MR3003DMS

Description

The MR3003DMS seismic monitoring system is the most compact, integrated and reliable system for dams, ensuring the highest level of safety and sustainability. Automatic earthquake detection and structural monitoring will ensure the dam full integrity over its lifetime.

The MR3003DMS is extremely versatile and easy to install, thanks to its state of the art Ethernet master-slave connectivity and the command & control access through embedded web server.

3 relays output (alarm 1, alarm 2, device error) can be directly connected to the control room for a centralized overview and an automatic logic response in case of any seismic event.

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
Dynamic range	Typ. 130dB@250 sps, 124dB@1000 sps
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	Level trigger or STA/LTA or automatic adjustment of trigger level
Trigger voting logic	Predefined AND or OR combinations, individual channel 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 GPS or NTP
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
Alarm triggers Principle	Two alarm levels independently settable as threshold levels or user-defined
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 MR3003DMS	32, in Master/slave configuration
Remote control	VPN, DDNS

Power Supply

ITEM	SPECIFICATION
Power supply	100 - 240 V AC, 50 - 60 Hz, OVP protected, type I and II. 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	Typ. 40 hours

I/O (glands and connectors)

ITEM	SPECIFICATION

Relays (3)	M16 cable gland 7-11mm / Terminals
Power	M16 cable gland 4-11mm / Terminals
Kit LAN	On request, 3 m Ethernet cable
Kit GPS	On request, connector and GPS antenna with 5 m cable for time synchronization
FO	M20 cable gland 6-13 mm / ST connectors

Fiber Optics

ITEM	SPECIFICATION
FO type	Multimode OM2 fiber with wavelength 1300 nm, 50/125 ?m, Rx/Tx

Relays

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 %
Orientation	Horizontal or vertical mounting, to be specified when ordering
Self test	Test-pulse, configurable

Housing

ITEM	SPECIFICATION
Dimensions	330 x 230 x 110 mm
Weight	10 Kg
Protection degree	IP66

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