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Datasheet

Lodestar (Surface) - AHRS and Acoustically Aided INS

Description

Lodestar AHRS and Lodestar AAINS systems are comprised of six sensing elements, three Ring Laser Gyros (RLG) and three linear accelerometers, running a Sonardyne developed gyrocompass algorithm with an optional AAINS upgrade.

The AHRS (Attitude and Heading Reference System) processing package is a genuine gyro-compassing algorithm capable of precise heading, roll and pitch estimation in dynamic conditions without the need for any aiding inputs or manoeuvres.

The AHRS output is available as an alignment means to an inertial navigation algorithm. Uses for the AHRS include a ship's gyrocompass, attitude compensation for acoustic navigation systems and for survey grade multi-beam echo sounders.

The Acoustically Aided Inertial Navigation System (AAINS) takes aiding inputs from LBL and USBL transceivers as closely coupled observations in addition to aiding from DVLs, GPS and the AHRS algorithm.

Lodestar also applies a heave algorithm to the vertical motion of the unit resulting in a robust heave measurement solution. Therefore, the Lodestar product is suitable for any application that requires the accurate measurement of heading, heave, roll, pitch and with AAINS, position in a highly dynamic environment.

For a rigorous time reference the local clock can be locked to a reference clock for missions lasting several days. Applications include a secondary reference system input to a DP drilling vessel and a subsea ROV navigation system.

In addition to the 4 traditional RS485 /RS232 serial interfaces to aiding sensors and clients systems there is an Ethernet interface. This provides web browser operation, delivery of data to clients using TCP/IP based protocols as well as providing a high speed link to download the data from the mass storage.

Key Features

- Single IP66 rated solution for motion sensor and gyrocompass
- 0.1° heading accuracy unaided
- <5 minute settling time
- 0.01° roll & pitch accuracy
- 5cm / 5% heave accuracy
- Fast follow up speed of 500°/Sec
- Subsea versions rated to 1000, 3000, 5000 and 7000 metres
- Ethernet interface
- Transport approved Li-Ion battery back up as standard
- Flexible power input AC or DC
- On board 4GByte memory allows post processing of a 2 day mission
- No dedicated GPS string required
- MTBF RLG >100,000 hours MTBF Lodestar >50,000 hours
- Designed and Approved to IMO Resolution A424(XI)

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Specifications

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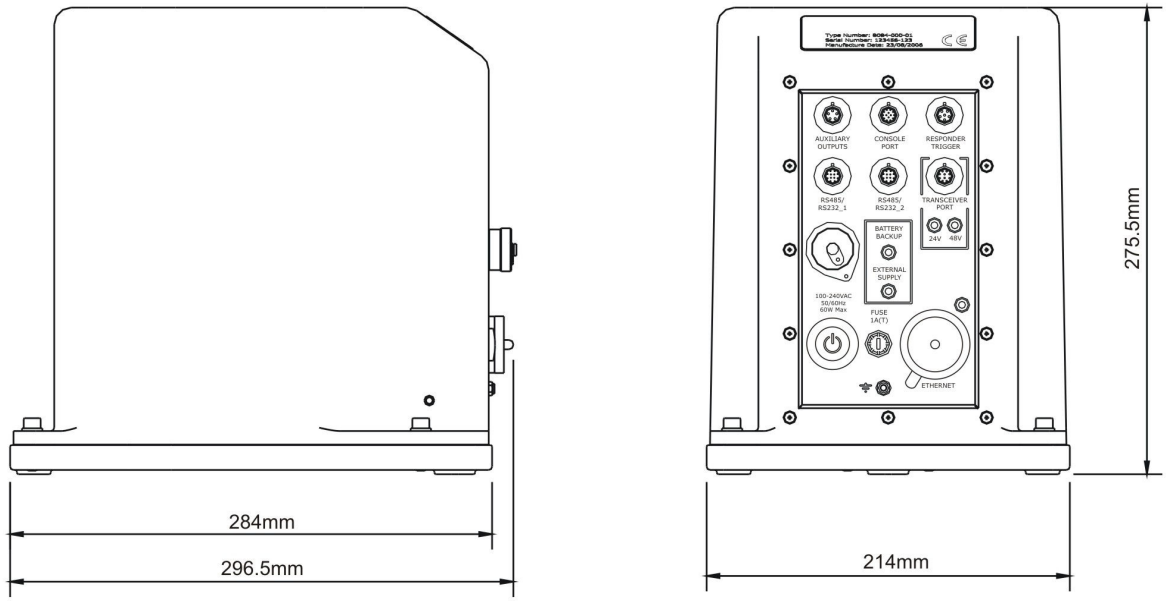

Feature			Type 8084-001
Attitude	Heading	Range	0-360°
		Accuracy	0.10° secant latitude rms
		Settle Time	<5 minutes
		Follow Up Speed	500° / Second
		Resolution	0.01°
	Roll & Pitch	Range	±180° (no physical limit)
		Accuracy	0.01°
		Resolution	0.01°
	Heave	Range	±99m
		Accuracy (Real Time)	5cm or 5% whichever the greater
		Bandwidth	User Selectable
		Resolution	0.01m
Physical	Size		276 × 297 × 214 mm (h×w×d)
	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 18–50V DC, 10W nominal, 20W max
	Back Up Battery Type / Life		Li-Ion / 3 hours
	Data Storage		4GB on board memory
Digital Output	Number of Digital Ports / Protocol		4 Digital Ports / RS232 or RS485
	Other Ports		1 × Ethernet
Optional INS	AAINS Upgrade Path		Yes
	Navigation Error (Free Inertial)		>1.5NM/hr CEP
	Maximum Acceleration		2.5g