

# MR3003C

## Description

Due to its design and reliability, the MR3003C is an efficient vibration solution for different temporary and fixed measurements in the civil engineering and strong-motion surveys.

### Applications include:

- Civil Engineering and Human comfort: Industrial Vibrations – Construction Site Monitoring – Tunneling  
– Truck and Rail Traffic – Blasting Monitoring – Model Verification
- Earthquake Engineering: Building Monitoring – Monitoring of Structures (Dams, Bridges..).
- Geology: Soil Characterization.
- Earth Science: Earthquake Monitoring (seismic Intensity). Continuous data stream in MiniSeed/SeedLink format.

## Data Acquisition

<b>ITEM</b>	<b>SPECIFICATION</b>
Resolution	24 bits
Sampling-rate	250, 500, 1000, 2000, 4000 sps
Number of channels	3
Channel to channel skew	None – simultaneous sampling on all channels
Dynamic range	Typ. 130dB@250 sps, 124dB@1000 sps
Data Filter	FIR & IIR digital filters
Trigger Filter	Digital IIR filter: 0.5 - 15 Hz band-pass (only for accelerometer)
Trigger and de-trigger principle	Level trigger or STA/LTA
Trigger voting logic	Predefined AND or OR combinations, individual channel votes
Level trigger	0.003 to 100% full scale
STA / LTA (for acceler.)	STA: 0,1 to 25s, LTA: 1 to 250s, Ratio: 0,1 to 25.
Smart Trigger / De-Trigger	Automatic adjustment of trigger level

## Microprocessor

<b>ITEM</b>	<b>SPECIFICATION</b>
Recording principle	Event recording (time history), continuous-time recording, manually triggered or timed recording. Contains status information at time of trigger and event summary.

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Pre-event recording	1-99 seconds (@250Hz), others depending on sampling rate.
Post-event recording	1-100 seconds
Data memory	Removable SD card (4Gb)
Alarm triggers principle	Two alarm levels independently settable as: threshold levels, curves defined by the main standards or user-defined curves
Alarm level range	0.1 % to 100% full scale
Alarm based on standards	Different built-in standards: DIN 4150-3 (Germany), SN 640312 (Switzerland), Circulaire du 23/07/1986 (France), Å?norm S 9020 (Austria)
User-defined alarm	Thresholds and frequencies individually settable for each axis.
Notifications	Various notification options, individually settable for each axis
Precision timing System Clock	1 ppm, this clock is disciplined by GPS, NTP
Data/user interface Intelligent Alerting	System initiates communications or sends text message (SMS) or e-mail when an event is detected
Web Interface	Easy to use command & control through embedded web server
FTP	Built-in client protocol supporting FTP, SFTP, FTPS able to push to a server
Display 3 LED	Run, Recording, Warning/Error
LCD-Display	Status information, important settings, event-related information
Wireless Communication WIFI	IEEE 802.11 b/g/n compliant
Mobile Network (option)	Internal 4G modem, fallback 3G/2G

## Power Supply

### ITEM

Supply Voltage

Power Consumption

### SPECIFICATION

9 - 14.5VDC or 48V PoE

From 1 W to 1.4 W depending on the configuration (velocitymeter) From 1.3 W to 1.7 W depending on the configuration (accelerometer)

## I/O and Connectors

### ITEM

Type

Power

GPS

### SPECIFICATION

Metallic self-latching push-pull connectors with positioning key (LEMO)

Metallic connector with protective GND

Connector for external GPS

LAN / PoE

Communication with PC or network - Ethernet  
100BaseT

## Sensors (Internal)

### Triaxial Velocitymeter ITEM

Type

Velocity sensor with linearized frequency response  
A3HV 315/1 (triaxial) (according to DIN 45669)

Principle

Geophone

Measuring range full scale

 $\hat{A} \pm 100$  mm/s

Frequency range

1 - 350 Hz

Case-to-coil motion

4 mm p-p

Dynamic range

&gt; 130 dB

Linearity/Phase

According to DIN 45669 (class 1)

Cross axis sensitivity

According to DIN 45669 (&lt;5%)

Orientation

Horizontal (floor) mounting or vertical (wall  
mounting)

### Triaxial Accelerometer ITEM

Principle

### SPECIFICATION

The MEMS accelerometer consists in a micro-  
machined capacitive sensing element (MEMS) and  
a custom low-power mixed-signal integrated circuit  
(ASIC) that includes an amplifier and differential  
output stage

Hysteresis

None

Dynamic range (100 Hz BW)

typ. 100 dB ( $\hat{A} \pm 4$ g)

Noise (10 to 1000 Hz)

typ. 7  $\hat{A} \mu$ grms/ $\hat{A} \sqrt{Hz}$ 

Frequency response

0 - 600 Hz

Measuring range

 $\hat{A} \pm 4$  g

Orientation

Horizontal (floor) mounting or vertical (wall  
mounting)

Self test

Test-pulse

## Dimensions

### ITEM

Housing

### SPECIFICATION

Aluminum, 120 x 180 x 100 mm

Weight

1.5 kg

Protection degree

IP 65 (splash-proof)

## Regulation

### ITEM

Electrical Safety  
EMI/RFI

Environmental

Conformity  
Specifications

### SPECIFICATION

In compliance with IEC 61010

In compliance with EN 61000

Shock: 30 g/11 ms half-sine Heat: -20°C up to  
+70°C Humidity: up to 100% RH Vibration: up to  
5 g (operating)

CE