SentryS-Lite

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

- 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

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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

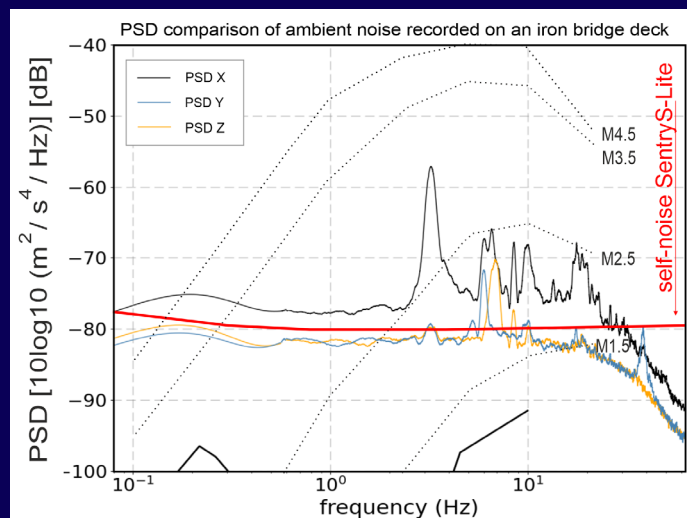- Bi-axial digital inclinometer (optional)

SentryS-Lite

FEATURES

SYSTEM	
Device with digital low noise MEMS accelerometer, environmental integrated sensor, 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 ℃
ENVIRONMENTAL	Temperature, Humidity, Pressure
temperature	oper. range -40 ÷ +85 ℃ (±1.0℃ 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	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