

Datasheet

Lodestar – Surface AHRS and AAINS



Description

Lodestar is a solid state IMO approved Attitude and Heading Reference System (AHRS) and Acoustically Aided Inertial Navigation System (AAINS).

The unit comprises 3 high grade/high reliability, commercially available Ring Laser Gyros (RLGs) and 3 linear accelerometers. A Sonardyne developed gyrocompass algorithm runs in the background even when used as an AAINS.

A flexible AC or DC power input has been incorporated to facilitate surface vessel applications. With the battery back up capability supplied, the unit is able to continue running the AHRS and AAINS algorithm during vessel power brown-outs.

The Lodestar AHRS algorithm outputs precise heading, roll, pitch and heave estimation in dynamic conditions without the need for external aiding inputs or vessel manoeuvres.

Lodestar is the core component in any Sonardyne AAINS system. It directly interfaces to aiding sensors such as USBL or LBL transceivers, a DVL, a GNSS receiver, a pressure sensor and a sound speed sensor (SSS).

Applications Include

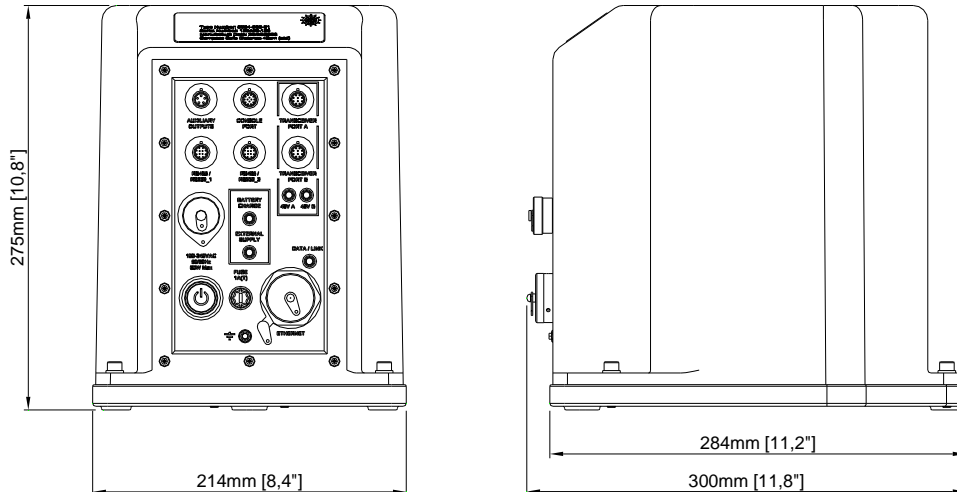
- An optimised USBL system: The directly coupled precise attitude data complements the precision of advanced USBL systems.
- As a precise position input to DP systems using AAINS, a USBL system and one or more seabed reference beacons for operations in excess of 2000m.
- As a positioning system for an ROV, aided by a combination of position estimates from a topside USBL system, vehicle mounted DVL, pressure, sound speed and LBL transceiver (subsea option).
- Multi-beam Surveys

Key Features

- Single IP66 rated solution for motion sensor and gyrocompass and AAINS systems
- 0.04° heading precision
- 0.01° roll and pitch accuracy
- <5 minute settling time
- 5cm / 5% heave accuracy
- Fast follow up speed of 500° / sec
- MTBF RLG >300,000 hours
MTBF Lodestar >50,000 hours
- Subsea versions available rated to 1,000, 3,000 and 5,000 metres
- Flexible power input AC or DC
- Transport approved Li-Ion battery back up as standard
- 8GB internal memory (expandable to 32GB)
- Designed and approved to IMO Resolution A424(XI)
- Ethernet interface
- AAINS capability

Specifications

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Feature	Type 8084-000-0000		
Attitude	Heading	Range	0-360°
		Precision	0.04° secant latitude rms
		Settle Time	<5 minutes
		Follow Up Speed	500° / second
		Resolution	0.01°
	Roll & Pitch	Range	±180° (No physical limit)
		Accuracy	0.01°
		Resolution	0.01°
	Heave	Range	±99m
		Accuracy (Real Time)	5cm or 5% (Whichever the greater)
Bandwidth		User selectable	
Resolution		0.01m	
Physical	Size (h×w×d)	276mm × 214mm × 297 mm	
	Weight	13kg	
	Mechanical Construction	Aluminium, Powder Coated	
Environmental	Operating Temperature	-10°C to +55°C	
	Shock Rating Operational	22g, 11ms half sine	
	IP Rating	IP66	
	Power Requirement	90–260V AC or 20–50V DC, 15W nominal, 20W max	
	Back Up Battery Type / Life	Li-Ion / 2 hours	
	Data Storage	8GB internal memory (expandable to 32GB)	
Digital Output	Number of Digital Ports / Protocol	5 x Digital Ports / RS232 or RS485	
	Other Ports	1 x Ethernet	
AAINS	Navigation Error – scenario/aiding dependent		
	Navigation Error (Free Inertial)	Typically 10m, 4 minutes after loss of aiding	
	Maximum Acceleration	2.5g or 10.0g	