

## Datasheet

# Lodestar 300 Subsea AHRS / SPRINT 300 Subsea AAINS



### Description

Lodestar 300 is a combined solid state Attitude and Heading Reference System (AHRS) and optional SPRINT Acoustically Aided Inertial Navigation System (AAINS).

The unit is comprised of three high grade, high reliability, commercially available, Ring Laser Gyros (RLG) and accelerometers. The sensors are also the standard for commercial aviation with a proven 15+ year track record.

Lodestar AHRS requires no external aiding and can settle in <15 minutes or less in dynamic conditions. SPRINT INS adds advanced Aided Inertial Navigation that runs concurrently with the Lodestar AHRS algorithm.

This dual algorithm capability is unique in the market and allows for dual use from one inertial instrument, e.g. Lodestar AHRS for ROV, SPRINT INS for Survey.

On-board data storage and backup battery functionality ensures continued operation and no data-loss even if communications or external power is lost.

SPRINT INS interfaces to aiding sensors such as USBL, a DVL, pressure sensor and sound speed. Power-pass through to aiding sensors is supported to ease integration.

SPRINT INS can be operated without external time synchronisation and aided with manual positions and DVL for relative navigation.

Lodestar and SPRINT have a proven track record spanning 10 years in the field in diverse applications from vehicle gyrocompass to demanding applications such as ROV guidance and mid water station keeping.

The instrument is available in 4,000 and 6,000 metre depth ratings and as an OEM version and is one of the smallest form factor subsea inertial instruments available.

### Applications Include

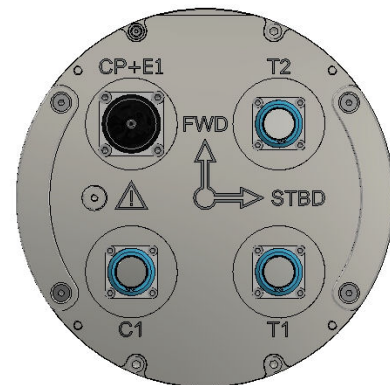
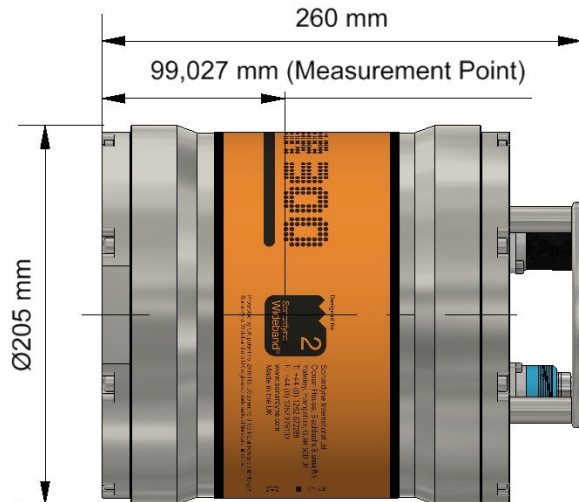
- ROV gyrocompass
- Vehicle guidance
- Station keep and autopilot including mid water applications
- USBL aided INS survey
- DVL aided relative navigation

### Key Features

- Single box solution for motion sensor, gyrocompass and AAINS
- SPRINT provides concurrent AHRS and AAINS capability for dual use
- 0.2° (AHRS) to 0.05° (INS) secant latitude heading accuracy
- 0.01° roll and pitch accuracy
- <10 minute AHRS settling time
- Fast follow up speed of 900°/sec
- MTBF inertial sensors (RLG and Accelerometer) > 400,000 hours
- Choice of depth ratings: 4,000 and 6,000 metres
- Choice of connectors: Seacon (standard) or Seanaet® (for use with FMC Schilling Robotics ROV)
- Transport approved rechargeable li-ion battery back-up as standard
- Minimum internal memory of 8 GB allows post processing and remote diagnostics
- Ethernet interface
- Lodestar AHRS can be remotely upgraded to SPRINT INS

## Specifications

# Lodestar 300 Subsea AHRS / SPRINT 300 Subsea AAINS



Feature	Lodestar SPRINT	Type 8084-xxx Type 8253-xxx	Type 8084-xxx Type 8253-xxx	Type 8084-xxx Type 8253-xxx
Depth Rating		4,000 metres	4,000 metres	6,000 metres
Physical	Size (Diameter x Length)	Ø205 x 260 mm	Ø205 x 250 mm	Ø205 x 280 mm
	Weight in Air/Water*	18.5/11.5 kg	18.5/11.5 kg	22/14 kg
	Mechanical Construction	Titanium	Titanium	Titanium
	Connectors	SPRINT/Lodestar 4 x Seacon Lodestar 1 x Seacon	4 x Seanet® 1 x Seanet®	4 x Seacon 1 x Seacon
	Performance	Heading Accuracy	0.2° (Lodestar AHRS), 0.05° (SPRINT INS) Secant Latitude	
	Roll and Pitch Accuracy	0.01°		
	Settle Time	<10 minutes in dynamic conditions (AHRS), Instantaneous (INS)		
	INS Aiding Supported	USBL, Depth, DVL, Zero Velocity, Manual Position, LBL (position), GNSS		
	USBL/LBL Aided	3 x precision improvement over USBL/LBL (Position)		
	USBL/LBL and DVL Aided	3 to 7 x precision improvement over USBL/LBL (Position)		
	DVL Aided Accuracy	0.2% position error for distance travelled (3 <sup>rd</sup> party DVL) 0.16% position error for distance travelled (Sonardyne Syrinx DVL)		
	DVL Aiding Loss/Drift	1.2 m over 1 min, 5 m over 2 mins (CEP50)		
	Station Keeping	<1 m over 1 hour (3 <sup>rd</sup> party DVL) <1 m over 24 hours (Sonardyne Syrinx DVL)		
Upgrades	Lodestar 300 AHRS can be remotely upgraded to SPRINT 300 INS			
Environmental	Temperature	-20 to +55°C (operating), -20 to +60°C (storage)		
	Shock Rating	22 g, 11 ms half sine		
Power	Power Requirement	20–50 V dc, 15 W nominal, 35 W max		
	Power Pass Through	3 x for external aiding sensors (up to 3A per sensor)		
	Back Up Battery Type/Life	Li-ion/5 minutes		
Data/Comms.	Data Storage	8 GB internal memory		
	Digital Ports/Protocol	Up to 4 digital Ports/RS232 or RS485		
	Other Ports	1 x Ethernet, 4 Triggers		
	Output Rate	Up to 100 Hz		
	Output Telegrams	Industry standard AHRS/INS telegrams including acceleration and rotation rates**		

\*Estimated Weights

\*\*Specific outputs may be limited below quoted performance for reasons of export classification and control and should not be used as IMU data.