Datasheet
Lodestar subsea AHRS

Lodestar is a solid-state Attitude and Heading Reference System (AHRS) highly optimised for cost, size, weight, and power (C-SWaP).

The instrument is a turn-key solution comprised of carefully selected high-grade and highly reliable inertial sensors integrated into a Sonardyne in-house designed Inertial Measurement Unit (IMU).

The selected inertial sensors are the standard for commercial aviation with a proven 20+ year track record. These sensors have a highly desirable characteristic being insensitive to vibration, temperature changes and having very limited initial errors. The result is a system which is highly suitable for the marine environment where performance, robustness and data integrity need to be available from initialisation, even during the harshest conditions.

Lodestar requires no external aiding and settles robustly in dynamic conditions in less than 5 minutes.

On-board data storage and backup battery functionality ensures continued operation and eliminates the risk of data-loss even if communications or external power is lost.

Power-pass through to external aiding sensors is supported to ease integration requiring only a single cable for comms and power.

If a full INS solution is required, the Lodestar can easily be field upgraded to a SPRINT system.

This makes the Lodestar a flexible and future proof solution for both ROV guidance and survey applications.

Lodestar has a proven track record spanning more than 10 years in the field in diverse applications from ROV guidance and autopilot to demanding survey applications.

The instrument is available in 4,000 and 6,000 m depth ratings with a variety of connector options and configurations.

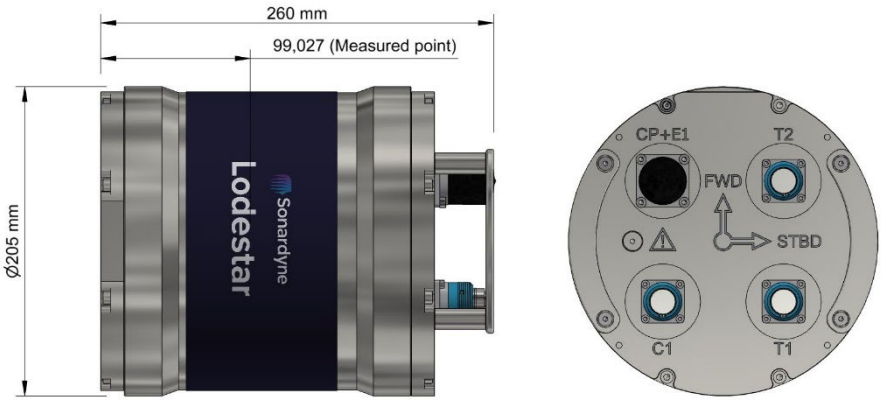
Applications include

- ROV control & guidance
- Offshore construction

Key features

- Turn-key solution for motion sensor and gyrocompass
- Up to 0.08° heading accuracy
- 0.01° roll and pitch accuracy
- 5 minute AHRS settling time
- Fast follow up speed of 900°/sec
- MTBF inertial sensors (gyros and accelerometers) > 400,000 hours
- Choice of depth ratings: 4,000 and 6,000 m
- Choice of connectors: Seacon (standard) or Seanet® (for use with FMC Schilling Robotics ROV)
- Transport approved rechargeable Li-ion battery back-up as standard
- 8 GB internal memory allows post processing and remote diagnostics
- Ethernet and serial interfaces
- Export is not ITAR controlled
- Lodestar AHRS can be remotely upgraded to SPRINT INS

Specifications
Lodestar subsea AHRS



Feature		Lodestar 300	Lodestar 500
Depth rating		4,000 / 6,000 m	4,000 / 6,000 m
Performance			
Heading		0.2°	0.1°
AHRS settle time		<5 minutes in dynamic conditions	
Roll and pitch		0.01°	0.01°
Power			
Power requirement		20–50 V dc, 15 W nominal, 35 W maximum	
Power pass through		3 x for external aiding sensors (up to 3 A per sensor)	
Backup battery type/life		Li-ion/5 minutes	Li-ion/5 minutes
Data/Comms			
Data storage		8 GB internal memory	8 GB internal memory
Serial ports/protocol		4x RS232 or RS485	4x RS232 or RS485
Other ports		1× Ethernet, 4 triggers	1× Ethernet, 4 triggers
Output rate		Up to 100 Hz	Up to 100 Hz
Output telegrams[1]		Industry standard AHRS/INS telegrams including acceleration and rotation rates	
Mechanical			
Connectors		4x Seacon / Seanet, 1x Seacon / Seanet	
Mechanical construction		Titanium	Titanium
Dimensions (diameter x height)	4,000 m (Seacon)	205 x 260 mm	205 x 260 mm
	6,000 m (Seacon)	205 x 280 mm	205 x 280 mm
	4,000 m (Seanet)	205 x 250 mm	205 x 250 mm
Weight in air/water[2]	4,000 m	18.5/11.5 kg	18.5/11.5 kg
	6,000 m	22/14 kg	22/14 kg
Environmental			
Operating temperature		-20 to +55°C	-20 to +55°C
Storage temperature		-20 to +60°C	-20 to +60°C
Shock rating		22 g, 11 ms half sine	22 g, 11 ms half sine

[1] Specific outputs may be limited below quoted performance for reasons of export classification and control and should not be used as IMU data.
[2] Estimated weights.

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Specifications subject to change without notice – 01/2024