



Structural monitoring and seismology

The onboard MEMS triaxial accelerometer which exhibits a dynamic range 85dB and self-noise $20\mu\text{g}/\sqrt{\text{Hz}}$ can be synchronously sampled up to 500* sps. The embedded triaxial velocimeter sensor is made of three geophones with a flat bandpass from 4.5Hz up to 100Hz, synchronously sampled at 24bit with a dynamic range that exceeds 120dB. The contribution, in terms of performance, given by the combination of the two sensors (accelerometer and velocimeter) is considerable. In fact the greater sensitivity of the velocimeter provides better seismic information whereas the resolution of the accelerometer limits while the latter provides better results with strong motion events where the velocimeter would cause saturation. The integrated memory bank (32 ÷ 256 GB) allows you to manage a ring-buffer for long continuous recordings as well as event data.

SENTINEL GEO

PREMIUM-QUALITY ACCELEROGRAPH PLUS SEISMOGRAPH

KEY FEATURES

ONBOARD 85dB MEMS ACCELEROMETER

EMBEDDED TRIAXIAL 4.5Hz GEOPHONES

SAMPLING RATES 125, 250, 500*, 1000** sps

SYNCHRONOUS SAMPLING

LAN, WIFI

INTEGRATED 4G MODEM (OPTIONAL)

BUILT-IN GNSS RECEIVER

INTEGRATED UPS

MINISEED DATA FORMAT

* Maximum sampling rate for 3 simultaneous channels ** Maximum sampling rate for 1 channel



Seismological networks
Structural monitoring and surveys
Post-seismic damage analysis

APPLICATIONS

TPOLOGY MEMS accelerometer and geophones
DYNAMIC RANGE 85 dB
SELF-NOISE 20 μ g/ $\sqrt{\text{Hz}}$
FULL-SCALE RANGES User selectable ± 2 , ± 4 and ± 8 g
GEOPHONES Bandwidth from 4.5Hz to 100Hz

SENSORS

RESOLUTION 20bit synchronous sampling
SAMPLE RATES Adjustable up to 500 sps (3ch) 250 sps (6ch)
ANTI-ALIASING FILTER FIR
OFFSET CORRECTION automatic via web interface

A/D CONVERSION

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

TRIGGERS

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

STORAGE

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 $< 1 \mu\text{S}$

SYNCHRONIZATION

FILE TRANSFER Via LAN 10/100, WiFi or integrated HSPA 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

COMMUNICATION

INTERFACE Web Server

CONFIG.

POWER SUPPLY 5 $\div$ 16 Vdc, AC/DC adapter included

POWER CONSUMPTION < 2 W

UPS Back-up LiPO battery, autonomy > 5 hours

ALARMS alerts in case of blackout

POWER SUPPLY

STORAGE TEMPERATURE RANGE -20 $\div$ +70 $^{\circ}\text{C}$

HUMIDITY 0 to 100%

OPERATING TEMPERATURE RANGE Without battery - 40 $\div$ +85 $^{\circ}\text{C}$

LiPo batteries can be charged in the range 0 $\div$ +45 $^{\circ}\text{C}$ while discharge is allowed in the range of -20 $\div$ +70 $^{\circ}\text{C}$.

If the temperature is out of range, the LiPo battery will be inhibited by the electronics

OP. CONDITIONS

CASE Anodized aluminum case (AISI 316 stainless steel optional)

PROTECTION GRADE IP67, IP68 optional

DIMENSIONS 130 OD x 66 mm

WEIGHT ≈ 1 Kg

PHYSICAL

SENTINEL-GEO
— Seismic Station

