

Datasheet

SPRINT OEM INS



SPRINT OEM is an Aided Inertial Navigation System (AINS) highly optimised for cost, size, weight, and power (C-SWaP).

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.

SPRINT's dual AHRS & INS algorithm capability is unique in the market and allows for on-board integrity checking between both orientation solutions. Furthermore, the SPRINT INS algorithm can instantaneously start with north alignment from the on-board AHRS. This negates the need for specific dynamics to 'align' standalone INS products to north.

The AHRS requires no external aiding and can settle in 5 minutes or less in dynamic conditions. INS adds advanced aided inertial navigation that runs concurrently with the AHRS algorithm.

SPRINT INS supports a wide range of aiding including: USBL, Depth, DVL, Zero Velocity, Manual Position, LBL Position and GNSS to support most autonomous vehicle requirements. Optimal tight coupling is supported for Sonardyne's Syrinx and 6G+ LBL acoustics products, also available in OEM form.

On-board data storage allows for post-mission diagnostics checking with the supplied Janus QC software. An optional software upgrade allows for reprocessing and optimisation of the navigation solution.

The lightweight aluminium housing is one of the smallest form factor high performance OEM INS/AHRS units available.

Sonardyne provides a dedicated integration development kit and service for SPRINT OEM.

Typical Applications

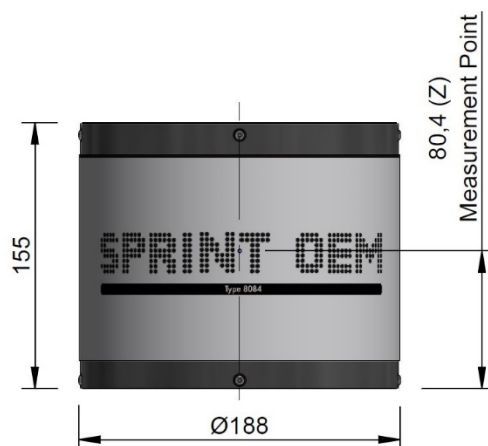
- Any subsea autonomous platform including AUV, AIV, ROV, towfish and ROTV
- Manned submersibles
- Surface autonomous vehicles (ASV)

Key Features

- Turn-key OEM solution
- Development kit included
- Integration service with on-site or remote engineers
- SPRINT provides concurrent AHRS and INS capability for dual use
- Up to 0.02° (sec lat) heading accuracy
- 0.01° roll and pitch accuracy
- Fast follow up speed of 900°/sec
- MTBF inertial sensors (RLG and accelerometer) > 400,000 hours
- Lightweight aluminium housing
- Transport approved rechargeable Li-ion battery back-up option
- Dedicated connection for optional Sonardyne supplied pressure sensor
- 8 GB internal memory allows post processing and remote diagnostics
- Ethernet and serial interfaces

Specifications

SPRINT OEM INS



Performance		SPRINT 300 OEM	SPRINT 500 OEM	SPRINT 700 OEM
Heading		0.05° secant latitude	0.04° secant latitude	0.02° secant latitude
INS Initialisation		Instantaneous		
Roll and Pitch		0.01°		
INS Aiding Supported		USBL, Depth, DVL, Zero Velocity, Manual Position, LBL (position), GNSS		
USBL/LBL Aided		3x precision improvement	3.5x precision improvement	4.5x precision improvement
USBL/LBL and DVL Aided		3 to 7 x precision improvement	4 to 10 x precision improvement	6 to 13 x precision improvement
LBL/DVL Aided		3 cm confined area, 20 cm wide area (dynamic)		
DVL Aided ¹	Typical Survey	0.05%	0.03%	0.02%
	Distance from Origin	0.15%	0.10%	0.08%
DVL Aiding Loss/Drift ¹		1.2 m over 1 minute, 5 m over 2 minutes	0.8 m over 1 minute, 3.2 m over 2 minutes	<0.5 m over 1 minute, 2 m over 2 minutes
Station Keeping		<1 m over 24 hours (Syrinx DVL)		
Power				
Power Requirement		20–50 V dc, 15 W nominal (35 W maximum with optional external battery)		
Power Pass Through		3x for external aiding sensors (up to 3 A per sensor)		
Back Up Battery Type/Life		Li-ion/5 minutes (optional back-up battery available)		
Data/Comms				
Data Storage		8 GB internal memory		
Serial Ports/Protocol		4x RS232 or RS485		
Other Ports		Ethernet, 4x Triggers		
Output Rate		Up to 100 Hz		
Output Telegrams ²		Industry standard AHRS/INS telegrams including acceleration and rotation rates		
Mechanical				
Connectors		4x Molex Microfit		
Mechanical Construction		Aluminium		
Dimensions (Diameter x Height)		188 x 155 mm		
Weight in Air ³		7.0 kg		
Environmental				
Operating Temperature		-20 to +55°C		
Storage Temperature		-20 to +60°C		
Shock Rating		22 g, 11 ms half sine		

¹ CEP50 (assumes use of a high performance DVL such as the Sonardyne Syrinx 600).

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

³ Estimated Weights.