



# 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  $20\mu\text{g}/\sqrt{\text{Hz}}$ . 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

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



Seismological networks Structural monitoring and surveys Seismic switch	APPLICATIONS
<b>TPOLOGY</b> MEMS accelerometer <b>DYNAMIC RANGE</b> 85 dB <b>SELF-NOISE</b> 20µg/√Hz <b>FULL-SCALE RANGES</b> User selectable ±2, ±4 and ±8g	SENSORS
<b>RESOLUTION</b> 20bit synchronous sampling <b>SAMPLE RATES</b> Adjustable up to 1000** sps <b>ANTI-ALIASING FILTER</b> FIR <b>OFFSET CORRECTION</b> automatic via web interface	A/D CONVERSION
<b>THRESHOLD TRIGGER</b> independent for each channel and Trigger broadcasting towards recorders in the network <b>THRESHOLD TYPE</b> Absolute or STA/LTA and STA/LTA between 0.1 Hz and 12 Hz <b>ALARM</b> 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	TRIGGERS
<b>MEMORY BANK</b> 32GB up to 256GB (more than 30 days continuous recording @ 500Hz on 3 channels) <b>DATA FORMAT</b> Binary and MiniSEED <b>RING BUFFER</b> 16 or 32 days continuously, depending on memory size plus strong motion events	STORAGE

<b>TIMING SOURCE</b> Absolute Time UTC through high sensitive integrated GNSS receiver (suitable for indoor use as well) <b>ACCURACY</b> in GNSS signal loss condition: ± 1 ppm (32 s/year) <b>ACCURACY WITH GNSS SIGNAL</b> < 1 µS	SYNCHRONIZATION
<b>FILE TRANSFER</b> Via Ethernet 10/100, WiFi (optional) or integrated 4G modem (optional) <b>WIFI MODE</b> SOFT AP function and Client at the same time <b>METADATA</b> RESP file available on IRIS <b>DATA DOWNLOAD</b> Through SCP protocol based program or via web interface <b>VPN</b> Compatible with OpenVPN and IPSec	COMMUNICATION
<b>INTERFACE</b> Web Server	CONFIG.
<b>POWER SUPPLY</b> 5 ÷ 16 Vdc, AC/DC adapter included <b>POWER CONSUMPTION</b> < 2 W <b>UPS</b> Back-up LiPO battery, autonomy > 5 hours <b>ALARMS</b> alerts in case of blackout	POWER SUPPLY
<b>STORAGE TEMPERATURE RANGE</b> -20 ÷ +70 °C <b>HUMIDITY</b> 0 to 100% <b>OPERATING TEMPERATURE RANGE</b> Without battery - 40 ÷ +85°C <small>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</small>	OP. CONDITIONS
<b>CASE</b> Anodized aluminum case (AISI 316 stainless steel optional) <b>PROTECTION GRADE</b> IP67 <b>DIMENSIONS</b> 17,5x10,5x3,9 cm <b>WEIGHT</b> ≈1 Kg	PHYSICAL

