Datasheet
HPT 7000L LMF USBL and telemetry transceiver

The HPT 7000L Ultra-Short BaseLine (USBL) and telemetry transceiver is a new high-performance platform which supports Sonardyne's Wideband®2 6G® LMF instruments (Compatt 6) and offers significant improvements in acoustic positioning range and telemetry performance.

The advanced multi-element processing enables transponders to be positioned more precisely, more quickly and more robustly due to improvements in signal processing algorithms and array design. When used as part of a complete USBL system such as Marksman or Ranger 2 and tightly integrated with Sonardyne's Lodestar attitude, heading and inertial navigation sensor, class leading performance in all water depths is achieved.

New functionality, such as 'Discovery Mode' which enables users to automatically detect previously deployed transponders including their configured address and channel, makes the system easier to use.

The HPT transceiver is also a highly capable acoustic telemetry transceiver. Its multiple simultaneous channels enable robust high-speed telemetry reception from Sonardyne's 6G subsea transponder modems and data loggers so reducing valuable vessel time.

Manufactured in aluminium bronze, the HPT is intended to be fitted temporarily or permanently to a vessel's through-hull or over-the-side pole.

Key features

- The LMF version is based on the HPT 7000, but with improved range performance due to drop in frequency
- Enhanced USBL array designs for improved noisy vessel and deepwater performance
- True simultaneous tracking of multiple transponders providing high update rates
- Seamless simultaneous positioning and telemetry of data whilst tracking
- Sonardyne Wideband 1 and 2 ranging mode compatible
- Built in health checks including USBL array and electronics diagnostics
- Discovery mode allows users to automatically scan for transponders deployed within acoustic range
- In water ambient noise monitoring
- Integral robust High Data Rate telemetry for fast acquisition of data from subsea instruments – reduces costly vessel time.
- Compatible with Marksman LUSBL, Ranger 2 USBL and Fusion 6G LBL systems
- Optional Ethernet connectivity

Specifications
HPT 7000L LMF USBL and telemetry transceiver
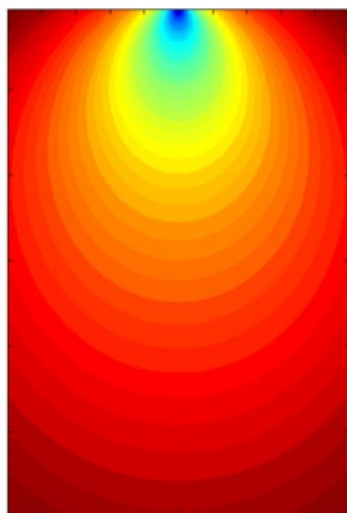
HPT7000L SNR Plot for a 18 kHz signal
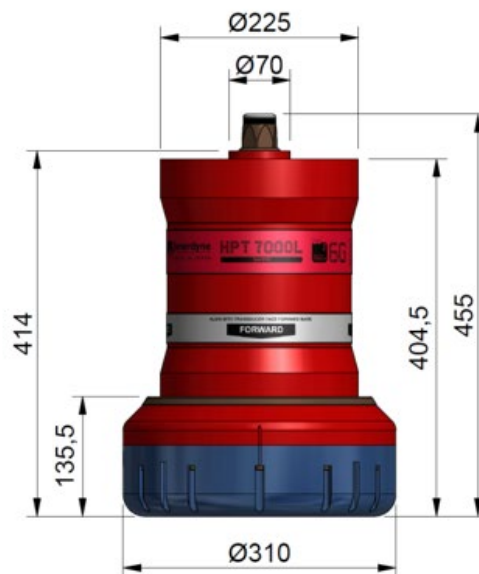
Feature		Type 8183
Operational frequency		LMF (14–19 kHz)
Transceiver performance	Operating range	Over 13,000 m[1]
	Acoustic cover	±90º Optimised for deep water
	Range precision	Better than 15 mm
	Positioning repeatability	All transceivers tested to better that 0.12% of slant range 1 Drms
Transmit source level (dB re 1 uPa @ 1 m)		200 dB
Tone equivalent energy (TEE)[2]		206 dB (13 JA)
Electrical		48 V dc, typical 15 W, Max 120 W
Communication		RS485, baud rate switchable, Ethernet 100 Mbps
Operating temperature		-5 to 40°C
Storage temperature		-20 to 45°C
Mechanical construction		Aluminium bronze
Dimensions (length x diameter)		405 x 310 mm
Weight in air/water		46.9/29.0 kg
Options		Tilted Array Adaptor

Note: The absolute accuracy of the system is dependent upon the quality of external attitude and heading sensors, beacon source level, vessel noise, water depth, mechanical rigidity of the transceiver deployment machine, SV knowledge and proper calibration of the total system using CASIUS.

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[1] WBv2+ signals are 4x the duration of Sonardyne tone signals (WBv1 & WBv2 are 2x). The TEE figure shows the operational performance when comparing wideband and tone systems. Detection performance is directly related to the signal energy (Joules (Watt seconds)) and not power. WBv2+ signals are longer in duration (greater energy) than WBv1 and Tone, therefore the detection performance is the same or improved for low transmit source levels.

[2] The maximum operating range will depend on source level of beacon, noise at the transceiver, and elevation angle of the received acoustic signal.

Specifications subject to change without notice – 03/2023