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GeoSIG
swiss made to measure

SMS / SAS Seismic Monitoring / Alarm System

Features*

- ❑ **Recording, advanced analysis and annunciation according to project specific or international regulations**
- ❑ **Automatic exceedance evaluation**
- ❑ **Reporting and alerting via relays, visual and audible tools as well as printed matter**
- ❑ **Project specific Automatic Event Processing (AEP), Nuclear (NPP) or other features**
- ❑ **Upto 48 remote stations or sensors**
- ❑ **20 to 24-bit event based and/or continuous recording**
- ❑ **Common timing and triggering within the system**
- ❑ **Completely over-voltage protected**
- ❑ **Continuous system-wide SOH monitoring**
- ❑ **Seismically and EMC proven design**
- ❑ **Comprehensive configuration of the whole system via the enhanced computer interface**

The information provided is a typical overview. For each project a specific description is provided outlining the relevant system.

Outline

The core of the SMS / SAS is a Central Processing Unit (CPU) with a multi-channel digital recorder system rack mounted in an industrial cabinet together with an industrial computer and relevant peripherals.

Accelerometers, seismometers, complete seismic stations or sensor packages, which are referred to as Detection / Recording Units (DRU's) are placed at remote locations can be connected to the CPU.

The system has been designed in a way that it is not bound to a single topology. There could be only the sensors or both sensors and data acquisition out in the field. Advantages of these topologies are briefly explained in the specifications section.

The system has a great modularity and flexibility so that an instrumentation upgrade is simplified and that as much as possible existing elements can be reused.

The CPU monitors all DRU's in parallel, as a result of the dedicated communication links that are provided by the system hardware.

By monitoring continuously the DRU's, the CPU detects seismic events, generates associated alarms and automatically processes the recorded data. Also it performs periodical tests on the system and monitors the system-wide state of the health as well as analyses the detailed cause of any malfunction. The result of the data processing is provided in a report a few minutes after the occurrence of an event.

State of the art GeoDAS software is utilized in the CPU. For each measuring channel the recording threshold and the alarm limit values can be set individually. Detailed project limits can be fully defined along with other parameters as required by relevant regulations or customized user requirements.
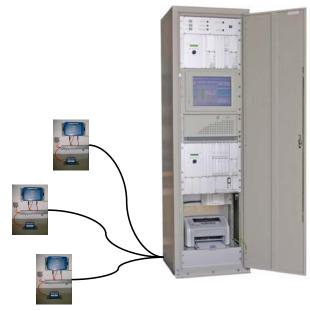
ISO 9001
REGISTERED FIRM

Centralized Recording

Advantages:
Simple devices in controlled area (analog sensors).
Simplified diagnostics and maintenance.
Higher compatibility with existing systems for upgrade.

De-centralized Recording

Advantages:
Independent recording units increase redundancy and reliability.
Link from remote to central can use Fiber Optics.
Digital transmission between remote and central locations.

Cascaded / Hybrid Recording

Combination of the decentralised and centralised systems to provide a more flexible deployment.

Typical System Specifications

The below specifications provide a typical overview. For each project a specific description is provided outlining the relevant system.

Sensor
SMS/SAS system offers the most flexible sensor connectivity options to cater for the needs of any measuring requirement. Any matching type of sensor can be connected to the system.

Digitiser
A/D Converter:	20 to 24 bits
Dynamic Range:	108 to 146 dB
Sampling rates:	100 to 500 SPS per channel
Bandwidth:	40% of sampling rate

Data Recording
Pre-event-Time:	Adjustable *
Post-event-Time:	Adjustable *

Triggering
Type	Level (threshold) or STA/LTA trigger, project specific triggers also available
Filtering:	User configurable

Data Storage
Type:	2 -128 Gbyte per 3 channels and/or HDD, SSD in the computer

Data Analysis
GeoDAS software provides various analysis functions like filtering, FFT, response spectra, etc. Other commercially available evaluation software packages may alternatively be used.

Timing
Standard clock accuracy: Free running, based on TCXO
External time interfaces: GPS System accuracy < 1 μsec.

Indicators
LED, Push button and/or Flatscreen indicators, may vary with each project, based on requirements

Self Test / State of Health
Permanently active, self monitoring and user selectable, periodical system test including comprehensive sensor, memory, filter, real time clock, battery level and hardware tests.

Seismic Switch / Warning / Alarm Options
The warning option provides independent warning / error outputs (relay contacts) based on user selectable criteria.
As separate acquisition module in the CPU with its own power supply, remote sensor and cable; or independent DRU's with integral relays and CPU connection.

Communication Channel Options
Ethernet TCP/IP, landline, GSM/ GPRS/UMTS/3G, Serial

Power Supply
AC/DC Power supply: 230 VAC / 50 Hz or 115 VAC / 60 Hz
External battery option: Rechargeable, 12 VDC, 24 to 100 Ah

Housing
19'' cabinet in different sizes, floor standing or wall mounted.

*: Any value is useable, as long as it does not lead to data loss because of incorrectly configured or conflicting parameters.