VMS, Vibration Monitoring System

Features

- **Compact, all-in-one**
- **Velocity and/or acceleration**
- **Dynamic and Static measurement**
- **Supports GPRS, GSM**
- **Local Alarm with SMS, Email, and GYR**
- **Embedded webserver**
- **Graphical display and keyboard**
- **In-situ calibration**
- **Swiss vibration SN640312a norm**

Description

The VMS is a state of the art vibration monitoring system. It is a compact device designed to provide simplicity and facility of usage and maintenance.

It provides data acquisition and storage, as well as communication facilities to operate on the field and send the data to a remote server.

It is bundled with internal geophones for velocity measurement with in-situ calibration possibility. The VMS provides facility to measure the characteristics of the geophones and calculate correct coefficients to provide a frequency linear response from 0.1 to 350 Hz.

Data Acquisition

Resolution	24 bit ADC
Dynamic Range	Typ. 110 dB @ 1000 SPS
Sampling rate	50, 100, 200, 500, 1000, 2000, 4000 (user selectable)
Number of channels	3
Trigger	level, SN640312a norm, permanent, time based

System Specifications

Processor	ARM Cortex 32bit processor with FPU
Memory	microSD slot for file storage, allowing almost unlimited recording (typ. 20 days of permanent data @ 200 SPS)
Web server	Embedded web server for configuration and data storage
Graphical display	A graphical display provides status and allows configuration without any external devices
Timing	Disciplined VCXO with 1ppm, that synchronizes to GPS or NTP
In situ calibration	Geophone sensors can be calibrated in-situ, the devices performs a characteristics measure of the geophone and calculates corrections coefficients
Firmware update	Local or remote firmware updates possible

Communication

Ethernet	Standard Ethernet available providing network access
FTP server	Embedded FTP server for file retrieving
FTP client	Embedded FTP client for automatic upload of files to remote server
DataStream	TCP and UDP datastream
Web server	Embedded webserver for configuration, status view and data retrieval
ModBUS	Serial and network Modbus available for configuration and data retrieval
telnet	Embedded telnet server for configuration
GSM modem (optional)	A GSM modem can be optionally mounted inside the device to provide connectivity to internet and SMS alarms

Power and IO

Supply voltage	10 to 15 VDC
Power consumption	130 mA @ 12 VDC (with internal sensor)
Battery	Internal LiPo battery providing > 24 h of operation
Alarms	3 contacts configurable for alarms (error, trigger)
Ethernet	Standard Ethernet connector for network connectivity (with optional PoE)
GPS	GPS connector for external serial GPS connection (optional)
ModBus	Serial ModBus connection available (optional)

User Interfaces

Device LEDs	Three LEDs provide status information about power, communication and any errors on the device
GYR LEDs	Three LEDs provide status information about the vibration levels
Graphical display	A graphical display provides interface to view status and configuration on the device without external devices/computer
Keyboard	An embedded keyboard on the device provides an easy access to check status and to configure the device.
Webserver	Embedded webserver provides interface for local or remote configuration and status control

Physical Details

Housing	Cast aluminium housing
Dimensions	230 x 170 x 80 mm
Weight	2.3 kg including battery
Protection	IP65
Fixation	Fixation is done with a central bolt under the housing and leveling screws are embedded in the custom housing
Leveling	Bubble level is incorporate in the housing for easier installation
Handle	Handle embedded in housing design for easier handling of the device
Operational temperature	-20 – 50 °C
Storage temperature	-40 – 70 °C
Humidity	0 to 100 % RH (non condensing)

Internal Velocity Sensor

Type	Geophone based velocity sensor
Full scale	± 100 mm/s
Accuracy	According to DIN 45669
Frequency range	4.5 to 315 Hz (linear response) covering SN640312a (5 – 150 Hz)
Dynamic range	> 130 dB
Frequency Analysis	For every channel the VMS computes the FFT according SN640312a and saves the maximum frequency of the amplitude spectrum.

Options

Sensor velocity	External velocity sensor
Sensor acceleration	Internal / External accelerometer sensor
Alarm Box	External alarm box with light indication and acoustic alarm
GPRS/GSM modem	Internal 3G modem for internet access and SMS and email alert sending
Solar Power	External solar power, including panel, battery and charger for installations and places where AC power is not available.
Cloud Data	Web interface on the cloud to monitor and analyse the data of one or many instruments

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Specifications subject to change without any notice
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