

## TSS Orion Subsea

Orion INS has been specifically designed for the demanding hydrographic survey, offshore construction and ROV operations markets.

Orion incorporates three single axis ring laser elements and three highly accurate accelerometers. These specific components, widely used in many of the world's commercial aircraft, were chosen for Orion because of availability, accuracy and their very high meantime between failures. These core elements enabled the TSS research and development team to design this high specification Inertial Navigation System which is configured and controlled by the latest easy-to use interface – OrionView.

Orion utilizes the latest version of the TSS inertial algorithm which has over 30 years of pedigree providing outstanding performance in all sea conditions. Orion is offered as an IP65-rated surface unit or 3000m-rated subsea unit (6000m optional).

Teledyne TSS offers comprehensive sales and service capabilities through its own personnel in the UK, USA and Asia-Pacific. Its products are further supported by a worldwide network of sales representatives.

- ✓ 0.1° heading with single GPS antenna aiding
- ✓ Heave, 5cm or 5% of range whichever is greater
- ✓ 0.01° roll, pitch
- ✓ Speed and position outputs
- ✓ Latitude and speed corrected
- ✓ IMU raw data outputs
- ✓ RLG MTBF of 300,000 hours
- ✓ Three configurable I/O Channels
- ✓ Easy set-up using OrionView software
- ✓ Surface and subsea (aluminium or titanium) options



# Orion INS

## Technical Specifications

<b>Heading</b>	Dynamic Accuracy - GPS Aided	0.1° sec/lat RMS	
	Dynamic Accuracy – Unaided	0.15° sec/lat RMS	
	Resolution	0.01° (or as dictated by the O/P packet format)	
	Settling time	15 minutes or less	
	Heading Data Latency	< 3 ms	
<b>Roll &amp; Pitch</b>	Range	± 90°	
	Accuracy	0.01°	
	Resolution	0.01°	
	Limits	None	
	Axis alignment	< 0.005°	
<b>Heave</b>	Data Latency	< 3 ms	
	Accuracy	5cm or 5% whichever is greater	
	Bandwidth	0.05-10 Hz	
	Range	± 99 m	
	Resolution	1 cm	
<b>Position</b>	Free Inertial	< 5 nautical miles/hour	
<b>Data Parameters</b>	Serial Outputs	3 configurable I/O Channels	
	Data Protocols	RS232 and RS422	
	Data output rate	Up to 200 Hz	
	Baud Rate	1200 – 38,400	
	Data Bits	7 or 8	
	Stop Bits	1 or 2	
	Parity	None, even or odd	
	Data output formats	TSS1, TSS HHRP, TSS1 + NMEA HDT, TSS1 with remote heave, TSS3, Simrad EM1000, Simrad EM1000 with remote heave, Simrad EM3000, Simrad EM3000 with Remote Heave, Atlas, NMEA PRDID, BMT1, Polled, GGA, VTG, User Configurable.	
	<b>Raw Data Output Aiding</b>	Rates & Accelerations	Fully corrected at 100 Hz
		GPS	NMEA 0183 GGA and VTG
<b>Environmental</b>	Ambient operating temperature	-10°C to +55°C operational, -20°C to +70°C storage	
	Shock (survival)	22g	
	Housing:	Surface IP65 rated Cast Aluminium Subsea 3000m Aluminium Subsea 3000m Titanium	
<b>Physical</b>	Dimension:	Surface 380 mm (l) x 240 mm (w) x 180 mm (h) including connectors Subsea 3000m (aluminium) 242mm (d) x 390mm (h) (including connector) Subsea 3000m (titanium) 229mm (d) x 366.5mm (including handles)	
	Weight:	Surface 3000m 13kg Subsea 3000m (aluminium) 20 Kg in air; 6.5 Kg in water Subsea 3000m (titanium) 26 Kg in air; 12.8 Kg in water	
	<b>Electrical</b>	Power requirement	18-36V DC
		CE	
	<b>Regulatory Approval</b>	System	>30,000 hours
MTBF:		RLGs and Accelerometers >300,000 hours	

Due to continuous development, specifications may vary from those listed above.