

Datasheet

SPRINT-Nav U/UX



SPRINT-Nav U is the world's smallest hybrid acoustic-inertial navigator, built on over a decade's experience gained with SPRINT-Nav.

SPRINT-Nav U has been designed to address a clear market need in smaller marine robotic platforms and towfish to provide accurate, precise and robust guidance and navigation information down to 1000 m depth.

SPRINT-Nav U empowers small ROVs, AUVs and towfish to conduct full geophysical survey and inspection in challenging environments, where previously accurate and reliable navigation was not possible.

A high performance UX variant is available for missions where you need improved heading or positioning performance for better deliverables or reduced error when on target.

SPRINT-Nav U combines carefully selected inertial sensors, a Syrinx Doppler Velocity Log (DVL) and a high accuracy pressure sensor into a single housing and is ultra optimised for size, weight and power consumption.

Like all SPRINT-Nav products, SPRINT-Nav U optimises information from its combined sensors to provide seamless operation and unprecedented levels of performance compared with standalone instruments.

SPRINT-Nav U uses Fibre Optic Gyro (FOG) technology to find North and is completely unaffected by proximity to ferrous objects.

SPRINT-Nav U outputs industry standard messages for command and control of your marine robotic platform, making integration straightforward.

SPRINT-Nav U provides survey grade velocity, depth and altitude which is free from noise and immune to short term DVL acoustic outages. Being able to provide these messages, including quality metrics, at a constant output rate of up to 200 Hz drastically improves vehicle control.

The compact, one package, form factor is smaller than any other true north seeking combination available in the market.

As is standard across the whole SPRINT-Nav family, it comes pre-calibrated offering minimal operational complexity. Various mounting options provide deployment flexibility.

An easy-to-use Web UI provides an intuitive dashboard viewer as well as configuration and detailed status pages for integration and troubleshooting. A clearly defined API allows for deep integration into vehicle control systems and remote operation of the system.

SPRINT-Nav U unlocks the potential to deliver big performance from small vehicles, delivering true geo-referenced data in applications that have previously been unreachable with such vehicles.

Typical applications

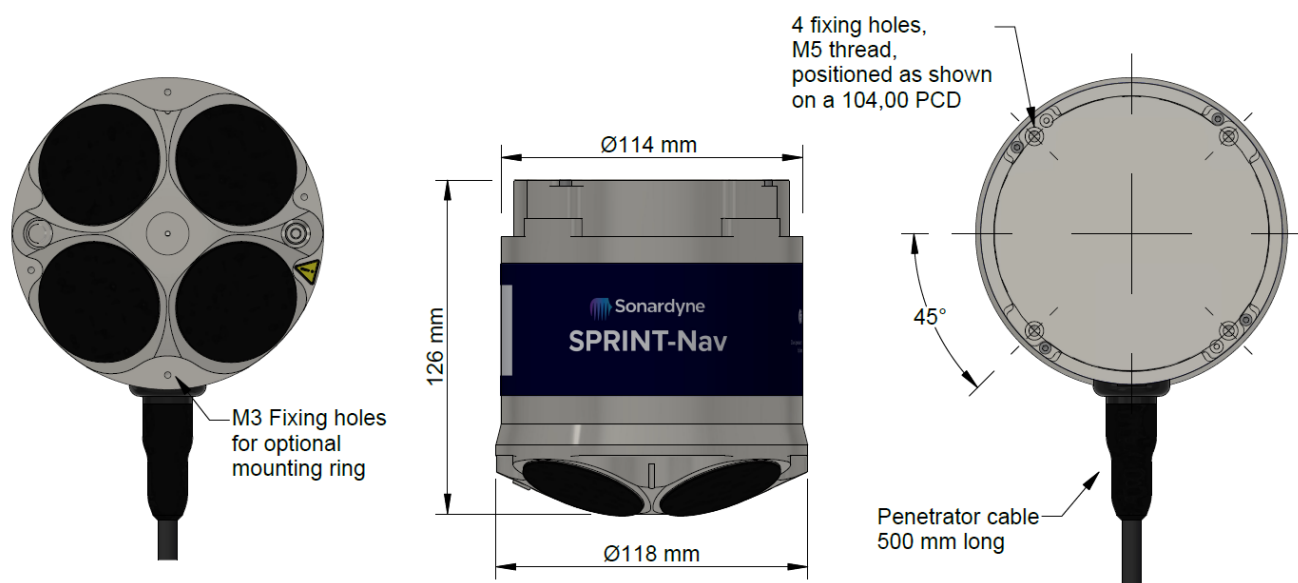
- Optimised for AUVs
- Ideal for increasing the capabilities of Observation-class ROVs
- Improved navigation for towed platforms manned submersibles and diver navigation boards

Key features

- World's smallest hybrid acoustic-inertial navigator
- Two performance options; U and high-performance UX
- True North seeking
- Survey grade sensor suite
- Ability to disable onboard logging
- All-in-one turn-key solution
- Highly optimised size, weight and power
- Fixed frequency guidance and navigation outputs
- Factory calibrated
- 500 kHz DVL
- 0.3–100 m bottom track operating altitude
- Intuitive web UI
- Direct DVL and pressure output alongside INS outputs
- Modern API and common interface to whole SPRINT-Nav family
- Export is not ITAR controlled
- World's fastest aligning subsea navigator (within 5 minutes)

Specifications

SPRINT-Nav U/UX



Performance		SPRINT-Nav U	SPRINT-Nav UX
DVL aided ¹	Typical survey	0.1%	0.05%
	Distance from origin	0.45%	0.3%
Altitude min/max ²		0.3/100 m	
USBL/GNSS and DVL aided	Precision improvement	Up to 4x better	Up to 5x better
Heading ³ (secant latitude)	with GNSS or USBL, and DVL	0.15°	0.08°
	with GNSS or USBL or DVL	0.2°	0.12°
Roll and pitch		0.02°	0.02°
Angular rate range		±850°/s	±495°/s
Pressure sensor ⁴		0.01% FS	
Power			
Power requirements		24 V dc ±10%, 8 W nominal	
Physical/Comms			
Data storage		64 GB internal memory	
Serial ports/protocol		1 RS232 (available on cable but not Subconn MCIL8F)	
Interfaces		Ethernet, UDP/TCP, WebUI, 1 x trigger inputs/output (1PPS in/out or DVL trigger), NTP, ZDA out	
Mechanical construction		Titanium	
Dimensions (diameter x height)		114/118 x 126 mm (excluding penetrator)	
Weight air/water ⁵		2.3/1.0 kg	
Environmental			
Depth rating		1,000 m	
Operating temperature		-5 to 40°C	
Storage temperature		-25 to 55°C	

¹ All accuracy figures related to time or distance are CEP50, all angular accuracies/heave are 1DRMS. All distance travelled % values assume accurate direct read sound velocity.

² Dependent on bottom type.

³ AHRS performance when static and never aided at correct latitude is 0.8° (secant latitude).

⁴ 0.01% precision, 0.05% accuracy, relative to full scale of sensor, raw pressure available or processed depth by SPRINT-Nav.

⁵ Measured in 20°C fresh water.