QUBE & SentryS-Lite



Sensor Box for accelerometric data acquisition and management integrating GNSS to ensure accurate synchronization across multiple devices.
Continuous, uninterrupted data streaming until 500 sps is allowed.

APPLICATIONS

- Regional and local (e.g. urban networks) seismic monitoring
- Structural health monitoring (SHM) of structures characterized by significant vibrations

MAIN FEATURES

- ACCELEROMETER WITH LOW SELF-NOISE (25 µg/√HZ)
- 20 BIT RESOLUTION
- ADJUSTABLE SAMPLING RATE (100, 200, 400, 500 sps)
- Programmable high- and low- pass digital filter
- FULL-SCALE RANGE ± 2 g, ± 4 g, ± 8 g

- Integrated Single Board Computer (SBC)
- Compatible with standard software, including Earthworm and SeisComP, and supports SeedLink data streaming.
- Ultra-low-latency mode for EEW
- PRECISE SYNCHRONIZATION ACROSS MULTIPLE NODES (< 0.1 ms)
- 32 GB micro SD
- ETHERNET, WIRELESS, 3G-4G (optional) for data transfer and remote monitoring
- Output data format: miniSEED (others on request)
- STATE-OF-HEALTH monitoring
- System Status LEDs

12 VDC input from mains (via AC/DC adapter), battery, or solar panel

OPTIONAL

- Single Board Computer
- Bi-axial digital inclinometer

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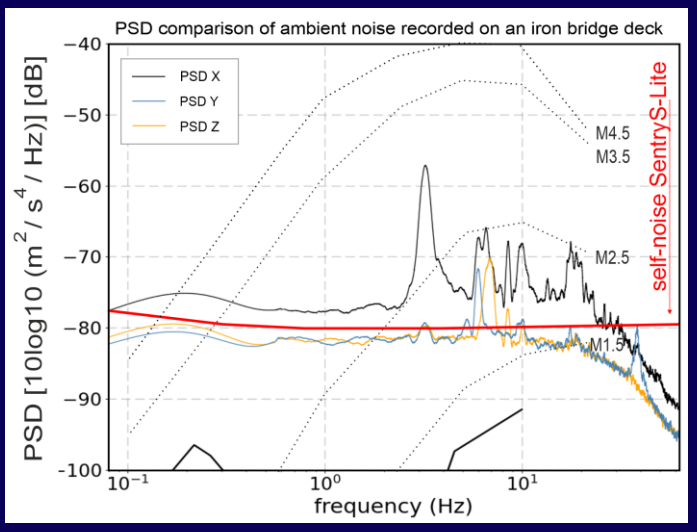
FEATURES

SYSTEM	
Device with digital low noise MEMS accelerometer. Optional: Environmental sensors and dual-mode digital inclinometer.	
SENSORS	**type - characteristics**
ACCELEROMETER	Triaxial digital MEMS
ADC	Sigma-Delta 20-bit
Output bandwidth	DC – 1000 Hz
Output Full Scale Range	±2 g, ±4 g, ±8 g
Sensitivity	256,000 - 128,000 - 64,000 LSB/g 3,9 - 7,8 - 15.6 µg/LSB
Sensor Dynamic Range	~ 90 dB
Noise density	25 µg / √ Hz
Operating temperature	-40 to +125 °C
ENVIRONMENTAL (Optional)	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)	When GNSS is unavailable, the TBU uses the RTC to maintain timing and regulate the output frequency.
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

PHYSICAL	
Standard **SentryS-Lite**	
Width	120 mm
Depth	90 mm
Height	60 mm
Weight	800 grams
Enclosure/Materials	Hard anodised aluminium
Communication / Connector	Military specification cconnector
Environmental protection	IP67



Self-noise plot of the accelerometer compared to ambient noise measurements on a bridge deck

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