# ROCK

## Description

Galloping urbanization, new infrastructure projects in crowded locations, plethoric transportation modes, challenging construction works, tunneling and demolition sites, are now more and more instrumented in so called smart cities environments. This also brings unrivalled challenges to civil and structural engineering works and requires lots of sensor data for situation assessment in real time.

These multiple sources of vibrations, root causes to human disturbances or potential structural damages, are extensively monitored to ensure acceptable levels for people nuisances mitigation, risk management and assets sustainability.

Syscom recognizes these needs and address them with an innovative vibration compliance solution, redeemed possible with the latest available and proven technologies driven by IoT low power integrated components and new LTE communication networks. Envision this new generation of autonomous motion recorders providing affordable sensors, cable free installation, smart & sleek monitoring services for structural health monitoring and human comfort evaluation. Discover the Syscom vibration compliance solution.

## Data Acquisition

| ITEM | SPECIFICATION |
|---|---|
| Resolution | 24 bits |
| Sampling-rate | 500, 1000, 2000, 4000 samples per seconds |
| Number of channels | 3 (X,Y, Z orthogonal axis) |
| Channel to channel skew | None â?? simultaneous sampling on all channels |
| Dynamic range | Typ. 110dB@1000sps |
| Data Filter | IIR digital filters: k - 80 Hz, k - 250 Hz, k - 315 Hz; k=1 Hz, k=4.5 Hz |
| Trigger Principle | Level trigger |
| Level trigger | 0.1% to 100% full scale |

## Data Processing

| ITEM | SPECIFICATION |
|---|---|
| Recording principle | Event recording (time history), Background recording (continuous) |
| Header | Contains status information at time of trigger and event summary |
| Event recording | Max 60 seconds per event file, unlimited continuous event files |

| | |
|---|---|
| Pre-event recording | 1 - 8 seconds (1s @ 4kHz - 8s @ 500Hz) |
| Post-event recording | 1 - 30 seconds |
| Data memory | Embedded memory chip, 2 GB. Data buffer automatically uploaded to SCS |
| Alarm triggers by SCS | Smart alarming managed by Syscom Cloud Software |
| Alarm principle | Two alarm levels independently settable as: threshold levels, curves defined by the main regulations or user-defined curves |
| Alarm level range | 0.1% to 100% full scale |
| Alarm based on standards | Different standards: DIN 4150-3 (Germany), SN 640312 (Switzerland), Circulaire du 23/07/1986 (France) among others. Refer to SCS |
| User-defined alarm | Amplitudes and frequencies individually settable for each axis |
| Notifications by SCS | Various notification options, individually settable for each axis |
| Time synchronization | Network Time Protocol (NTP) |
| Data/user interface | User interface managed by Syscom Cloud Software |
| FTP | FTP client in SCS to push data to any FTP server, ASCII data format available |
| Wireless Communication Mobile Network | Multi-Band LTE Cat M1 and LTE NB-IoT, fallback 2G. Frequency band width suitable for basement monitoring |
| SIM card | Embedded SIM provided by Syscom |

## Other Features

| ITEM | SPECIFICATION |
|---|---|
| ROCK keyboard LED | 3 multicolors LEDs: Status, Record, 4G (Communication) |
| 1 push-button | On / Off button |
| Levelling | Embedded Spirit level |
| Fixtures | 2 holes, diameter 10.3 mm, 3 contact points according to DIN45669 |

## Power Supply

| ITEM | SPECIFICATIONS |
|---|---|
| Supply Voltage | 5V DC through microUSB connector |
| Battery | Compact high density Lithium battery, UN38.3 & IEC62133 certified |

| | |
|---|---|
| Autonomy | Typ. 6 months on internal battery (based on 10 events per day, 1000sps, continous monitoring) |
| Solar Panel | Optional, 500mW solar panel for outdoor usage embedded on ROCK housing |

## I/O and Connectors

| ITEM | SPECIFICATION |
|---|---|
| Type | microUSB IP67 AB connector with protective cap |
| Power | 5V DC |
| Power bank | Optional, must provide 5V DC with microUSB type B connector |

## Sensors (Internal)

| ITEM | SPECIFICATION |
|---|---|
| Triaxial Velocitymeter Type | Velocity sensor with linearized frequency response A3HV 315/1 (triaxial) (according to DIN 45669) |
| Triaxial Velocitymeter Principle | Geophone |
| Measuring range full scale | ± 135 mm/s - ± 5.3 in/s |
| Frequency range | 1 - 350 Hz |
| Case-to-coil motion | 4 mm p-p |
| Dynamic range | > 130 dB |
| Linearity/Phase | According to DIN 45669 (class 1) |
| Cross axis sensitivity | According to DIN 45669 (<5%) |
| Orientation | Horizontal (floor) mounting or vertical (wall mounting) |
| Self test | Periodic Test-pulse, user selectable 1 - 30 days |

## Dimensions

| ITEM | SPECIFICATION |
|---|---|
| Housing | Aluminum, (L x W x H) 173 x 135 x 83 mm |
| Weight | 2.3 kg |
| Protection degree | IP65 |

## Regulation

| ITEM | SPECIFICATION |
|---|---|

| Electrical Safety | In compliance with IEC 61010 |
| --- | --- |
| EMI/RFI | In compliance with EN 61000 |
| Environmental | Shock: 30 g/11 ms half-sine Heat: -20°C up to +50°C Humidity: up to 100% rh Vibration: up to 5 g (operating) |

Specifications