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SM MONITORING STATION for vibration and overpressure waves in air measurement

Description

SM is a portable seismic and overpressure in air monitoring station, compact, robust, cheap and reliable. For its easiness of use, robustness, reliability and low price is become, in a short time, one of the most common monitoring station in Europe.
Ideal for the continuous monitoring of vibration and noise generated by quarry activities, traffic, industrial machines, etc, it allows verification of international legislation related to permissible vibrations (UNI 9916, DIN 4150-3, UNI 9614, etc.). It provides the seismic-acoustic graph required by “circolare 557/PAS/12982D(22) del 2005-08-29” implementing the last anti-terrorism laws in Italy.
The use is simple. The measurement preparation may be done directly on site. The acquired data may be read directly on the liquid crystal display and then transferred to a PC via RS-232 for processing and print. The possibility to transfer data via a GSM modem or an ethernet/wireless system make easy the consultation from remote (i.e., from the office), saving time to send personnel on site to download the data.
An external board may provided to allow extra features, such as automatic text messages send in correspondence to an event, a daily summary, etc. (For special applications, ask for detail to e-mail address: admin@ntx-int.com)

Operation

The transducers, after being placed, are connected to the monitoring station via aluminum connectors. The connection automatically turns the instrument on, and the misuration is enabled. Events are recorded when the measured values exceed a set alarm threshold, called trigger, saving the measurement also for 0.5 or 1 seconds before the instant of the trigger. When the event has been saved, the instrument check the transducers to verify the correct working, and then rearm itself for the next event (50 ms rearm delay).
In case of extended monitoring period without exceeding the alarm threshold, the instrument automatically checks the transducers for verify the correct working and placement (self-calibration test). Self-calibration tests are saved in memory. For variuos measure requirements, extension cords for cabling and other transducers (displacement meters, accelerometers..), tranducers with different sensivity and limit values (from 64 mm/s for 8x gain to 2000 mm/s for 0.25x gain) are available.
Measurement can be scheduled up to 1 second time interval, in bargraph mode, with indication of the max value in the time slice.

Maintenance

SM is a robust instrument and does not require specific maintenance. Continuous usage in cold environments could accelerate battery wearing.

Certification

CE conformity certification to European regulation on electric equipments. Microphone and geophone calibration certificate.
The annual calibration of the monitoring station is lead in NTX licensed laboratory in Lonato del Garda (Italy). 4 hours are required for a calibration procedure

TECHNICAL SPECIFICATIONS	
GENERAL	
Channels number	3 seismics + 1 acoustic
Storage Memory	Solid-state memory with summary of all the events, settings, recordings stored also with power off. Lithium backup battery.
Timer mode	To turn the instrument ON and OFF during the working day, saving battery
Display	High-contrast liquid crystal display, 2 lines of 40 chars
Keyboard	5 pushbutton for settings and commands
Battery	6 Volts internal, for 7÷10 days of continuous monitoring (it is possible to connect an external battery, solar panel or other energy source)
Operating Temperature	From -15°C to +50°C (low temperatures reduce battery duration)
Weight and size	20 x 10 x 6.5 cm for about 2 kgs
Data storage	Max 340 complete waveshapes of 1 second can be saved in solid state memory, with date and time of the event, peak values, zero-crossing frequencies, serial number, transducers gain and calibration date.
Measure unit	Metric or Imperial
Recording length	From 1 to 12 seconds, depending in sampling frequency, with pre-trigger function to record 0,5 or 1 second before the event
Sampling Frequency	512 or 1024 samples per second for every channel (from 32 to 2048 samples per second available on request, with memory expansion)
RS-232 serial port	To transfer data and direct set from a PC or remotely, via a GSM modem, or Wifi module
Serial transfer	From 1200 to 38400 baud
SEISMIC WAVES TRANSDUCER	
Transducers	Speed meters
Frequency response	Flat from 3 to 400 Hz (within 2% tolerance), 1 Hz cut-off frequency transducers are available on request.
Sensivity	On x0.25 type equals to 1 mm/s (limit value 2000 mm/s); x1 type equals to 0.25 mm/s (limit value 500 mm/s); x2 type equals to 0.125 mm/s (max value 250 mm/s); x4 type equals to 0.0625 mm/s (limit value 125 mm/s); x8 type equals to 0.0313 mm/s (limit value 63 mm/s)
Limit recording values (selectable by the user)	For the specific transducer, full scale, ½ or ¼ of the maximum value.
Alarm threshold (minimum trigger value)	From 0.25 mm/s on 2x type; from 0.063 mm/s on 8x type
ACUSTIC TRANSDUCER	
Transducer	Microphone with ceramic sensor – pressure limit 160 dB
Sampling Frequency	From 32 to 2048 samples per second
Values range (selectable by the user)	100 – 142 dB; 106 – 148 dB
Alarm threshold	From 106 to 148