# GEAsystem

THE SOLUTION FOR VIBRATION MEASUREMENT
AND MONITORING IN CIVIL ENGINEERING

SEQUOIA

www.sequoia.it

# LARGE STRUCTURAL HEALTH MONITORING SOLUTION

# HERITAGE BUILDING PROTECTION

# TRAFFIC INDUCED VIBRATIONS

# TUNNEL CONSTRUCTION MONITORING

# CONSTRUCTION SITE MONITORING

# MINING EXPLOSION MONITORING

## GEAsystem

is an extremely flexible and complete system that can be used to cover a wide variety of vibration measurements and monitoring needs within the civil environment.

### FLEXIBLE AND MODULAR SOLUTION

The concept of digital distributed sensor brings several advantages in terms of system scalability and technical features such as the possibility of using extremely long connection cables, and the noise free data transmission.

# A simple portable instrument

Just connect your **GEA** sensor to the pc to transform it into a powerful vibration analyzer suitable for building and ground vibration measurements.



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# A multi sensor system

Thanks to the **SynkHub** that grants synchronization among different sensors and power them up to **1 km** length.

# GEAsensor I



**APPLICATION AREA**

- Construction site monitoring
- Mining and explosive monitoring
- Tunnel construction monitoring
- Seismic applications with CLASS C requirements

| SENSOR | |
|---|---|
| TYPE | MEMS |
| AXIS | 3 |
| FULL RANGE | 10 g |
| NOISE DENSITY | 10 ug/hz-2 |
| CROSS AXIS SENSITIVITY | < 5% |
| SHOCK | 5000 g |
| | |
| **INTEGRATED DIGITIZER** | |
| TYPE | SIGMADELTA |
| N° OF BITS | 16 |
| DYNAMIC RANGE | 100 dB |
| SAMPLING FREQUENCY | 1024 hz |
| | |
| **CONSTRUCTION** | |
| DIMENSIONS | Ø 110 X H 40 mm |
| CONSTRUCTION | ANODIZED AL |
| PROTECTION GRADE | IP68 |
| OPERATING TEMPERATURE | -10 ÷ 75 °C |
| WEIGHT | 500 g |

Automatic self-levelling function included.

# GEAsensor II



**APPLICATION AREA**

- Construction site monitoring
- Human vibration exposure
- Modal testing and structural health monitoring
- Seismic applications with CLASS B requirements

| SENSOR | |
|---|---|
| TYPE | HYBRID PIEZO-MEM |
| AXIS | 3 |
| FULL RANGE | 8 g |
| NOISE DENSITY | 1 ug/hz-2 @ 1 hz |
| CROSS AXIS SENSITIVITY | < 5% |
| SHOCK | 3000 g |
| | |
| **INTEGRATED DIGITIZER** | |
| TYPE | SIGMADELTA |
| N° OF BITS | 24 |
| DYNAMIC RANGE | 120 dB |
| SAMPLING FREQUENCY | 1024 hz |
| | |
| **CONSTRUCTION** | |
| DIMENSIONS | Ø 110 X H 40 mm |
| CONSTRUCTION | ANODIZED AL |
| PROTECTION GRADE | IP68 |
| OPERATING TEMPERATURE | -10 ÷ 75 °C |
| WEIGHT | 500 g |

Automatic self-levelling function included.



STANDALONE

RACK MOUNTED

# SynkHub

| SPECIFICATIONS | |
|---|---|
| POWER | MAIN / BATTERY (12 V) |
| DIMENSION: | 110 X 170 X 30 mm |
| MAX SYNCH. ERROR | < 5 µ S |
| CABLE LENGTH | UP TO 1 Km |

The **SynkHub** is supplied with required accessories for powering and parallel connection with other modules.

# Monitoring box

For permanent and/or semi-permanent installations we can provide ready to use system including industrial pc with Linux operating system, all accessories for remote communication and site protection, pre-installed software. The system is extremely robust and easy to carry on.



MONITORING BOX INCLUDES SYNKHUB FOR 4 SENSORS, INDUSTRIAL PC WITH INSTALLED SOFTWARE.

UPGRADABLE TO A 16 SENSORS SYSTEM.



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In standard configuration up to **4 SynkHub** modules can be connected in parallel for a system up to 16 sensors.

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GPRS 3G ROUTER/WIFI MODULE
FOR REMOTE COMMUNICATION

RELAY MODULE FOR CONTROLLING
EXTERNAL DEVICES

ALARM BEACON

# Permanent
# monitoring
# solutions

The ideal cost-effective
solution to deploy
Dynamic Structural
Health Systems
on civil structures.

**GEA**system

# Global Software Structure

## Single sensor

Licenses are written directly within the sensor firmware.



**FREE**
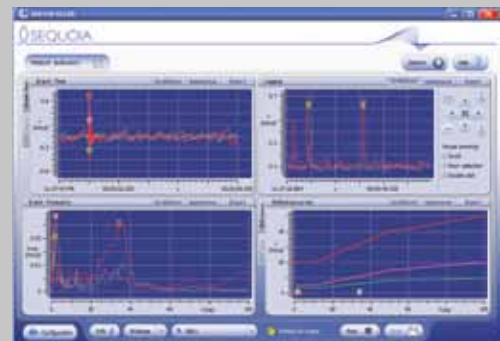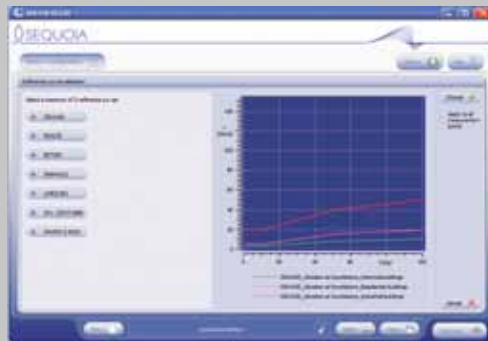- Raw data recording

**MEASUREMENT OPTION**
- Structural damage
  IN CONFORMITY WITH SEVERAL RELEVANT STANDARDS, STARTING FROM DIN 4150-3 FOR P.P.V AND P.C.P.V CALCULATIONS
- Human confort
  IN CONFORMITY WITH DIN 4150-2, ISO 2631

**MONITORING OPTION**
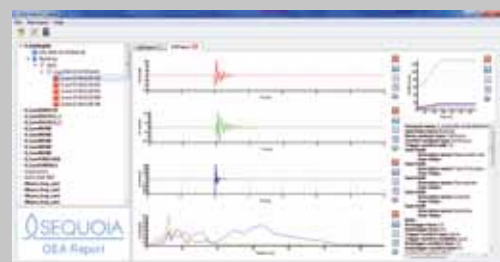- Long term monitoring and scheduling
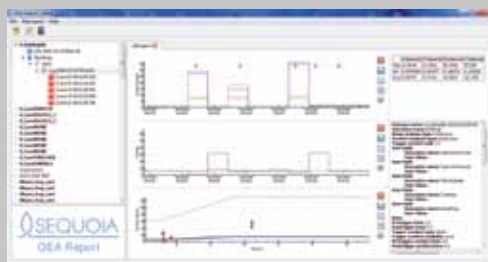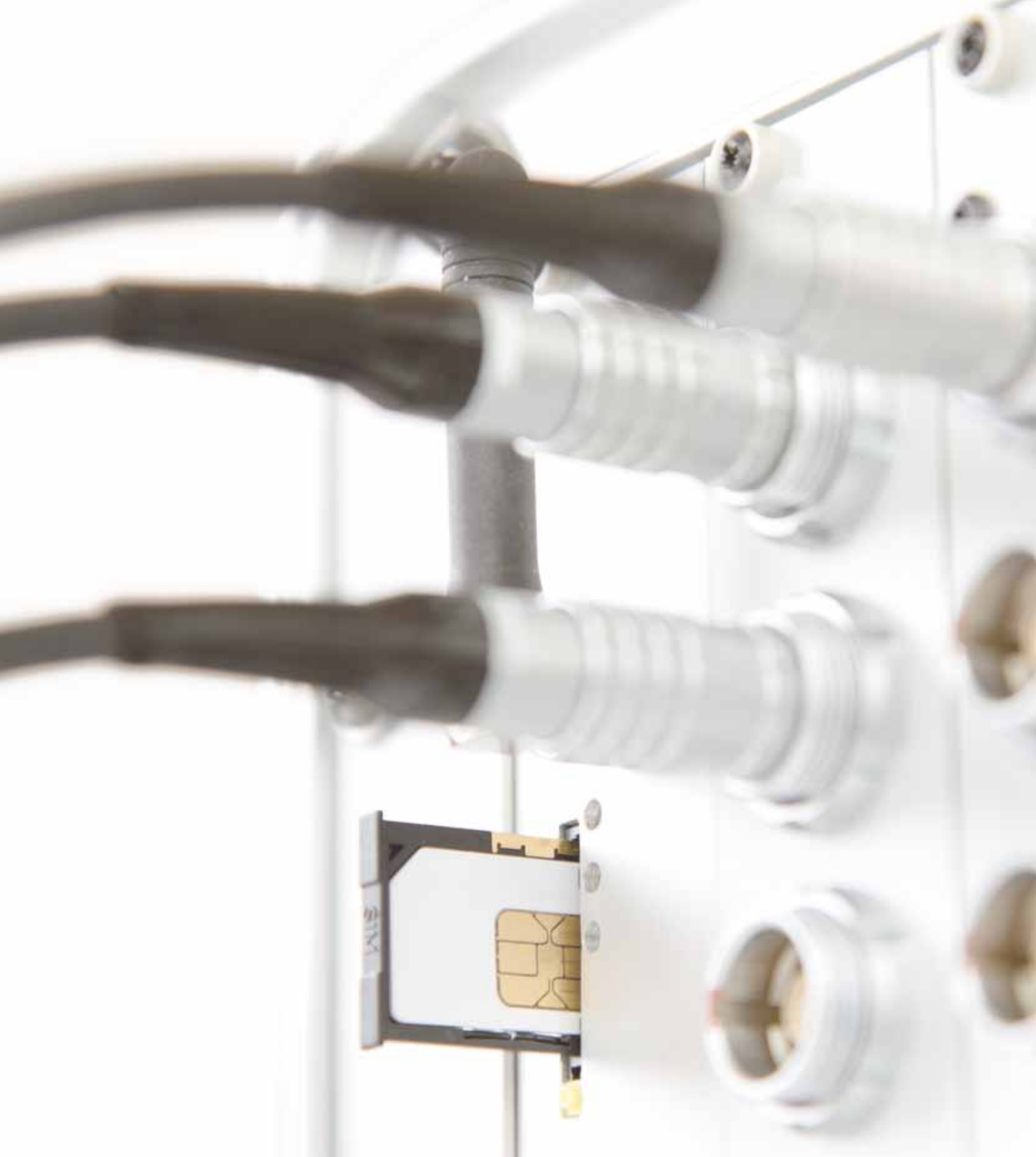- E-mail notification system





## Multiple sensors

Once one of the above measurements or monitoring licenses are activated on one of the used sensors, NO EXTRA LICENSE is required but just an economical multi-sensors license for each sensor in your system.



## Reporting Software

For handling the acquired data, print simple reports, export data to .txt format, copy chart and other functionalities the GEA Report software is available for improving GEA System usability.

## SEQUOIA

SMART SOLUTIONS FOR VIBRATION MONITORING