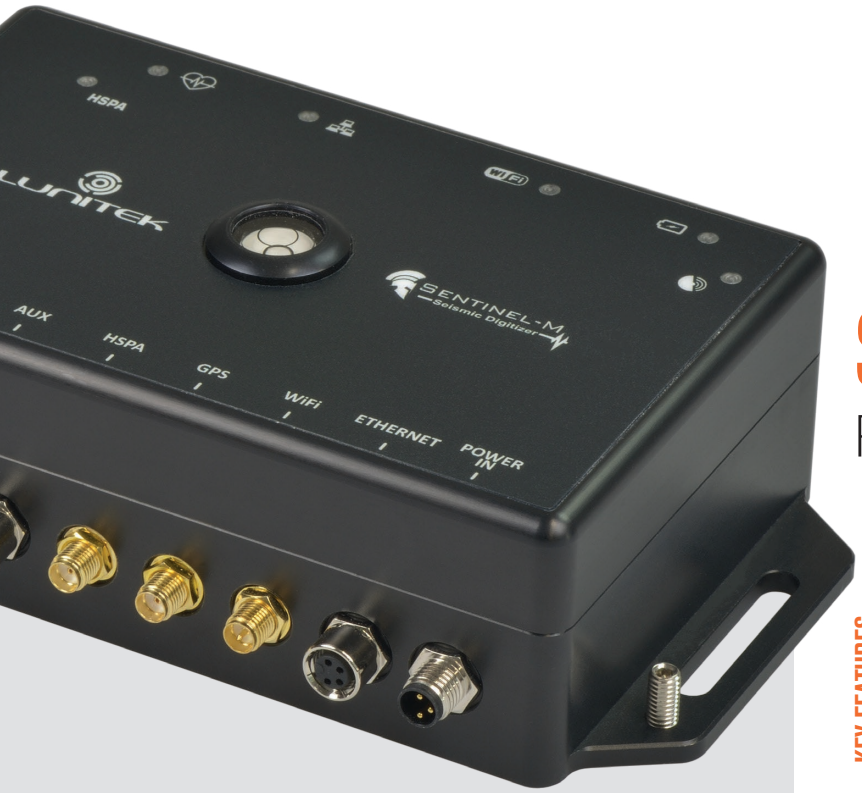
QUAKELOGIC

UNITEK

DATA-SHEET SENTM 001



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).

KEY FEATURES

- 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 μS

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APPLICATIONS

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

SENSOR (M90)

FULL-SCALE RANGE: ±2g, ±5g
SCALE FACTOR 1350 mV/g (±2g), 540mV/g (±5g)
CALIBRATION 1.5% scale factor deviation
NOISE IN BAND 7µg/√Hz (±2g), 17 µg/√Hz (±5g)
DYNAMIC RANGE 90dB

SENSOR (M100)

FULL-SCALE RANGE: ±3g, ±5g
SCALE FACTOR 900 mV/g (±3g), 540mV/g (±5g)
CALIBRATION 1.5% scale factor deviation
NOISE IN BAND 0.2µg/√Hz (±3g), 1.2 µg/√Hz (±5g)
DYNAMIC RANGE 110dB

A/D CONVERSION

RESOLUTION 24bit synchronous sampling
SAMPLE RATES Synchronous, adjustable up to 500 Sps
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

STORAGE

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

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 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

CONFIG.

USER 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

OP. CONDITIONS

STORAGE TEMPERATURE RANGE -20 ÷ +70 °C
HUMIDITY 0 to 100%
STORE TEMPERATURE RANGE Without battery - 20 ÷ +70°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 (SAE 316 steel optional)
PROTECTION GRADE IP67
DIMENSIONS 17.5x10x4.7 cm
WEIGHT ≈ 1 Kg

Sentinel-M — Seismic Station