Ellipse Series

Ellipse-N/D

GNSS-aided Inertial Navigation Systems

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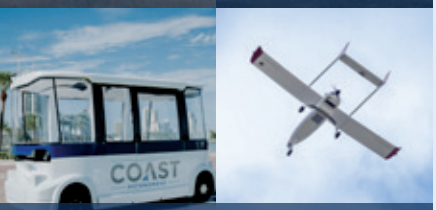
Compact and Robust Inertial Sensors for Reliable Navigation

No Export Restriction

2-year Warranty

Vehicle Positioning



Autonomous Navigation

Motion Monitoring & compensation

The Ellipse INS series combines Inertial Measurement Unit (IMU) with GNSS and external sensors using our advanced **fusion** algorithm, delivering accurate **position** and **orientation**, even in challenging environments.

- Robust L1/L2 RTK capable
- ARDUPILOT, ROS, pixhawk — Compatible drivers
- Vibration resilient
- Built-in magnetometer
- **Reliability & Robustness**
- Auto-adjusting heave
- External sensors input
- Dead reckoning capable
- Spoofing & Jamming mitigation OSNMA capable

SBG SYSTEMS | Motion & Navigation you can trust

ISO 9001 BUREAU VERITAS Certification

Specifications

VERSIONS

Box version are IP68, resistant to dust and water. OEM version are PCB mounted for tight integration.

	Ellipse-N		Ellipse-D	
	Box	OEM	Box	OEM
Dual-antenna heading	✕	✕	✓	✓
Dimensions	46 x 45 x 24 mm	29.5 x 25.5 x 16 mm	46 x 45 x 32 mm	29.5 x 25.5 x 16 mm
Weight	47 g	17 g	65 g	17 g

SYSTEM PERFORMANCE

1-sigma error over the full temperature range for a typical land application

Correction	Single point	RTK	PPK[1]
Roll / Pitch	0.1°	0.05°	0.03°
Heading	0.2°	0.2°	0.1°
Horizontal position	1.2 m	0.01 m	0.01 m

[1] *Using Qinertia post processing software*

SENSORS

	Accelerometers	Gyroscopes	Magnetometers
Measurement range	Marine: 8 g Land/Air: 20 g High dynamics: 40 g	Marine: 450°/s Land/Air: 450°/s High dynamics: 1000°/s	50 Gauss
In run bias instability	14 ug	7°/h	1.5 mGauss

INTERFACES

Aidings	GNSS, RTCM, Odometer, DVL, Magnetometers, Air data
Protocols	NMEA, sbgEcom (binary), REST API, third party protocols
Output rate	1 kHz (IMU & INS)
Main Serial Interface	RS-232, RS-422, USB – up to 2 Mbps
CAN interface	CAN 2.0 A/B – up to 1 Mbps
Sync I/O	2x Sync inputs (RS232), 1x Sync output (TTL)

LONG GNSS OUTAGE PERFORMANCE[1]

Application	Position accuracy
Land	0.5% travelled distance
Marine	1.0% travelled distance
Airborne	2.0% travelled distance

[1] *With external aiding inputs. Test report available upon request.*

HEAVE PERFORMANCE *Marine version*

Accuracy	5 cm or 5%	Whichever is greater
Wave period	0 to 20 s	Auto-adjusting

INTERNAL GNSS

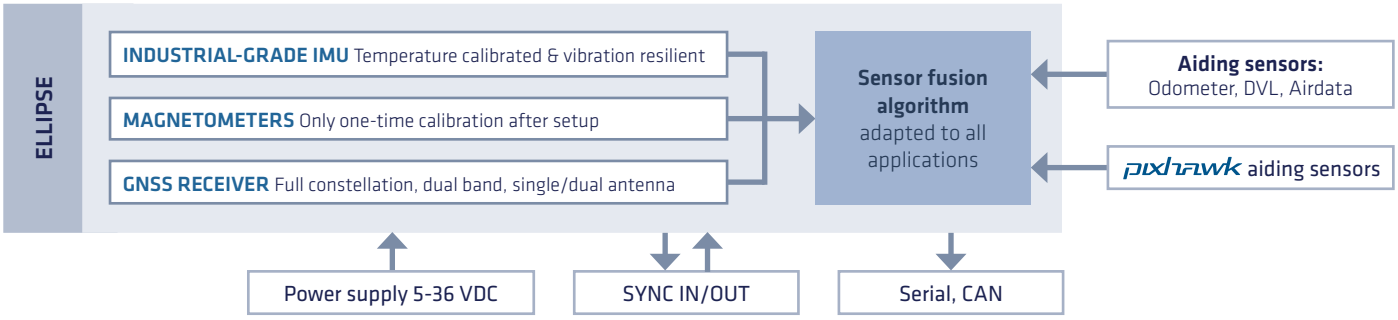
Features	RAW, OSNMA, PointPerfect (SPARTN/RTCM), SBAS	
Signals	GPS: L1C/A, L2C GLONASS: L1OF, L2OF	GALILEO: E1, E5b BEIDOU: B1/B2
Time to first fix	< 24 s (cold start)	
Jamming / Spoofing	Mitigation & advanced indicators	

ELECTRICAL & ENVIRONMENTAL

Input voltage	5 - 36 VDC
Power consumption	N[1]: < 600 mW, D[1]: < 900 mW
Operating temperature	-40 to 85 °C
Shock limit	500 g / 0.1 ms
Operating vibration	8 g RMS (20 Hz to 2 kHz per MIL-STD 810G)
MTBF	218,000 hours

[1] *Without GNSS antenna*

FUNCTIONAL BLOCK DIAGRAM



Free Technical Support | Lifetime Firmware Updates | 2-year Warranty

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