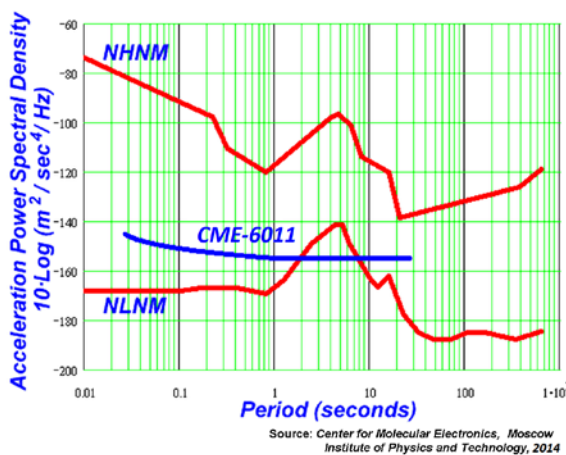
CME-6011ND is a digital 3-component low-noise broadband seismometer with a force feedback. A bandwidth of up to 30 sec provides recording of the remote seismic events.

This seismometer combines the low-noise molecular-electronic sensing element (transducer) and the electrodynamic feedback that result in a very flat response over a wide frequency range, a high dynamic range and a greatly improved time and temperature stability of the parameters.

This model is very rugged and does not require any special means or procedures for transportation and installation. The only procedure to start the operation is to place the seismometer on a rigid horizontal surface, turn the power on and wait for several minutes.

This seismometer can be used in various applications including seismic observatories, seismological surveys, seismic microzoning and passive broadband seismic exploration.

Configuration	Triaxial – Vertical, North, East
Sensitivity	2000 V/(m/s) or customized
Maximum input signal	7.5 mm/sec
Frequency bandwidth	0.033 (30 sec) – 50 Hz / customized down to 60 sec and up to 100 Hz
Dynamic range at 1 Hz	127 dB
Integral noise in the band 0,033 (30 sec) – 50 Hz 0,1 (10 sec) – 20 Hz	33.5 nm/sec (67 μV) 9 nm/sec (18 μV)
Non-linearity at 1 Hz	0.2 %
Temperature range	Standard -12°C...+55°C (10.4°F...131°F) Low-temperature -40°C...+55°C (-40°F...131°F)
Supply voltage	12 V Nominal (9-36 V permissible) 5 V via USB
Power consumption	< 1 W during stand-alone recording
Settling time till correct readings after power on	5-15 minutes depending on low frequency cut-off
Mass locking, mass centering	None required
Self-calibration	Built-in calibration coil
Connector type, cable	10-pin MS3102E-type connector, 1.5 m UTP cable or customized
Case type, material	Aluminum, stainless steel
Weight	7.0 kg
Dimensions including handle, diameter x height	204 x 238 mm
Digitizer Specifications	
ADC resolution	24 bit
ADC sampling rate	1, 10, 50, 100, 125, 250, 500, 1000 Hz
Data recording format	Internal binary; miniSeed, SEG converters provided
Data storage	microSD 32 GB
GNSS timing accuracy	< 1μs
GNSS receiver	GPS / GLONASS



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