

# ROCK

Autonomous vibration  
monitoring device



The SYSCOM ROCK is one of the most advanced vibration recorders integrating highly innovative and proven technologies such as ultra low power integrated components, state of the art LTE connectivity and embedded SIM card. Thanks to the ROCK extra large autonomy, it is also fully operable in a cable-free manner.

The all-in-one solution provided together with Syscom Cloud Software (SCS) brings unrivalled ease of use and quickest return on investment, especially for vibration monitoring compliance based on widely spread standards worldwide.

## Applications

### ■ Civil Engineering

Industrial Vibrations - Construction Site Monitoring - Truck & Rail  
Traffic - Piling - Blasting Monitoring - Model Verification

### ■ Vibration compliance to widely spread standards (refer to page 2)



## ROCK Autonomous vibration monitoring

The SYSCOM ROCK is tailored to mostly used standards all around the world. Syscom expertise in vibration with latest electronic capabilities driven by the Internet of things market make such device best in class for autonomy, connectivity, ease of use and information processing. Empowered by the SCS (scs.syscom-instruments.com), the ROCK brings a disruptive solution for vibration compliance to standards.

### Major features

- Compact unit containing triaxial sensor, digital recorder, communication and battery
- Embedded memory for data safety
- Wide dynamic range
- Embedded SIM card
- Extra large autonomy (typ. 6 months)
- Managed by Syscom Cloud Software
- Standard compliance (non exhaustive):
  - Germany, DIN4150-3
  - Switzerland, SN640312a
  - France, IN1226, Circulaire de 1986, Arrêté de 1994
  - USA, RI8057, OSMRE
  - Portugal, NP2074
  - Spain, UNE22-381
  - Australia, AS2187-2
  - Austria, ÖNORM S 9020
  - Italy, UNI 9916
  - UK, BS5228, BS7385-2
  - Netherlands, SBR A, B
  - User defined standard
  - and others...



ROCK autonomous motion recorder

### Data acquisition

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

### Data processing

<b>Recording principle</b>	Event recording (time history), Background recording (continuous)
<b>Header</b>	Contains status information at time of trigger and event summary
<b>Event recording</b>	Max 60 seconds per event file, unlimited continuous event files
<b>Pre-event recording</b>	1 - 8 seconds (1s @ 4kHz - 8s @ 500Hz)
<b>Post-event recording</b>	1 - 30 seconds
<b>Data memory</b>	Embedded memory chip, 2 GB. Data buffer automatically uploaded to SCS
<b>Alarm triggers by SCS</b>	
<b>Principle</b>	Smart alarming managed by Syscom Cloud Software
<b>Alarm level range</b>	Two alarm levels independently settable as: threshold levels, curves defined by the main regulations or user-defined curves
<b>Alarm based on standards</b>	0.1% to 100% full scale
<b>User-defined alarm</b>	Different standards: DIN 4150-3 (Germany), SN 640312 (Switzerland), Circulaire du 23/07/1986 (France) among others. Refer to SCS
<b>Notifications by SCS</b>	Amplitudes and frequencies individually settable for each axis
<b>Time synchronization</b>	Various notification options, individually settable for each axis
<b>Data/user interface</b>	Network Time Protocol (NTP)
<b>FTP</b>	User interface managed by Syscom Cloud Software
<b>Wireless Communication</b>	FTP client in SCS to push data to any FTP server, ASCII data format available
<b>Mobile Network</b>	
<b>SIM card</b>	Multi-Band LTE Cat M1 and LTE NB-IoT, fallback 2G. Frequency band width suitable for basement monitoring
	Embedded SIM provided by Syscom

### Other features

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

### Power Supply

<b>Supply Voltage</b>	5V DC through microUSB connector
<b>Battery</b>	Compact high density Lithium battery, UN38.3 & IEC62133 certified
<b>Autonomy</b>	Typ. 6 months on internal battery (based on 10 events per day, 1000sps, continuous monitoring)
<b>Solar Panel</b>	Optional, 500mW solar panel for outdoor usage embedded on ROCK housing

### I/O and Connectors

<b>Type</b>	microUSB IP67 AB connector with protective cap
<b>Power</b>	5V DC
<b>Power bank</b>	Optional, must provide 5V DC with microUSB type B connector



#### Sensor (Internal)

##### Triaxial Velocitymeter

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

#### Dimensions

<b>Housing</b>	Aluminum, (L x W x H) 173 x 135 x 83 mm
<b>Weight</b>	2.3 kg
<b>Protection degree</b>	IP65

#### Regulation

<b>Electrical Safety</b>	In compliance with IEC 61010
<b>EMI/RFI</b>	In compliance with EN 61000
<b>Environmental</b>	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)

**Conformity** **CE**

#### Ordering Information (please refer to last page)

<b>Measurement System</b>	ROCK with internal Velocitymeter
<b>Power supply</b>	External AC/DC charger External power bank (not supplied by Syscom)
<b>Mounting Platform</b>	Mounting platform for ROCK with leveling screws



ROCK with mounting plate

## Syscom Cloud Software (SCS)

The SYSCOM ROCKs have to be connected to the Syscom Cloud Software (SCS) in order to simply process all the device setup and data management.

The main features of the SCS include:

- ROCK easy parametrization
- different access levels (administrator, read/write, view only)
- FTP forward to any FTP server
- visualization of events/background monitoring
- comparison with reference standards
- automatic reporting
- smart notification, alarming and state of health, user settable with Emails and/or SMS
- data conversion into ASCII files, 1-click export

Please visit [www.larsondavis.com](http://www.larsondavis.com) for more information.

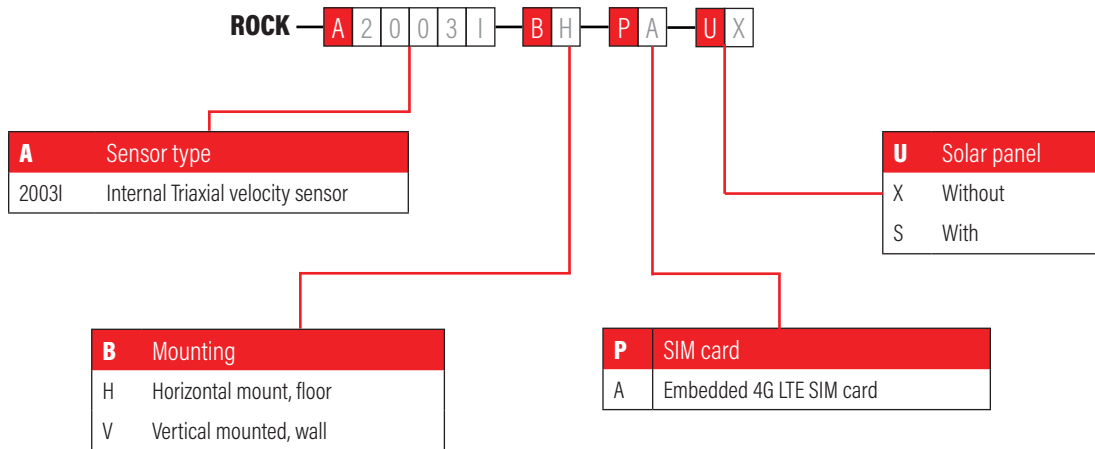
**SCS**  
[scs.syscom-instruments.com](http://scs.syscom-instruments.com)



## Ordering information

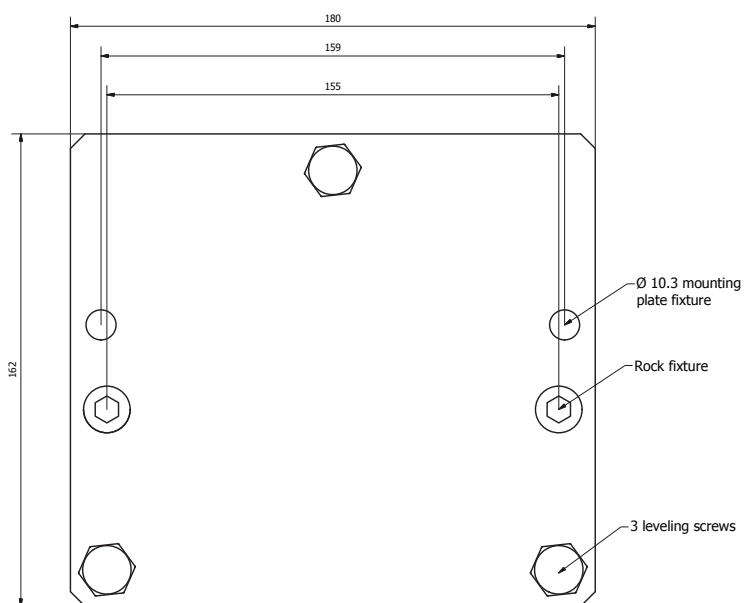
Every ROCK contains: 2GB Memory - 3 channels XYZ geophones - 4G LTE connectivity with eSIM - microUSB - internal battery - SCS compatibility

Example: **ROCK-2003I-H-A-X**

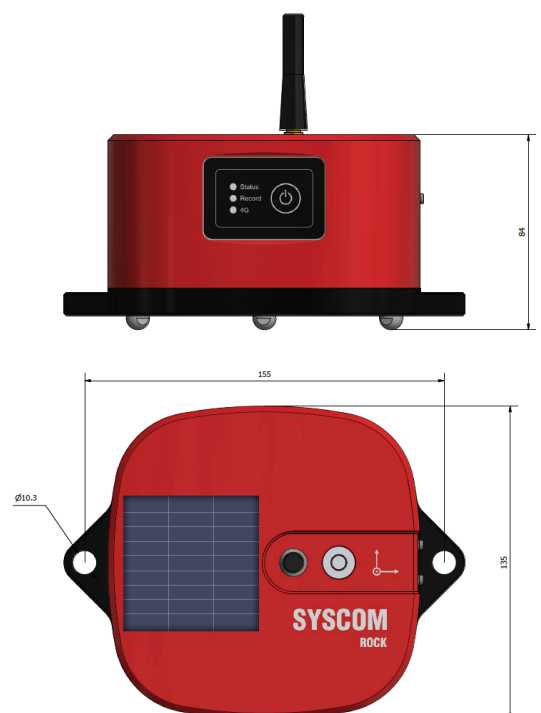


## Ordering information - Accessories

Description	Part Number
ROCK USB charger	87000317 (EU) / 87000318 (US)
Carrying case for up to three ROCK (Internal shape with & without mounting plate)	74710134
microUSB 1.8 meters power cable	81000631
ROCK mounting plate	13100020
ROCK wall mounting plate, 1 fixation point	13100021
Three pointed screws set for 13100020	13100001
Anti-theft ROCK field cover	90001052
Remote LTE - Cat M1 antenna with 2 m cable	87000321



Mounting plate dimensions in mm



ROCK overall dimensions in mm