Sonardyne
SOUND IN DEPTH

MINI-RANGER 2 USBL

HIGH PERFORMANCE, HIGH SPEED TRACKING SYSTEM

Mini-Ranger 2 is the latest addition to Sonardyne's family of sixth-generation (6G) Ultra-Short Baseline (USBL) underwater target tracking systems. With an operating range of 2,000 metres and the ability to simultaneously track up to 10 subsea targets (e.g. divers, ROVs and structures) at very fast update rates, Mini-Ranger 2 is ideal for nearshore operations on small, quiet vessels / vessels of opportunity, or use on pipelay and construction barges that need survey grade positioning performance without the cost and complexity of a deep water USBL solution.

System Overview

Mini-Ranger 2 calculates the position of an underwater target by measuring the range (distance) and bearing (heading) from a vessel mounted transceiver to a small acoustic transponder fitted to the target; a technique known as Ultra-Short BaseLine (USBL) positioning. One of the main advantages of the USBL technique is that no other in-water acoustic equipment has to be deployed before underwater operations can commence. Only the targets being tracked need to be equipped with a transponder.

The Sonardyne 6G and Wideband 2 digital signal technology inside Mini-Ranger 2 USBL offers precise acoustic ranging and hardware that is easier to set up and operate, even in the most challenging subsea operating environments. These features improve the efficiency of subsea survey operations, reduce vessel delays and generate cost savings for owners.

Mini-Ranger 2 is compact and highly portable, comprising of the 1U-high (desk or rack-mounted) Ethernet Serial Hub (ESH), HPT 3000 acoustic transceiver and software which is installed on the user's own PC or ruggedised laptop. Any Sonardyne 6G transponder can be used with Mini-Ranger 2 allowing the user to select the most appropriate beacon for the task in hand.

Mini-Ranger 2 at a glance

- Portable and quick to install on all types of vessel
- Easy to use software and hardware
- Up to 2000 metres slant range
- Automatic discovery and tracking of Sonardyne 6G transponders
- Audio Codec for live listening and recording acoustics
- Incredibly fast position updates; up to 3 per second
- Extensive survey output telegrams
- Audio and visual diagnostic tools enable optimised performance
- Integrated calibration of magnetic compass

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HPT 3000

At the heart of Mini-Ranger 2 is the new HPT (High Performance Transceiver) 3000 transceiver. Small and lightweight, HPT 3000 is perfect for installation on very small boats using temporary, over-the-side deployment arrangements.

The transceiver features a new design of receiver array and transmitter which are optimised to provide excellent performance in shallow water, at high elevations, as well as in deeper water. USBL precision is dependent on the baseline between the receiver elements and signal to noise. This is where the HPT 3000 excels in that the larger diameter array provides excellent precision and noise rejection, dramatically better than USBL systems on the market with much smaller diameter arrays.

A key new feature of the HPT 3000 is that communications are all Ethernet based. This means connection to the topside computer (via the Ethernet Serial Hub) is simple and user friendly as it can be connected through a ship's network via a single network socket – eliminating challenging USB to serial drivers and their associated compatibility problems. Ethernet based communications also enable improved in-water diagnostics, allowing the operator to both listen to and visualise signals and noise in the water. The HPT 3000 is available in durable Aluminium Bronze or lightweight Aluminium Alloy.

Software

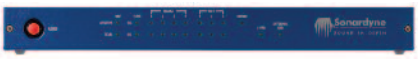
Mini-Ranger 2 uses the same modern and intuitive software as Ranger 2 ensuring users quickly become confident in its use. An extensive set of tools are included to allow the user to optimise the system performance, including real-time audio and visual signal and noise analysis displays. Sonardyne's CASIUS calibration tool is also included to correctly calibrate gyro and VRU offsets, and so improve positioning accuracy. There is a built-in calibration routine of the internal magnetic sensor to minimise the time between installation and tracking.

Ethernet Serial Hub

With Mini-Ranger 2, the Ethernet Serial Hub (ESH) provides a simple, but all-encompassing, robust interface between peripheral sensors, acoustic instruments, mains power and the software running on the PC. Communications are all Ethernet based, allowing connection through a ship's network and eliminating the requirement for all equipment to be co-located on the bridge. The Ethernet Serial Hub (ESH) also supports responder trigger and 1PPS synchronisation across systems.

Software Mini-Ranger 2 shares the same modern and intuitive interface as Sonardyne's established Ranger 2 USBL system ensuring users quickly become confident in its use.

HPT 3000
HPT 3000 is designed for portable installation on very small boats. It offers excellent performance in shallow water, at high elevations as well as in deeper water.



Ethernet Serial Hub
The Ethernet Serial Hub (ESH) is a 1U-high (desk or rack-mounted) unit for interfacing the HPT 3000 transceiver, GPS and user's PC running the Mini-Ranger 2 software.

6G Transponders
Mini-Ranger 2 is compatible with a wide range of subsea positioning transponders including Sonardyne's WSM 6+, WRT 6, as well as aircraft pinger locators.