TOGSNAV

Subsea Navigation Systems

The Next Generation of Subsea Inertial Navigation with Integrated DVL

TOGSNAV is a comprehensive and fully integrated navigation system for ROVs that builds on the TSS core fibre optic gyro technology and inertial navigation capability by adding a fully coupled and fully integrated Teledyne RDI phased array Pioneer DVL.

Available in three standard heading accuracy variants: 0.1° (TOGSNAV1), 0.3° (TOGSNAV3) and 0.5° (TOGSNAV5) with further options of DVL performance; 600kHz (100m) and 300kHz (275m), as well as an optional XRT (Extended Range Tracking) that offers a 50% increase in bottom tracking range.

Inertial position data is produced using an improved Kalman filter for superior performance, alongside the accurate heading, attitude and heave capabilities. Additional external coupling is available (GPS, USBL and LBL), as well as accepting input from an external depth sensor and sound velocity via an external SVS.

The system benefits from the Pioneer DVL offering BM8 mode, optional XRT, highly accurate time of validity output, and transducer and system health monitoring. It comes with a built-in INS-DVL calibration function, making it easy to perform location-based calibration, whilst removing the need to expensive sea trials, for optimal accuracy.

With an alignment time of 10 minutes offering less downtime and more operational time, the TOGSNAV is built for OEM ROV manufacturers and operators, and with a number of options available, it is highly flexible and is ideally suited to installation on a wide range of ROVs.

PRODUCT FEATURES & BENEFITS

- Three model options; 0.1°, 0.3° and 0.5° sec lat heading to cover all your needs
- Lightweight, high quality 4,000m housing with 600kHz or 300kHz DVL
- Built on the Teledyne RDI Pioneer DVL offering BM8 mode, optional XRT, highly accurate time of validity output, and transducer and system health monitoring
- Choice of depth range: 600kHz (100m), 300kHz (275m)
- Built-in INS-DVL calibration functionality for optimal accuracy
- Additional external coupling; GPS/USBL/LBL
- Based on tried and tested Teledyne TSS fibre optic gyro technology
- Able to accept both external depth sensor and SVS to give better flexibility
- Easy to use common TSS embedded browser interface
- Low power consumption
- Single ROV connection with additional connections for sensor inputs

TELEDYNE MARINE
TSS
Everywhereyoulook™

PRODUCT DATASHEET

TELEDYNE MARINE

TOGSNAV Subsea Navigation Systems

TECHNICAL SPECIFICATIONS

			TOGSNAV1	TOGSNAV3	TOGSNAV5
Performance	Heading accuracy		0.1° secant latitude RMS	0.3° secant latitude RMS	0.5° secant latitude RMS
	Roll & pitch accuracy		0.01° RMS	0.05° RMS	0.05° RMS
	Heave accuracy		5 cm or 5%	5cm or 5% (delayed)	5cm or 5% (delayed)
	Alignment time		10 minutes		
	Angular rate		≥300°/s	≥500°/s	≥500°/s
	Operating latitude		± 80°		
Position *performance aiding sensor dependent	GPS aiding*		factor of 3 improvement	factor of 3 improvement	factor of 3 improvement
	DVL aiding (CEP50)		0.2% distance travelled	0.4% distance travelled	0.6% distance travelled
	No aiding (CEP50)		1.5m after 1 min / 6m after 2 min	5m after 1 min / 20m after 2 min	Not specified
DVL			300kHz or 600kHz Teledyne RD Instruments Pioneer phased array DVL		
Bottom Tracking	Maximum altitude		100m (150m optional) (600kHz) / 275m (400m) (300kHz)		
	Minimum altitude		0.2m (<20cm altitude mode available) (600kHz) / 0.6m (300kHz)		
	Velocity range		±9m/s or ±16m/s on request		
	Long term accuracy		0.2% ±0.1cm/s (600kHz) / 0.4% ±0.1cm/s (300kHz)		
Water Profiling	Range		1.9m to 60m (600kHz) / 4.5m to 150m (300kHz)		
	Velocity range		±12m/s (600kHz) / ±17m/s (300kHz)		
	Long term accuracy		0.3% ±0.1cm/s (600kHz) / 0.6% ±0.1cm/s (300kHz)		
Power	Power supply		18 - 36Vdc		
	Power consumption		22-24W (600kHz) / 31-33W (300kHz) avg.	20-22W (600kHz) / 29-31W (300kHz) avg.	20-22W (600kHz) / 29-31W (300kHz) avg.
Interface	Serial (bi-directional)		3 x configurable RS-232 / RS-422		
	Serial (transmit only)		4 x configurable RS-232 / RS-422		
	Ethernet		10 / 100 MB		
	Data formats		NMEA 0183 / IEC 61162, TSS proprietary and industry standard		
	Aiding inputs		GPS, EM Log, DVL, Depth Sensor, SVS, USBL/LBL		
Physical Characteristics	Dimensions	600kHz DVL	182mm (Ø) x 449mm (h)	182mm (Ø) x 428mm (h)	182mm (Ø) x 428mm (h)
		300kHz DVL	182mm (Ø) x 457mm (h)	182mm (Ø) x 436mm (h)	182mm (Ø) x 436mm (h)
	Weight in air	600kHz DVL	18.2kg	16.9kg	16.9kg
		300kHz DVL	18.6kg	17.4kg	17.4kg
	Weight in water	600kHz DVL	8.5kg	7.7kg	7.7kg
		300kHz DVL	8.7kg	8.0kg	8.0kg
	Rating		4000m rated titanium	4000m rated titanium	4000m rated titanium
Environmental and EMC	Operating temperature		-5°C to +45°C		
	Storage temperature		-30°C to +60°C		
	EMC		Meets or exceeds IEC 60945		
Compliance	Standards		N/A		
	Export		Goods are subject to Strategic Export Control		
Warranty			12 months international warranty including parts and labour		
Scope of Supply			TOGSNAV1 unit	TOGSNAV3 unit	TOGSNAV5 unit
			Power/Data cable (1.5m) (right angle connector)		
			Data/Power Out cable (1.5m)		
Options			INS Power/Data cable up to 20m (right angle connector)		
			Data/Power Out cable up to 20m (right angle connector)		
			Right Angle or Straight Connector option		
			Extended warranty		

TELEDYNE MARINE
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