



KEY FEATURES

# SENTINEL-M

## PREMIUM-QUALITY ACCELEROGRAPH

### For strong motion and geophysical monitoring.

The analog channels meet the electrical MEMS specifications and are synchronously sampled up to 500 samples/second at a resolution of 24bit with a dynamic range that exceeds 120dB@100Hz. 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, remote using the internal 4G CAT1 modem (optional).

HIGH DYNAMIC 24bit ADC

MEMS 90 OR 110dB VERSION AVAILABLE

WI-FI AND 10/100 LAN

OPTIONAL ONBOARD 4G MODEM WITH NANO SIM CARD

INTEGRATED GNSS RECEIVER FOR SPECIFIC TIMING APPLICATION

32GB INTERNAL MEMORY

MINISEED DATA STREAM

STA/LTA TRIGGERING ALGORITHMS

SYNCHRONIZATION BETWEEN UNITS, TIME DELAY  $< 1 \mu\text{s}$



Seismological networks  
Structural monitoring and survey  
Post-seismic damage analysis  
Geophysical survives

APPLICATIONS

**FULL-SCALE RANGE:**  $\pm 2g, \pm 5g$   
**SCALE FACTOR** 1350 mV/g ( $\pm 2g$ ), 540mV/g ( $\pm 5g$ )  
**CALIBRATION** 1.5% scale factor deviation  
**NOISE IN BAND**  $7 \mu g/\sqrt{Hz}$  ( $\pm 2g$ ),  $17 \mu g/\sqrt{Hz}$  ( $\pm 5g$ )  
**DYNAMIC RANGE** 90dB

SENSOR (M190)

**FULL-SCALE RANGE:**  $\pm 3g, \pm 5g$   
**SCALE FACTOR** 900 mV/g ( $\pm 3g$ ), 540mV/g ( $\pm 5g$ )  
**CALIBRATION** 1.5% scale factor deviation  
**NOISE IN BAND**  $0.2 \mu g/\sqrt{Hz}$  ( $\pm 3g$ ),  $1.2 \mu g/\sqrt{Hz}$  ( $\pm 5g$ )  
**DYNAMIC RANGE** 110dB

SENSOR (M100)

**RESOLUTION** 24bit synchronous sampling  
**SAMPLE RATES** Synchronous, adjustable up to 500 Sps  
**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  
**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**  $\pm 1$  ppm (32 s/year)

**ACCURACY WITH GNSS SIGNAL**  $< 1 \mu S$

SYNCHRONIZATION

**FILE TRANSFER** via LAN 10/100, WiFi or integrate HSPA/4G modem (optional)

**WIFI MODE** SOFT AP function and Client at the same time

**METADATA** RESP file available on IRIS

**DATA DOWNLOAD** via a SCP protocol based program or via web interface

**VPN** Compatible with OpenVPN and IPSec

COMMUNICATION

**USER 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

POWER SUPPLY

**STORAGE TEMPERATURE RANGE**  $-20 \div +70$  °C

**HUMIDITY** 0 to 100%

**STORE TEMPERATURE RANGE** Without battery -  $20 \div +70$ °C \*

\*LiPo batteries can be charged in the range  $0 \div +45$ °C while discharge is allowed in the range of  $-20 \div +70$ °C. If the temperature is out of range, the LiPo battery will be inhibited by the electronics

OP. CONDITIONS

**CASE** Anodized aluminum case (SAE 316 steel optional)

**PROTECTION GRADE** IP67

**DIMENSIONS** 17.5x10x4.7 cm

**WEIGHT**  $\approx 1$  Kg

PHYSICAL

