

SentryS-ProS



High performance Sensor Box with dual-core MCU for sensor and data management integrating GNSS and a high-precision Time Base Unit (TBU) to guarantee accurate synchronization across multiple devices. Continuous, uninterrupted data streaming until 500 sps is allowed.

APPLICATIONS

- Seismic and volcanic monitoring
 - HVSR measurements
- Structural Health Monitoring (e.g. dams, bridge, viaducts, buildings, industrial machinery)
- Dynamic identification for SHM

MAIN FEATURES

- ACCELEROMETER WITH ULTRA LOW SELF-NOISE (0.02 $\mu\text{g}/\sqrt{\text{Hz}}$)
 - 32 BIT RESOLUTION
 - ADJUSTABLE SAMPLING RATE (100, 200, 400, 500 sps)
 - Programmable high- and low- pass digital filter
 - FULL-SCALE RANGE $\pm 5 \text{ g}$
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- Integrated temperature, humidity, pressure sensor
 - Compatible with standard software such as Earthworm, SeisComp and support SEEDLink data transfer
 - Ultra-low-latency mode for EEW
 - Continuous, periodic, or event-triggered acquisition
 - PRECISE SYNCHRONIZATION ACROSS MULTIPLE NODES (< 0.1 ms)
 - 128 GB micro SD
 - ETHERNET PoE, WIRELESS, 3G-4G optional) for data transfer and remote monitoring
 - OUTPUT DATA FORMAT IN MINISEED or others on request
 - 12 Vdc from electrical power source (with ac-dc adapter) - BATTERY or SOLAR PANEL (optional)
 - STATE-OF-HEALTH monitoring
 - System Status LEDs

OPTIONAL

- Single Board Computer
- Bi-axial digital INCLINOMETER

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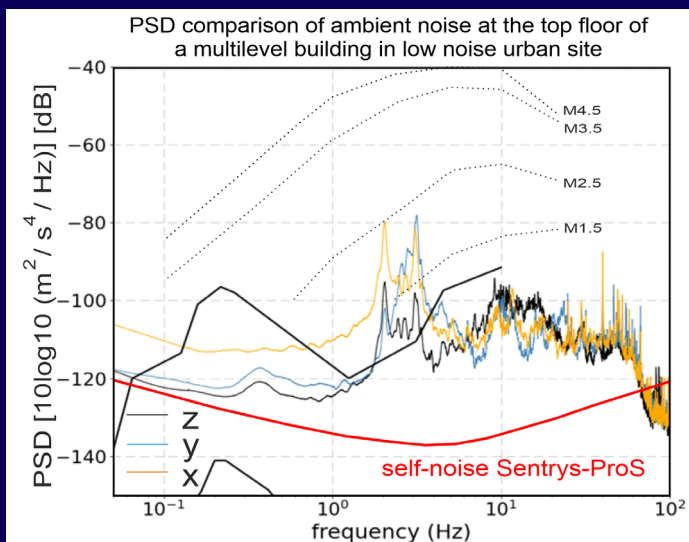
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FEATURES

SYSTEM	
Device with digital ultra-low noise MEMS accelerometer, environmental integrated sensor and dual-mode digital inclinometer	
SENSORS	type - characteristics
ACCELEROMETER	Triaxial digital QMEMS (orthogonal axes)
ADC	Sigma-Delta 32 -bit
Output bandwidth	DC–230 Hz
Output Full Scale Range	± 5 g
Resolutio	0.06 µG/LSB
Dynamic Range	~ 150 dB
Noise density	0.02 µg / √ Hz
Data Output Rate	500 sps
Operating temperature	- 30 to + 85 °C
ENVIRONMENTAL	Temperature, Humidity, Pressure
temperature	oper. range -40 ÷ +85 °C (±1.0°C accuracy)
Humidity	oper. range 0 ÷ 100 % rel. humidity (±3% accuracy)
Pressure	oper. Range 300 ÷ 1100 hPa (±1 hPa absolute accuracy)
INCLINOMETER (optional)	Dual-mode digital inclinometer
Dual-axis (horizontal operation)	±90°
Single-axis (vertical operation)	±180°
Accuracy	0.1°
Resolution	0.025°
TIME BASE UNIT	
GNSS module	GPS L1C/A, SBAS L1C/A, QZSS L1C/A, QZSS L1 SAIF, GLONASS L1OF, BeiDou B1I, Galileo E1B/C Accuracy of time pulse RMS 30 ns
Real Time Clock (RTC)	The TBU uses the GNSS receiver or the RTC, when the first cannot produce a fix, to adjust the output frequencies
POWER	
Power voltage range	10–36V DC*
Power consumption (at 12 V DC)	< 1 W standard
Types of power supply	12 Vdc, electrical power source (AC-DC adapter) 12 Vdc from battery 12 V from solar panel 20 W LAN PoE (optional)

PHYSICAL	
Standard SentryS-Lite	
Width	160 mm
Depth	100 mm
Height	60 mm
Weight	900 grams
Enclosure/Materials	Hard anodised aluminium
Communication / Connector	Military specification cconnector
Environmental protection	IP67



Self-noise plot of the accelerometer compared with measurements of ambient noise at the top floor of a multilevel building