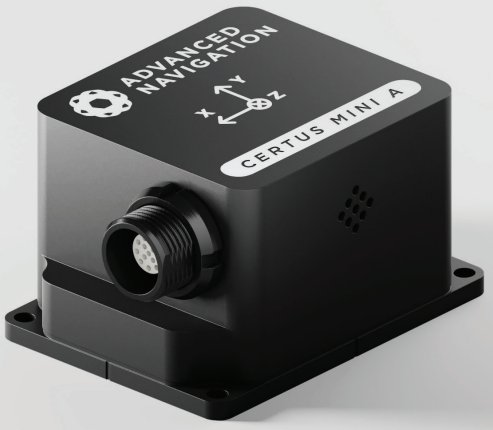
ADVANCED NAVIGATION



CERTUS MINI A
MEMS IMU/AHRS

Certus Mini A combines temperature-calibrated accelerometers, gyroscopes, and magnetometers.

These are coupled in an AI-based fusion algorithm to deliver accurate and reliable orientation data. The Certus Mini A features low SWaP-C (Size, Weight, Power and Cost) and multiple communication interfaces for easy integration.

It is available in both rugged and OEM packages.

ITAR FREE

PERFORMANCE

- 0.1 ° Roll and Pitch
- 0.8 ° Heading (Magnetic)
- 1000 Hz Update Rate

KEY FEATURES

- High Performance Tactical Grade IMU
- Low SWaP-C
- Rugged & OEM options

APPLICATIONS

AIR
- UAV Orientation
- Stabilisation & Pointing

LAND
- Human Movement
- Stabilisastion & Pointing
- Robotics Control

SEA
- AUV Orientation
- ROV Orientation

v1.0 September 2024

FEATURES

AI NAVIGATION ALGORITHM

The Certus Mini range features Advanced Navigation's revolutionary AI neural network sensor fusion algorithm.

This provides accuracy levels up to 10 times that of a traditional Kalman filter.

The algorithm was designed for control applications and has a high level of health monitoring and instability prevention to ensure stable and reliable data.

HIGH PERFORMANCE MEMS

The Certus Mini range contains high performance MEMS sensors that are put through Advanced Navigation's intensive 8 hour temperature calibration process.

This provides the highest accuracy possible from this sensor class and outputs consistent accuracy over the full temperature range from -40°C to 85°C.

RELIABILITY

The Certus Mini range has been designed from the ground up for mission-critical control applications where reliability is essential.

Built using a safety-oriented real-time operating system, all software is designed and tested to high safety standards with fault-tolerance in mind.

The Certus Mini range is designed, manufactured and tested to military standards.

LINEAR ACCELERATION COMPENSATION

Certus Mini uses an innovative algorithm to compensate for linear accelerations.

This allows Certus Mini to maintain accurate roll and pitch through short term linear accelerations that typically cause significant errors in competitors systems.

For long term linear accelerations Certus Mini supports the addition of an external GNSS receiver for full acceleration compensation.

EXTENSIVE INTEROPERABILITY

Certus Mini seamlessly communicates with a wide range of industry standard protocols including NMEA 0183 and CANOpen making it easy to integrate into existing systems.

Certus Mini effortlessly interfaces with ROS 1, ROS 2, and Ardupilot, streamlining your development processes for maximum efficiency and effectiveness.

SPECIFICATIONS

ORIENTATION

Roll & Pitch Accuracy	0.1 °
Heading Accuracy (Magnetic Only)	0.8 °
Orientation Range	Unlimited
Hot Start Filter Initialisation	1 s
Output Data Rate	Up to 1000 Hz

HARDWARE

Operating Voltage (Rugged)	5 to 36 V
Operating Voltage (OEM)	5 V
Power Consumption (typical) (Rugged)	0.5 W
Power Consumption (typical) (OEM)	0.18 W
Hot Start Battery	Yes
Operating Temperature (MIL-STD-810H 502.7)	-40 °C to 85 °C
Ingress Protection (IEC 60529) (Rugged)	IP67
Shock Limit (IEC 60068-2-27)	150 g, 6 ms
Shock Limit (MIL-STD-810H 516.8)	40 g, 11 ms
Vibration Limit (MIL-STD-810H 514.8)	7.7 g RMS
Dimensions (Rugged)	30 x 41 x 24 mm
Dimensions (OEM)	25 x 25 x 8 mm
Weight (Rugged)	38 grams
Weight (OEM)	7 grams

COMMUNICATION

Interface (Rugged)	Primary RS232/RS422 Auxiliary RS232 CAN 2x GPIO
Interface (OEM)	Primary & Auxiliary UART CAN 2x GPIO
Protocols and Functions	Digital Input / Output Frequency Input AN Packet Protocol (ANPP) NMEA GNSS CANOpen

SENSORS

	ACCELEROMETERS	GYROSCOPES	MAGNETOMETERS
Range (dynamic)	± 2 g ± 4 g ± 16 g	± 250 °/s ± 500 °/s ± 2000 °/s	± 8 G
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
Random Walk	58 mm/sec/√hr VRW	0.24 °/√h ARW	-
Bandwidth	400 Hz	400 Hz	110 Hz

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