S2C USBL Buoy and Beacons

For Accurate Ultra Short Base Line Positioning & Tracking

EvoLogics offer a combination of combined positioning and communication devices for a variety of subsea applications. Combining powerful USBL transceiver functionality with full benefits of an S2C technology communication link, a S2C R USBL device is an efficient choice for application scenarios that demand space-, energy- and cost-saving solutions.

S2C R USBL devices with a built-in USBL antenna enable accurate tracking and full-duplex digital communication, delivering an excellent all-round performance. S2C R USBL devices implement advanced data delivery algorithms, support addressing and networking and are easy to control with a comprehensive set of commands and software-configurable settings.

Switching between positioning and communication modes is not necessary: positioning data is calculated simultaneously with acoustic transmissions. Both features complement each other in a fully integrated positioning and communication system.

The S2C R USBL series offers a selection of short- mid- and long-range devices for shallow or deep water applications. Each product is available in a variety of configurations to offer the best-fit solution for a particular scenario.

Moreover, EvoLogics' new underwater acoustic positioning software, SiNAPS, provides easy-to-use display features for real-time tracking of multiple targets, supports interfacing with external instruments and offers advanced data management tools.

- USBL transceiver with a built-in battery, mounted to a floating unit with on-board PC, dual-antenna GNSS receiver and Wi-Fi access point.
- USBL data and control over Wi-Fi from surface buoy
- Light and compact no-foam buoyancy
- On-board PC runs pre-installed SiNAPS, EvoLogics positioning software
- NMEA data stream for custom processing
- Buoy packs into a single case for easy transportation, assembly and deployment by a single operator.

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A typical EvoLogics USBL (ultrashort baseline) positioning system is pictured below and operates as follows. A **USBL TRANSCEIVER** is mounted on a Vessel and uses acoustic signals to determine the distances and bearings toward tracking targets - for example, to autonomous underwater vehicles (AUVs), remotely operated vehicles (ROVs), towfish etc.

A **TRANSPONDER** is attached to each target. Transponders reply to acoustic signals from the USBL transceiver with their own acoustic pulses, allowing the transceiver to calculate the targets' positions.

The USBL transceiver measures the time from transmission of its interrogation signal until a reply from the transponder is detected and converts it to distance to the transponder. Containing several transducer elements separated by a short distance (the **ultra-short baseline antenna**), the transceiver calculates the angle to a transponder using the phase-difference method.

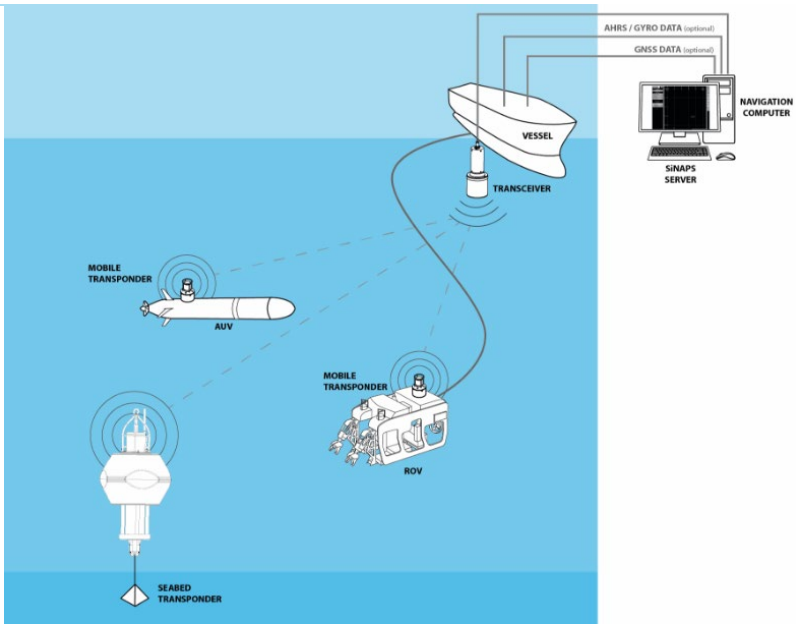
Optional third-party external instruments (an **AHRS** sensor and/or a **GNSS receiver**) provide information about the vessel's orientation and real-world coordinates.

The operator's **NAVIGATION COMPUTER** is interfaced with the USBL transceiver and the external instruments and is connected to the local computer network.

EvoLogics positioning software, **SiNAPS**, is installed on the navigation computer. This controls the positioning system and provides display features to monitor the mission in real-time.

EvoLogics S2C R USBL devices offer transceiver functionality combined with fully fledged acoustic modem performance: tracking targets and exchanging data with them at the same time does not require switching between modes of operation.

Each USBL transceiver is acoustically compatible with the corresponding type of EvoLogics underwater acoustic modems to be used as target transponders. They offer a wide range of designs and configuration options to match the target and the specific application scenario of the system.



Buoy Specification

Operating range	1000 -10,000 m depending on model
Frequency band	High-, mid- and low-frequency models
Transducer beam pattern	Directional & omnidirectional models
Slant range accuracy	0.01 m
Bearing resolution	0.1 degrees
Nominal SNR	10 dB
Host interface	Ethernet
Integrated AHRS	Integrated xSens MTi 30
GNSS	Dual antenna, GPS, GLONASS, optional RTK or Base-Rover configuration
Radio communication	WiFi 2.4 GHz, dual antenna
On-board pc	Pre-installed SiNAPS Software
Power supply	Internal rechargeable Li-Ion battery, 156 Wh (NiMH optional)
Power consumption	2.5 mW Stand-by Mode, 2.7 W Receive Mode. Up to 70W depending on model
Dimensions	1138 x 280 x 2240 mm / Ø 180 mm
Weight (in air)	19 kg

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