MR3003SB

Description

The MR3003SB seismic monitoring system is the most advanced, integrated, and reliable monitoring system for structures and buildings, able to automatically detect,
record, and process any strong motion vibrations that might affect the structure. A daisy-chained network (Fiber Optic or Ethernet Copper cable) coupled with the latest data
retrieval capabilities, make the MR3003SB the easiest to use and most versatile instrument available on the market.

The all-in-one Red Box with an internal battery, AC/DC, and terminals already integrated provides all the necessary features for easy installation without any additional
parts. Command & control access through an embedded web server provides a self-explanatory interface for system set-up and control.

The optional kit with 3 configurable relay outputs (alarm 1, alarm 2, device error) can be directly connected to any external alarming devices and used as an earthquake
early warning system. A common logic system, for a typical 3-station network, will ensure the highest reliability and avoid spurious activation of the warning system.

Data acquisition

ITEM	SPECIFICATION
General principle	4th order delta-sigma ADC per channel
Resolution	24 bits
Sampling-rate	250, 500, 1’000, 2’000, 4’000 sps
Number of channels	3
Channel to channel skew	None, simultaneous sampling on all channels
Data Filter	Anti-aliasing filters
Trigger Filter	Digital IIR filter: 0.5 – 15 Hz band-pass (Strong Motion Applications)

Trigger and de-trigger

ITEM	SPECIFICATION
Principle	Principle Level trigger or STA/LTA or automaticadjustment of trigger level
Trigger voting logic	Predefined AND or OR combinations, individualchannel votes
Trigger level	0.1 mg to 4 g
STA / LTA	STA: 0.1 to 25s, LTA: 1 to 250s, ratio 0.1:25
Smart Trigger / De-Trigger	Automatic adjustment of trigger level

Microprocessor

ITEM	SPECIFICATION
Recording Principle	Event recording (time history), continuous-time recording, or manually triggered
Header	Contains status information at time of trigger and event summary
Pre-event recording	1-99 seconds (@250Hz), others depending on sampling rate
Post-event recording	1-100 seconds
Max. recording time	Unlimited
Memory Removable	SD flash card (4GB)
Timing System clock	1ppm, could be disciplined by NTP or GPS (optional)
Data / User Interface Web interface	Easy to use command & control through embedded web server
Intelligent Alerting	System initiates communications and sends e-mail when an event is recorded
FTP Built-in	Built-in client protocol supporting FTP, SFTP, FTPS able to push to a server
API	Application programming interface REST with extended functions available
Alarm triggers Principle	Two alarm levels independently settable as threshold levels or user-defined curves, with various notification options (individually settable for each axis)
Alarm level range	0.1 % to 100% full scale
User-defined alarm	Thresholds and frequencies individually settable for each axis
System status	3 LEDs Run, Recording, Warning/Error. Internal LCD with status info and important settings

Network capabilities

ITEM	SPECIFICATION
Common trigger and common alarm	Configurable with AND/OR logic, for every device within the same network

Sync. in LAN network	Typically 1 ms with NTP protocol
Max. number of MR3003SB	32, in Master/Slave configuration
Remote control	VPN, DDNS

Power Supply

ITEM	SPECIFICATION
Power supply	100 - 240 V AC, 50 - 60 Hz, internal AC/DC. Optional DC power 10-36 V DC
Internal battery	12 V, 12 Ah
Consumption	4 W (with charged battery), 25 W (AC max. and battery in charge)
Battery autonomy	Typical 60 hours in stand-alone mode

I/O (glands and connectors)

ITEM	SPECIFICATION
Power	M16 cable gland 4-11mm / Terminals on the AC/DC
Kit Relays (3)	On request, M16 cable gland 7-11mm / Terminals
Kit daisy-chain LAN	On request, RJ45 panel mount
Kit FO	On request, M20 cable gland 6-13mm / ST connectors
Kit GPS	On request, connector and GPS antenna with 5 m cable for time synchronization

LAN cables

ITEM	SPECIFICATION
Fiber Optic type	Multimode OM2 fiber with wavelength 1300 nm, 50/125 ?m, Rx/Tx
Ethernet Copper type	Cat 5e, <100m

Relays kit

ITEM	SPECIFICATION
Configuration	3 output configurable relays, No/Nc
Current	2 A, 30 V DC

Acceleration sensor

ITEM	SPECIFICATION
Principle	Micro-machined capacity MEMS accelerometer

Hysteresis	None
Noise (10 to 1000 Hz)	Typ. 7 ?g/? Hz
Frequency range	DC to 600 Hz
Dynamic range	Typ. 100 dB @ 200 sps
Measuring range	±4 g
Sensitivity	1.25 V/g differential
Scale factor error	< 1 %
Mounting	Horizontal, vertical, or ceiling (horizontally mounted on the ceiling), to be specified when ordering
Self-test	Test-pulse, configurable

Housing

ITEM	SPECIFICATION
Dimensions	330 x 230 x 110 mm
Weight	9.5 Kg
Protection degree	IP67, temporary static immersion in water

Environmental

ITEM	SPECIFICATION
Shock	30 g/11 ms half-sine
Heat	-20 °C to +50°C
Humidity	up to 100% RH

Regulations

ITEM	SPECIFICATION
EMC	IEC 61326-1
Electrical safety	IEC 61010
Conformity	CE
Origin	Swiss Made

Specifications