

Lodestar GyroUSBL



Lodestar GyroUSBL combines a Sonardyne 6th (6G[®]) generation high performance HPT USBL transceiver and a Lodestar Attitude and Heading Reference System (AHRS) / Inertial Navigation System (INS) in the same mechanical assembly.

With the AHRS / INS in fixed mechanical alignment to the USBL's acoustic array, the Lodestar GyroUSBL can be quickly deployed without need for a USBL calibration to determine the alignment of the ship's motion sensors to the acoustic transceiver. For certain applications, this can enable significant savings in vessel time and operational costs.

The HPT transceiver component of the instrument utilises the latest Sonardyne Wideband^{®2} signal processing and is fully compatible with other products in the new Sonardyne 6G equipment range. Lodestar is tightly integrated into the USBL system providing power and communications to the HPT transceiver and embedded highly accurate time-stamping of all motion and acoustic data.

Specifications

Product	Lodestar GyroUSBL
Country of origin	UK
Manufacturer	Sonardyne International Ltd

This enables unparalleled precision and accuracy of position estimation by removing many of the sources of error associated with all USBLs such as lever arm offsets, pole bending, and ship flexing.

In addition, because many of the system parameters are now fixed, no USBL calibration is required during installation so the system is easier to install and set-up.

Precision of better than 0.3% of slant range is achievable out of the box, or a oneoff calibration can push this figure to less than 0.1% of slant range, depending on array type. Manufactured in Aluminium-Bronze the Lodestar GyroUSBL is ideally suited for short term temporary installations on vessels of opportunity using through-hull or over-the-side poles. It is also ideal for permanent installation on flexible stem tubes.

In case of operational damage to the USBL transducer array, all electronics are robustly protected behind a double-sealed, pressure-resistant bulkhead. This ensures that if the transducer face is breached, the Lodestar and

Key features

- Integrated Sonardyne 6G Wideband 2 USBL transceiver and Lodestar AHRS / INS offering high performance
- Available in two versions; standard and deepwater optimised
- Calibration free offering rapid setup
- Class leading system precision and accuracy.
- Sonardyne Marksman LUSBL, DPINS and Ranger 2 USBL compatible
- Water-blocked transducer array protects electronics in the event of damage
- Compatible with Sonardyne's through-hull, over-the-side and stem tube deployment systems
- Ethernet connectivity

Specifications

Feature		Type 8084-000-0445	Type 8084-000-0447
Operating frequency		MF (19-34 kHz) (33-50 kHz)	MF (19-34 kHz)
Transceiver	Operating Range	Up to 7,000 Metres	Up to 7,000 Metres
Performance	Acoustic Coverage	Up to ± 90°	Up to ±90° Optimised For Deep Water
	Range Accuracy	Better Than 15 mm	Better Than 15 mm
	Positioning	All Transceivers Tested to Better Than	All Transceivers Tested to Better Than
	Repeatability	0.1% of Slant Range 1 Drms	0.07% of Slant Range 1 Drms
Transmit Source Level	SL = dB re 1 uPa @ 1 m Tone Equivalent Energy (TEE)*	200 dB 206 dB	200 dB 206 dB

Specifications Common to all Variants

Attitude	Attitude Type 8084-000-0445	Attitude Type 8084-000-0445
Heading Range	0-360°	0-360°
Accuracy	0.04 to 0.1° secant latitude	0.04 to 0.1° secant latitude
Settle Time	<5 minutes	<5 minutes
Follow-up Speed	500° / second	500° / second
Resolution	0.01°	0.01°
Roll & Pitch Range	±180° (No physical limit)	±180° (No physical limit)
Accuracy	0.01°	0.01°
Heave Range	±99 m	±99 m
Accuracy (Real Time)	5 cm or 5% (Whichever the greater)	5 cm or 5% (Whichever the greater)
Resolution	0.01 m	0.01 m
Electrical	+48 V DC Max 160 W	+48 V DC Max 160 W
Communication	RS485, baud rate switchable, Ethernet 100 Mbps	RS485, baud rate switchable, Ethernet 100 Mbps
Resolution	0.01°	0.01°
Dimensions; Length x Diameter	602 mm x 225 mm	626 mm x 310 mm
Resolution	51 kg (28.5 kg)	64 kg (38 kg)