blueprint subsea

SeaTrac Micro-USBL Tracking Data & AHRS Modems

Introducing the SeaTrac X1 series of Micro-USBL tracking and data modems. Built around a robust broadband spread spectrum signalling scheme, these multi-purpose acoustic transponder beacons are capable of simultaneously tracking asset positions and undertaking bi-directional data exchange.

Shown actual size
160mm x 55mmØ

Position Tracking

When used in a tracking application, one X150 is mounted from the supervisor vessel, and connected to a PC running the SeaTrac PinPoint display and logging software. All positions are computed by the X150 beacon, so no additional PC hardware is required.

Sub-surface assets to be tracked (including Divers, ROV's, AUV's etc) are fitted with an X110 beacon, and optionally may use the data port to provide periodic acoustic communications with other systems and sensors.

In this mode up to 14 beacons may be tracked at ranges up to 1km from the supervisor, with the position of each being optionally broadcast to others in the network.

AHRS

Each beacon is fitted with a 9 Degrees-of-Freedom (DOF) Attitude and Heading Reference System, taking data from the onboard MEMS gyroscope, accelerometer and magnetometer to produce pitch, roll and yaw information that is made available to external applications via the communications port.

Data Modems

In a modem application, beacons are mounted at either end of the required data links and addressable packets of data are exchanged between the Acoustic Communication Stacks using protocols that ensure integrity of data, buffering and reattempting transmission in event of packet loss.

Use of the X150 USBL beacons will allow the interrogating end of the link to obtain a relative position of the remote modem during data exchange, while X110 beacons will provide distance between modems.

Integrated beacon sensors (such as depth, attitude and supply voltage) may also be remotely queried by the interrogating modem.

Applications

- Multi-beacon tracking system (for ROVs, AUVs, Divers etc).
- Remote control and interrogation of sub-sea equipment
- AUV/Diver telemetry links
- Remote depth, attitude and orientation measurement.

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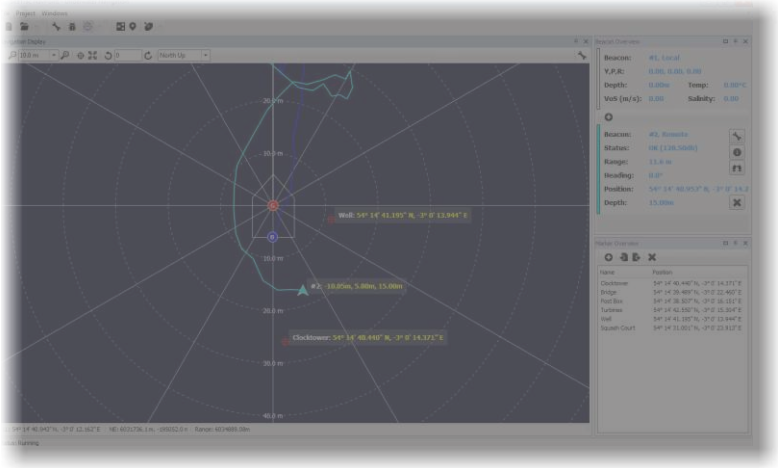
NavPoint



NavPoint is a Windows software application that allows users to track up to 14 underwater assets, each fitted with a SeaTrac acoustic beacon, from a single USBL beacon.

NavPoint has a variety of features to help users perform positioning, navigation and survey tasks, including the logging and playback of operational data, interfaces to satellite positioning systems, geographic markers, waypoint and destination navigation information and real-time data output to other NEMA compatible systems.

Specifications

	SeaTrac X150	SeaTrac X110
Mechanical	*BP00795*	*BP00843*
Length	132mm (5.2”) excluding connector 160mm (6.3”) including connector	106mm (4.2”) excluding connector 134mm (5.3”) including connector
Diameter	55mm	
Weight	720g in air, 530g in water	690g in air, 500g in water
Depth Rating	100m, 300m, 1000m, 2000m (determined by pressure sensor)	
Construction	316 Stainless Steel	
Operating Temp Range	-5°C to +40°C (23°F to 104°F)	

Electrical

Connector	Either Teledyne Impulse MCBH-5-MP (5-way) or MCBH-8-MP (8-way) depending on required communication options.
Communications	Single RS-232 as standard (5-way connector), second ‘Aux’ RS-232 available as option (8-way connector)
Supply Voltage	9-28VDC
Power Consumption	Less than 10W when transmitting
Integrated Sensors	Depth, 9-DOF AHRS, Supply Voltage Monitor, Water Temperature
Indicators	Red/Green visual status LED

Acoustic

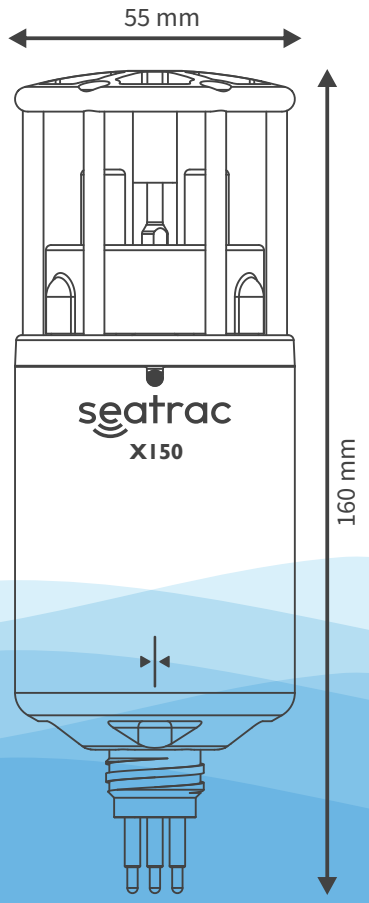
Remote Ranging	Yes	Yes
Remote Positioning (USBL)	Yes	No
Acoustic Range	1km radius horizontal, 1km vertical (hemispherical)	
Range Resolution	±50mm (dependant on VOS accuracy)	
Angular Resolution	±0.4° RMS	N/A
Velocity-of-Sound Range	1300ms^{-1} to 1700ms^{-1}	
Beacon Velocity	Active Doppler compensation, up to 15kts (28kph)	
Communications	Broadband spread spectrum encoding, 24-32kHz, 100 baud. Multi-tiered Acoustic Protocol Stack.	
Packet Addressing	15 unique beacon identifiers, broadcast to all capability.	

Applications

Supported Software Platforms	SeaTrac NavPoint Software SeaTrac Beacon Management Software
Developers/Integrators	SDK, including ASCII based serial interface with Application level and Acoustic Protocol Stack level commands for third party integration.

System Integration

For OEMs, system integrators and developers the serial interfaces, ASCII based command protocol and SDK documentation allow quick integration with existing systems, providing functionality from the Application level (i.e. tracking or bi-directional data-exchange) down to individual protocols within the Acoustic Communication Stack for more specialist requirements.



Please note that this data is PRELIMINARY, and all functions & specifications may be subject to change in line with our policy of continual product development.