Certus Evo is an AI based GNSS-aided INS that provides extremely accurate position, velocity, acceleration and orientation under the most demanding conditions.

It offers FOG-like performance combined with the reliability and affordability of MEMS sensors. It features low SWaP-C (Size, Weight, Power and Cost), internal data logging and multiple communication interfaces for easy integration.

Certus Evo is available in both OEM and rugged packages, and comes standard with license free 10 mm RTK position accuracy.

PERFORMANCE

- 0.03 ° Roll and Pitch
- 0.05 ° Heading
- 10 mm RTK Positioning
- 0.2 °/hr MEMS Gyroscope
- 1000 Hz Update Rate

KEY FEATURES

- Dual Antenna Heading
- Free Multi-Constellation RTK
- Ethernet, CAN, RS232, etc.
- Internal Data Logging
- OEM or Rugged options

APPLICATIONS

AIR
- UAV Geopointing
- UAV Lidar
- Stabilisation & Pointing

LAND
- Gimbal Stabilisation
- Structural Monitoring
- Vehicle Navigation

SEA
- AUV Navigation
- ROV Navigation
- Hydrography
Certus Evo features some of the highest accuracy MEMS accelerometers and gyroscopes currently available.

Certus Evo’s inertial performance exceeds some FOG IMUs and is up to 10x smaller and 10x cheaper.

Certus Evo is put through Advanced Navigation’s intensive calibration process to provide consistently accurate data over an extended temperature range of -40°C to 85°C.

Certus Evo features multiple interfaces including Ethernet, CAN, RS232, RS422 and GPIOs.

Certus supports all the industry standard protocols including NMEA 0183, NMEA 2000, TSS, PASHR, Simrad as well as a wide variety of proprietary protocols. It features a rich web UI and 256GB of internal logging.
### SPECIFICATIONS

#### NAVIGATION
- **Horizontal Position Accuracy**: 1.2 m
- **Vertical Position Accuracy**: 2.0 m
- **Horizontal Position Accuracy (with SBAS)**: 0.5 m
- **Vertical Position Accuracy (with SBAS)**: 0.8 m
- **Horizontal Position Accuracy (with RTK or Kinematica PPK)**: 0.01 m
- **Vertical Position Accuracy (with RTK or Kinematica PPK)**: 0.015 m
- **Velocity Accuracy**: 0.05 m/s
- **Roll & Pitch Accuracy**: 0.03 °
- **Heading Accuracy (1m Antenna Separation)**: 0.05 °
- **Roll & Pitch Accuracy (Kinematica post processing)**: 0.01 °
- **Heading Accuracy (Kinematica post processing)**: 0.01 °
- **Slip Accuracy**: 0.1 °
- **Heave Accuracy (whichever is greater)**: 5 % or 0.05 m
- **Range**: Unlimited
- **Hot Start Time**: 500 ms
- **Cold Start First Fix**: 30 s
- **Horizontal Position Accuracy**: 1.2 m
- **Horizontal Position Accuracy (with SBAS)**: 0.5 m
- **Horizontal Position Accuracy (with RTK)**: 0.01 m
- **Velocity Accuracy**: 0.05 m/s
- **Timing Accuracy**: 20 ns
- **Acceleration Limit**: 4 g

#### GNSS
- **Model**: Advanced Navigation Aries
- **Supported Navigation Systems**: GPS L1, L2, GLONASS L1, L2, GALILEO E1, E5b, BeiDou B1, B2
- **Supported SBAS Systems**: WAAS, EGNOS, MSAS, GAGAN, QZSS
- **Update Rate**: Up to 20 Hz
- **Hot Start First Fix**: 3 s
- **Cold Start First Fix**: 30 s
- **Horizontal Position Accuracy**: 1.2 m
- **Horizontal Position Accuracy (with SBAS)**: 0.5 m
- **Horizontal Position Accuracy (with RTK)**: 0.01 m
- **Velocity Accuracy**: 0.05 m/s
- **Timing Accuracy**: 20 ns
- **Acceleration Limit**: 4 g

#### COMMUNICATION
- **Interface (Rugged)**: Ethernet, RS232 / RS422, CAN
- **Interface (OEM)**: Ethernet, UART, CAN
- **Speed**: 100Mbit
- **Protocol**: 4800 to 4M baud serial
- **Peripheral Interface**: 2x GPIO, 1x Auxiliary RS232
- **GPIO Level**: 5 V or RS232
- **GPIO Functions**: 1PPS input / output, Odometer, Stationary, Air data input, NMEA input / output, Novatel GNSS input, Trimble GNSS input, AN Packet Protocol, CAN / CANopen, Event trigger

#### HARDWARE
- **Operating Voltage (Rugged)**: 9 to 36 V
- **Operating Voltage (OEM)**: 9 to 30 V (or 5 V)
- **Input Protection (Rugged only)**: -40 to 100 V
- **Power Consumption (typical)**: 2.9 W
- **Hot Start Battery Capacity**: > 48 hrs
- **Hot Start Battery Charge Time**: 30 mins
- **Hot Start Battery Endurance**: > 10 years
- **Operating Temperature**: -40 °C to 85 °C
- **Environmental Protection (Rugged only)**: IP67, MIL-STD-810G
- **MTBF**: 140,000 hrs
- **Shock Limit**: 2000 g
- **Vibration Limit**: 8 g
- **Dimensions (Rugged)**: 78 x 115 x 44 mm
- **Dimensions (OEM)**: 75 x 101.5 x 40.2 mm
- **Weight (Rugged)**: 300 grams
- **Weight (OEM)**: 125 grams

#### SENSORS

<table>
<thead>
<tr>
<th>SENSOR</th>
<th>ACCELEROMETERS</th>
<th>GYROSCOPES</th>
<th>MAGNETOMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>± 10 g</td>
<td>± 475 °/s</td>
<td>± 8 G</td>
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<tr>
<td>Bias Instability</td>
<td>8 µg</td>
<td>0.2 °/hr</td>
<td>-</td>
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<tr>
<td>Initial Bias</td>
<td>&lt; 0.45 mg</td>
<td>&lt; 3 °/hr</td>
<td>-</td>
</tr>
<tr>
<td>Initial Scaling Error</td>
<td>&lt; 0.03 %</td>
<td>&lt; 0.02 %</td>
<td>&lt; 0.07 %</td>
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<tr>
<td>Scale Factor Stability</td>
<td>&lt; 0.04 %</td>
<td>&lt; 0.03 %</td>
<td>&lt; 0.09 %</td>
</tr>
<tr>
<td>Non-linearity</td>
<td>&lt; 0.05 %</td>
<td>&lt; 0.03 %</td>
<td>&lt; 0.08 %</td>
</tr>
<tr>
<td>Cross-axis Alignment Error</td>
<td>&lt; 0.05 °</td>
<td>&lt; 0.05 °</td>
<td>&lt; 0.05 %</td>
</tr>
<tr>
<td>Noise Density</td>
<td>2 ug/√Hz</td>
<td>6 °/hr/√Hz</td>
<td>210 uG/√Hz</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>250 Hz</td>
<td>200 Hz</td>
<td>110 Hz</td>
</tr>
</tbody>
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