



**ADVANCED
NAVIGATION**

ORIENTUS MEMS AHRS

Orientus is a ruggedised miniature sensor and AHRS that provides accurate orientation under the most demanding conditions. It combines temperature calibrated accelerometers, gyroscopes and magnetometers in a sophisticated fusion algorithm to deliver accurate and reliable orientation.



PERFORMANCE

 0.2 ° Roll and Pitch

 3 °/hr MEMS Gyroscope

 2000 g Shock Limit

 0.5 ° Heading

 1000 Hz Update Rate

FEATURES



HIGH UPDATE RATE

Orientus's internal filter runs at 1000Hz and data can also be output at this rate over high speed RS232. This allows for control of

dynamically unstable platforms and makes Orientus virtually immune to vibration.



MINIATURE RUGGED ENCLOSURE

Orientus's precision marine grade aluminium enclosure is waterproof and dirtproof to the IP68 standard and shockproof to 2000g, allowing it to be used in the most extreme conditions. It's minimal size, weight and power requirements allow for easy integration into almost any system.



RELIABILITY

Orientus has been designed from the ground up for mission critical control applications where reliability is very important. It is built on top of a safety oriented real time operating system and all software is designed

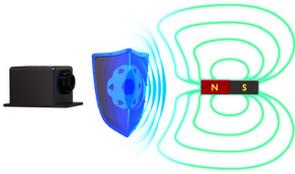
and tested to safety standards with fault tolerance in mind. The hardware is protected from reverse polarity, overvoltage, surges, static and short circuits on all external interfaces.



LINEAR ACCELERATION COMPENSATION

Orientus uses an innovative algorithm to compensate for linear accelerations. This allows Orientus to maintain accurate roll and pitch through short

term linear accelerations that typically cause significant errors in competitors systems. For long term linear accelerations Orientus supports the addition of an external GNSS receiver for full linear acceleration compensation.



MAGNETIC INTERFERENCE MITIGATION

Orientus's advanced filter is able to detect when there is magnetic interference present and ignore magnetic data until the interference disappears. This allows Orientus to maintain accurate heading through periods of magnetic interference.



CALIBRATED DYNAMIC RANGING SENSORS

Orientus contains very high performance MEMs inertial sensors. These are put through Advanced Navigation's intensive calibration process to increase their performance further still and provide consistently accurate data over an extended temperature range of -40°C to 85°C . Advanced Navigation's custom calibration process is the only full sensor calibration that can provide dynamic ranging, allowing the user to select a sensor range for high accuracy or high accelerations on the fly. As part of this calibration, every Orientus unit spends 8 hours in our specially built rotating temperature chamber.

SPECIFICATIONS

ORIENTATION

Roll & Pitch Accuracy (Static)	0.2 °
Heading Accuracy (Static)	0.5 °
Roll & Pitch Accuracy (Dynamic)	0.6 °
Heading Accuracy (Dynamic)	1.0 °
Orientation Range	Unlimited
Internal Filter Rate	1000 Hz
Output Data Rate	Up to 1000 Hz
Latency	0.3 ms

HARDWARE

Operating Voltage	4 to 36 V
Input Protection	± 60 V
Power Consumption	0.325 W
Operating Temperature	-40°C to 85°C
Environmental Protection	IP68 MIL-STD-810G
MTBF	380,000 hrs
Shock Limit	2000 g
Dimensions (excluding tabs)	30 x 30 x 24 mm
Dimensions (including tabs)	30 x 40.6 x 24 mm
Weight	25 grams

SENSORS

SENSOR	ACCELEROMETERS	GYROSCOPES	MAGNETOMETERS
Range (dynamic)	± 2 g ± 4 g ± 16 g	± 250 °/s ± 500 °/s ± 2000 °/s	± 2 G ± 4 G ± 8 G
Bias Instability	20 ug	3 °/hr	-
Initial Bias	< 5 mg	< 0.2 °/s	-
Initial Scaling Error	< 0.06 %	< 0.04 %	< 0.07 %
Scale Factor Stability	< 0.06 %	< 0.05 %	< 0.09 %
Non-linearity	< 0.05 %	< 0.05 %	< 0.08 %
Cross-axis Alignment Error	< 0.05 °	< 0.05 °	< 0.05 °
Noise Density	100 ug/√Hz	0.004 °/s/√Hz	210 uG/√Hz
Bandwidth	400 Hz	400 Hz	110 Hz

COMMUNICATION

Interface	RS232
Speed	4800 to 1M baud
Protocol	AN Packet Protocol, NMEA or TSS
Peripheral Interfaces	2x GPIO and Auxiliary RS232
GPIO Level	5 V
GPIO Functions	NMEA input/output Novatel input AN Packet Protocol input/output Magnetometers disable Set zero orientation Packet trigger u-blox input TSS output Custom (contact us)