

# Datasheet

## SPRINT-Nav



### Description

SPRINT-Nav is the world's highest performing all-in-one hybrid navigator for all subsea vehicles and survey operations.

The SPRINT-Nav is a turn-key solution combining carefully selected inertial sensors, a Syrnix Doppler Velocity Log (DVL) and a high accuracy pressure sensor into a single housing.

The result is not only the highest performing hybrid navigator but also one of the smallest navigation instruments on the market.

All onboard sensors are optimally integrated to provide seamless operation and unprecedented levels of performance compared with standalone instruments from different vendors.

The unit comes pre-calibrated and requires no additional calibration to achieve unprecedented performance with minimal operational complexity. SPRINT-Nav's inertial dual AHRS & INS algorithm capability is unique in the market and allows for automatic on-board integrity checking between algorithms as well as instantaneous INS start up with North alignment from the on-board AHRS. This capability allows for simultaneous use from one instrument, e.g. AHRS plus DVL for

ROV piloting and INS plus DVL for survey operations.

Tight beam-level DVL aiding for the on-board INS with optimal timing and use of proprietary QC metrics provides higher performance and more reliable navigation in demanding bottom-lock environments. Furthermore, the tight integration also enables unconventional mounting arrangements, i.e. tilting the SPRINT-Nav, enabling vehicle integration previously not possible.

Each DVL transducer is fitted with a full depth-rated water block to ensure protection of the internal components. Combined with beam level aiding the SPRINT-Nav will continue to function even if one of the DVL transducers has been damaged.

SPRINT-Nav can be interfaced using a single connection and/or the internal sensors can be interfaced separately depending on requirements.

Internal battery backup provides continuous on-board navigation and data storage supporting post-mission diagnostics and post-processing, even throughout brownout periods.

Export of SPRINT-Nav is simplified as compared to other separate DVL and INS units. For example, shipping from outside the USA does not require a re-export licence.

### Applications

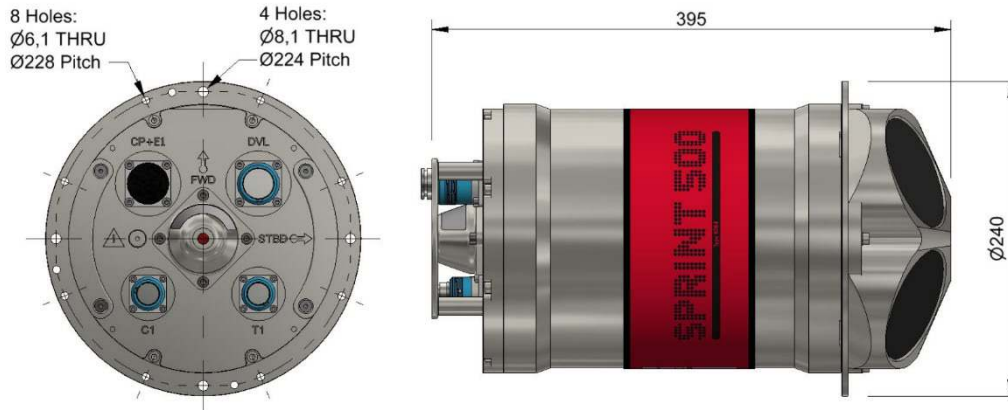
- Any subsea vehicle including AUV, AIV, ROV, Towfish & ROTV
- Ideally suited for autonomous and resident vehicles
- Survey and construction

### Features

- World's highest performing hybrid navigator
- All-in-one turn-key solution
- Dual concurrent AHRS, INS and DVL output capability for multi-use
- Instantaneous INS initialisation from AHRS with no alignment procedure required
- Dual AHRS & INS algorithms enabling internal health check of orientation
- Highly optimised SWaP
- Proven long life and high MTBF inertial sensors from trusted long-term US supplier
- Remote diagnostics and performance verification
- Fully water blocked DVL endcap protecting internal electronics
- 0.4–175 m bottom track operating range
- Export is not ITAR controlled

# Specifications

## SPRINT-Nav



Performance		SPRINT-Nav 300	SPRINT-Nav 500	SPRINT-Nav 700
DVL Aided <sup>1</sup>	Typical Survey	0.04%	0.02%	0.01%
	Distance From origin	0.12%	0.07%	0.05%
DVL Aiding Loss/Free Inertial Drift <sup>1</sup>		1.2 m over 1 min 5.0 m over 2 mins	0.6 m over 1 min 2.4 m over 2 mins	0.5 m over 1 min 2.0 m over 2 mins
USBL Aided		3 x precision improvement	3.5 x precision improvement	4.5 x precision improvement
USBL/DVL Aided		3 to 7 x precision improvement	4 to 10 x precision improvement	6 to 13 x precision improvement
Station Keeping		<1 m over 24 hours	<1 m over 24 hours	<1 m over 24 hours
LBL/DVL Aided		3 cm confined area, 20 cm wide area (dynamic)		
'Synthetic' LBL Aided		<25 cm @ 200 m distance to single transponder	<20 cm @ 200 m distance to single transponder	<15 cm @ 200 m distance to single transponder
INS/AHRS Heading (Secant Latitude)		0.05° (INS) 0.20° (AHRS)	0.04° (INS) 0.10° (AHRS)	0.02° (INS) 0.08° (AHRS)
AHRS/INS Roll and Pitch		0.01°		
Pressure Sensor		0.01% FS removable module		
<b>Power</b>				
Power Requirements			20–50 V dc, 15 W nominal, 35 W max	
Internal Battery Backup			Li-ion/5 minutes	
<b>Physical / Comms</b>				
Data Storage			8 GB internal memory	
Serial Ports/Protocol			4x RS232 or RS485	
Other Ports			Ethernet, 4 Triggers	
Construction			Titanium	
Diameter x Height		4,000 m	Ø240 x 395 mm	
(including connectors and mounting ring)		6,000 m	Ø240 x 405 mm	
Weight Air/Water <sup>2</sup>		4,000 m	23.9/13.1 kg	
		6,000 m	28.1/17.2 kg	
<b>Environmental</b>				
Depth Rating			4,000/6,000 metres	
Operating Temperature			-5 to 50°C	
Storage Temperature			-25 to 55°C	

<sup>1</sup> CEP50

<sup>2</sup> Estimated Weights