

# MARINUS

## RLG Attitude & Heading Reference System



Designed to provide highly accurate heading, heave, roll and pitch, MARINUS, attitude and heading reference system (AHRS), is an easy to use, install and configure stand-alone unit.

Users of multibeam systems require reliable attitude data and a well-supported product. VT TSS has designed the MARINUS product to meet this demanding requirement for high accuracy, fast output rate and limitless motion within a small, light, rugged and competitively priced package.

Based around a proven ring laser gyroscope (RLG), the MARINUS offers outstanding accuracy in all dynamics, allowing the very best results from multibeam systems.

The industry renowned TSS real-time and delayed heave algorithms are utilised by the unit, giving accurate heave measurements in all conditions, including long-period, open-ocean swells. A Windows™ based display and control software (DCS) is supplied with the MARINUS allowing interface and set up of the unit for project integration.

MARINUS has a flexible mounting arrangement (vertical/horizontal) and is depth rated to 3000m as standard for pole-mounted sonar heads and ROV operations. An optional 6000m unit is also available for deeper projects.

Due to the high accuracy of the RLG element used (drift rates of 0.05° per hour) the unit is capable of measuring earth rotation directly leading to accurate heading without the requirement of a further rigid dual GPS antenna installation on the vessel. As MARINUS incorporates highly accurate solid state sensing elements, the unit is maintenance free (no moving parts).

VT TSS is renowned for strong and responsive customer support. With a worldwide agent and representative network, as well as three regional offices, VT TSS is able to support clients in a timely and effective manner, no matter of their location.

MARINUS is the ideal product for high accuracy motion compensation with the quality support that customers deserve.

### Features:

- Innovative design with state-of-the-art ring laser INS
- Highly accurate heave, roll, pitch and heading in all dynamics
- TSS delayed heave algorithm for survey in long period swells
- Small, lightweight and versatile
- Less than 5 minute settling time
- 0.1° heading accuracy
- 0.03° roll and pitch accuracy.
- Dynamic turn rates of up to 1000° per second
- 3000m depth rated as standard, 6000m depth rating optional
- Strapdown INS algorithm
- TSS real time heave filter algorithm
- No attitude limitations to motion, can be rotated full 360° in any orientation
- Maintenance free, due to the solid- state sensing elements

### Benefits:

- Fast and simple unit installation
- Intuitive and fast unit interface / set-up software DCS
- VT TSS worldwide support
- IHO Class 1 standard
- No moving parts
- 2 Channel RS232/RS422 output
- No temperature related system degradation
- No additional GPS antennas to install



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TECHNICAL SPECIFICATIONS		
Heading	Resolution	0.01° (or as dictated by the O/P packet format)
	Settle point error	<±0.1° RMS secant latitude
	Static error	<±0.05° RMS secant latitude
	Dynamic accuracy	<±0.1° RMS secant latitude
	Settle point repeatability	<±0.1° RMS secant latitude
	Follow-up speed	1000° / second
	Settling time	< 5 minutes or less to within 0.1°
	Heading Data Latency	< 5 mS
Roll and Pitch	Resolution	0.01° (or as dictated by the O/P packet format)
	Range	± 90°
	Accuracy	0.025°
	Limits	None
	Axis alignment	< 0.005°
	Data Latency	< 3 mS
Heave	Accuracy (real time)	5cm or 5% whichever is greater
	Bandwidth	0.05-10 Hz real time, 0.03-10 Hz delayed
	Range	± 99m
	Resolution	1cm
Compensation	Latitude	80N to 80S
	Speed	0 – 90 Knots
Data Output Parameters	Data Protocols	RS232 and RS422
	Data output rate	Up to 50 Hz
	Baud Rate	1200 – 38400
	Data Bits	7 or 8
	Stop Bits	1 or 2
	Parity	None, even or odd
	Data output formats	TSS1, TSS2 (delayed heave), 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, User Configurable.
Environmental	Ambient operating temperature	-10°C to +55°C operational, -20°C to +70°C storage
	Shock (survival)	10g
	Housing	3000m Standard (6000m optional)
Physical	Dimensions	186 mmø x 283 mm length (excluding connector and mounting bracket)
	Weight	9kg in air, 2kg in water
	Finish	Black hard anodised aluminium.
Electrical	Power requirement	18-32V DC, 35W max, reverse polarity protection
Regulatory Approval	CE Marked	
Warranty	12 months international warranty including parts and labour	
Due to continuous development, specifications may vary from those listed above.		



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