



# The Latest Generation of Marine Navigation Systems

The Saturn fibre optic gyrocompass capitalises on more than a century's experience in marine navigation. Teledyne TSS' own experienced and innovative engineering team has combined the latest solid state technologies and calibration techniques to offer a user-friendly, highly accurate and cost-effective navigation solution for demanding marine environments.

The Saturn product range has been designed by TSS to provide a range of versatile attitude and heading reference, and inertial navigation systems for both surface and subsea applications. The lightweight, compact and highly reliable units have no moving parts and are maintenance free, making them ideal for all sizes of surface vessel and subsea vehicle.

Applications for the Saturn product range include navigation for fast ferries and yachts; subsea positioning for autonomous underwater, and remotely operated vehicles; attitude and heading references for dynamically positioned platforms; full attitude data for hydrographic survey vessels and much, much more.



## FEATURES & BENEFITS

- Heading, pitch, roll and heave outputs
- Full inertial position from Saturn 10
- Easy to use Saturn web interface
- Compatible with GPS, DVL, USBL and LBL
- Raw output data format supported
- Subsea titanium rated to 4000m as standard



## Navigation Systems

Saturn is the new fibre optic-based range of inertial navigation, and attitude and heading reference systems developed and manufactured by Teledyne TSS.

### APPLICATIONS

- Fast Ferries
- Yachts
- Workboats
- Survey Vessels
- Remotely Operated Vehicles
- Autonomous Underwater Vehicles



*Saturn 10  
Surface*



*Saturn 10  
Subsea*

The Saturn 10 surface and subsea systems are designed to support the offshore construction and multibeam survey industries where reliability, price and performance are essential.

The systems provide highly accurate pitch, roll, heading and heave and are suitable for a variety of applications including major seabed installations.





Saturn 30  
Surface

The Saturn 30 Surface system is designed as a solid state attitude and heading reference system (AHRS) and primary navigation sensor. The unit has no moving parts and is maintenance free – it is also lightweight, compact and highly reliable – ideal for installations where space is at a premium. It is a flexible system for all sizes of vessel and excels on smaller craft such as fast ferries, yachts and patrol craft.



Saturn 30  
Subsea



The Saturn 30 Subsea, is primarily designed for subsea ROV navigation.

All subsea versions are housed in 4000m rated titanium casings ensuring durability, reduced weight and size, and reduced corrosion when compared to aluminium casings.





## TECHNICAL SPECIFICATIONS

		SATURN 30	SATURN 10	
<b>Performance</b>	Heading	<0.3° secant latitude RMS	<0.1° secant latitude RMS	
	Roll and pitch	<0.2° (0.05° typical)	0.01°	
	Heave		5cm or 5%	
	Position	GPS / USBL / LBL		> 2 times improvement
		DVL		0.2% distance travelled
		No aiding		0.5m after 30s, 50m after 5 mins, 1nm / hour
	Alignment time	15 minutes (typical)		
	Angular rate	> 300°/s	> 200°/s	
	Operating latitude	± 80°		
	Operating speed	0 to 90 knots		
<b>Power</b>	Power supply	18 to 36Vd.c.		
	Power consumption	< 18W		
<b>Interface</b>	Surface	4 x configurable bi-directional RS-232 / RS-422		
		4 x configurable transmit only RS-232 / RS-422		
		1 x Ethernet		
		1 PPS		
		Status / Alarm relay contacts		
	Subsea	4 x bi-directional RS-232 / RS-422	4 x bi-directional RS-232 / RS-422	
		1 x Ethernet	4 x transmit only RS-232 / RS-422	
1 PPS		1 x Ethernet		
Data formats	NMEA 0183 / IEC61162			
	TSS proprietary and Industry standard			
<b>Physical</b>	Dimensions	Surface	179.5mm (H) x 165mm (W) x 366mm (D)	
		Subsea	142mm (φ) x 290mm (H) 169.5mm (φ) x 316mm (H)	
	Weight Air (water)	Surface	5kg	6kg
		Subsea	10.3kg (5.4kg)	15kg (7.4kg)
	Rating	Surface	IP64	IP66
		Subsea	4000m titanium	
<b>Environmental and EMC</b>	Operating temperature	-20 to +55°C		
	Environmental	Meets or exceeds IEC60945		
	EMC	Meets or exceeds IEC60945		
<b>Compliance</b>	Standards	Designed to meet EU Marine Equipment Directive, US Coast Guard recognised, IMO Resolutions, IEC 60945, IEC61162, IEC62288, ISO8728, ISO16328		
	Export	ECCN 7A003 (EAR re-export regulations do not apply outside of the USA)		
<b>Warranty</b>		12 months international warranty including parts and labour.		

COMPANY WITH  
MANAGEMENT SYSTEMS  
CERTIFIED BY DNV  
= ISO 9001 =  
= ISO 14001 =

Specifications subject to change without notice.  
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