QUAKELOGIC

LUNITEK

SENTINEL
ACCELEROGRAPH

For strong motion and structural monitoring

The onboard MEMS triaxial accelerometer is synchronously sampled up to 1000 sps at a resolution of 20bit and exhibits a dynamic range > 85dB and a self-noise < 18μg/√Hz. The integrated memory bank (32 ÷ 256 GB) allows you to manage a ring-buffer for long continuous recordings as well as event data. The data format is MiniSEED.
The system implements sophisticated trigger criteria (STA/LTA and threshold) that distinguishes false events (i.e. environment vibrations) from true seismic events.The internal GNSS receiver allows you to create a network where all the instruments are synchronized with the absolute time. The connection to the instrument can be local via network (LAN or WiFi) or, alternatively, remotely using the internal HSPA modem (optional).

KEY FEATURES

ONBOARD MEMS ACCELEROMETER

A/D RESOLUTION 20 bit

DYNAMIC RANGE >85dB

SAMPLING RATES 125, 250, 500 ,1000 sps

SYNCHRONOUS SAMPLING

LAN, WIFI

INTEGRATED 4G MODEM (OPTIONAL)

BUILT-IN GNSS RECEIVER

INTEGRATED UPS

MINISEED DATA FORMAT

RELAY OUTPUT

APPLICATIONS

Seismological networks
Structural monitoring and surveys
Seismic switch

SENSORS

TYPOLOGY MEMS accelerometer
DYNAMIC RANGE > 85 dB
SELF-NOISE <18µg/√Hz
FULL-SCALE RANGES User selectable ±2, ±4 and ±8g

A/D CONVERSION

RESOLUTION 20bit synchronous sampling
SAMPLE RATES Adjustable up to 1000 sps
ANTI-ALIASING FILTER FIR
OFFSET CORRECTION automatic via web interface

TRIGGERS

THRESHOLD TRIGGER independent for each channel and Trigger broadcasting towards recorders in the network
THRESHOLD TYPE Absolute or STA/LTA and STA/LTA between 0.1 Hz and 12 Hz
ALARM the relay activation (NO/NC contacts) indicates that a seismic event has been detected. The activation duration is adjustable from 1 to 300 sec. The activation time can be chosen in correspondence with the detection of the trigger, or at the end of the seismic event

STORAGE

MEMORY BANK 32GB up to 256GB (more than 30 days continuous recording @ 500Hz on 3 channels)
DATA FORMAT Binary and MiniSEED
RING BUFFER 16 or 32 days continuously, depending on memory size plus strong motion events

SYNCHRONIZATION

TIMING SOURCE Absolute Time UTC through high sensitive integrated GNSS receiver (suitable for indoor use as well)
ACCURACY in GNSS signal loss condition: ± 1 ppm (32 s/year)
ACCURACY WITH GNSS SIGNAL < 1 µS

COMMUNICATION

FILE TRANSFER Via Ethernet 10/100, WiFi (optional) or integrated 4G modem (optional)
WIFI MODE SOFT AP function and Client at the same time
METADATA RESP file available on IRIS
DATA DOWNLOAD Through SCP protocol based program or via web interface
VPN Compatible with OpenVPN and IPSec

CONFIG.

INTERFACE Web Server

POWER SUPPLY

POWER SUPPLY 5 ÷ 16 Vdc, AC/DC adapter included
POWER CONSUMPTION < 2 W
UPS Back-up LiPO battery, autonomy > 5 hours
ALARMS alerts in case of blackout

OP. CONDITIONS

STORAGE TEMPERATURE RANGE -20 ÷ +70 °C
HUMIDITY 0 to 100%
OPERATING TEMPERATURE RANGE Without battery - 40 ÷ +85°C *
*LiPo batteries can be charged in the range 0 ÷ +45°C while discharge is allowed in the range of -20 ÷ +70°C. If the temperature is out of range, the LiPo battery will be inhibited by the electronics

PHYSICAL

CASE Anodized aluminum case (AISI 316 stainless steel optional)
PROTECTION GRADE IP67
DIMENSIONS 17,5x10,5x3,9 cm
WEIGHT ≈1 Kg

SENTINEL — Seismic Station