

# Ellipse 2 Micro Series

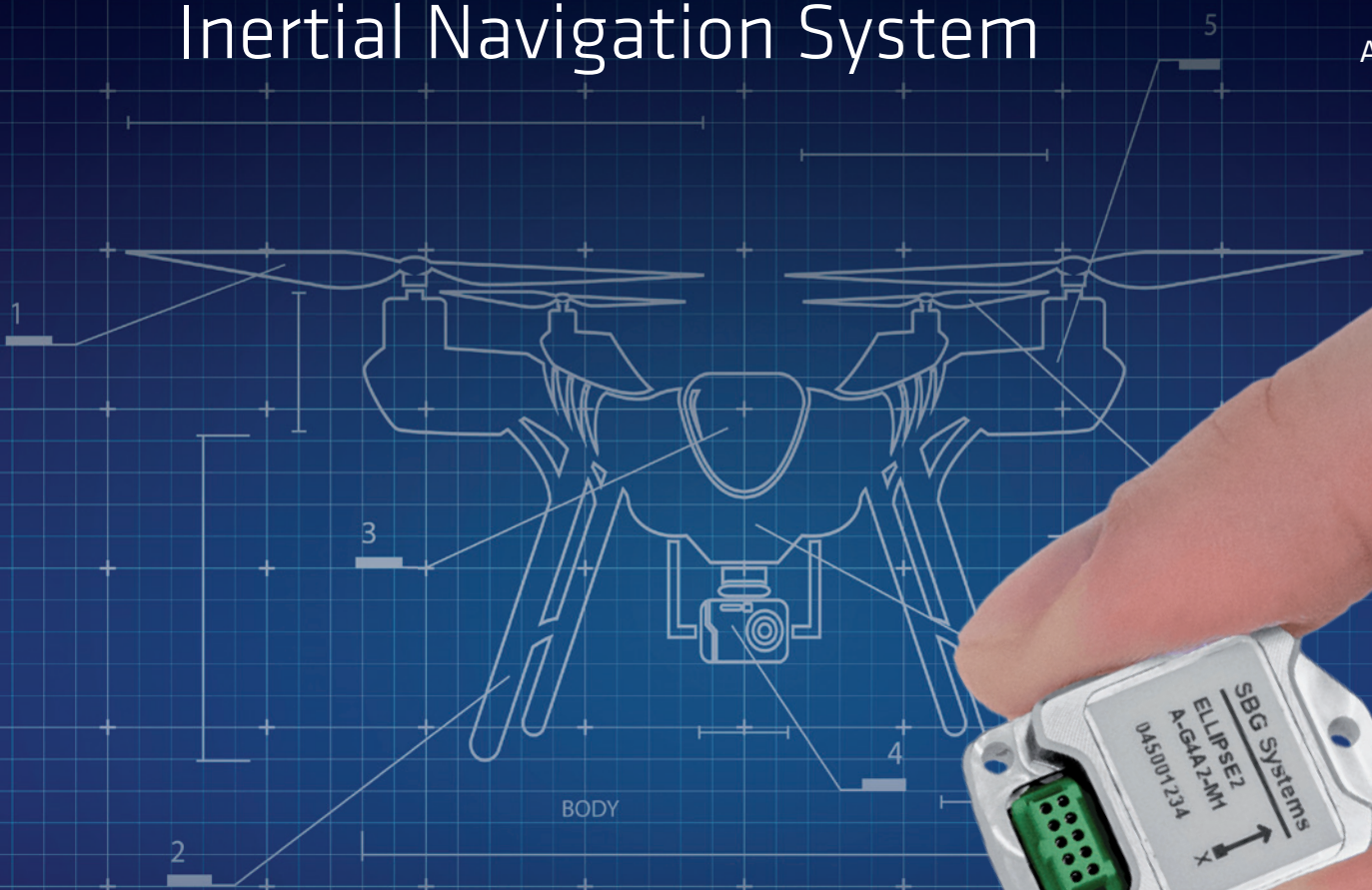
## The smallest INDUSTRIAL-GRADE Inertial Navigation System



ITAR  
Free

0.1°  
RMS

IMU  
AHRs  
MRU  
INS  
VG



Navigation, Motion & Heave Sensing



The ELLIPSE 2 MICRO SERIES brings the highest accuracy in the smallest and most economic package. Ellipse 2 Micro takes industrial-grade IMU, AHRs, and INS to high volume projects.



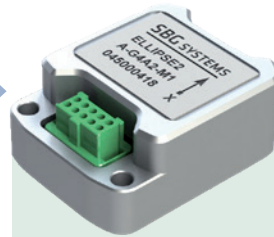
# Ellipse 2 Micro Series - Highest Accuracy, Smallest Sensor

## High Performance

0.1° Roll / Pitch

## Calibrated in dynamics

and Temperature (-40° to 80°C)



## Light-weight

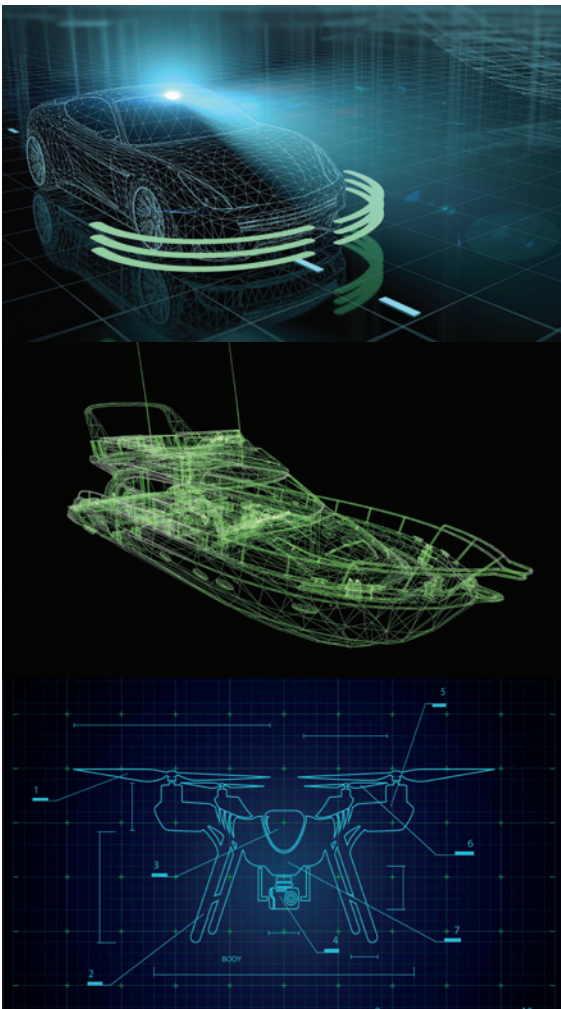
10 grams

## Industrial grade

High End Gyroscopes and Accelerometers

ALL ELLIPSE  
MODELS COME WITH  
A TWO-YEAR  
WARRANTY

10 years of Filtering embedded  
in the 10-gram Ellipse 2 Micro



## Land

- » Fusion with GNSS receiver and odometer for a robust position in all conditions (forest, tunnel, urban canyons, etc.)
- » Specific motion algorithms dedicated to land vehicle
- » CAN Protocol

## Marine

- » The only micro sensor to provide a 5 cm Heave, automatically adjusted to the wave period
- » Fusion with GNSS receiver for a robust position and heave in all conditions

## Aerial

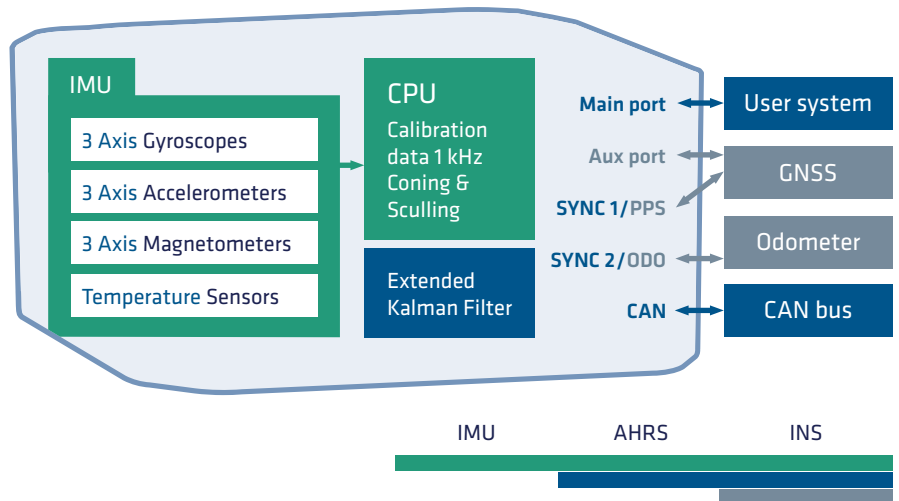
- » Calibrated from -40 to +85°C for a constant behavior in all environments
- » High resistance to shock and vibrations (< 2 000g)
- » Fusion with GNSS receiver for a high accuracy position and heading

## 3 models to best fit your project requirements

Ellipse 2 Micro IMU is an Inertial Measurement Unit. It embeds 3 gyroscopes, 3 accelerometers, 3 magnetometers and a temperature sensor.

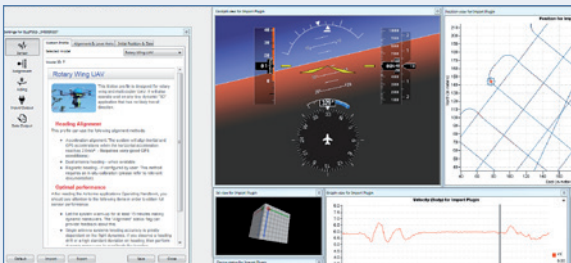
Ellipse 2 Micro AHRS additionally runs an Extended Kalman Filter to provide Roll, Pitch, Heading, and Heave.

Ellipse 2 Micro INS additionally connects to a GNSS receiver and an odometer for Navigation.



Bring the highest accuracy to your project, in the smallest and most economic package.

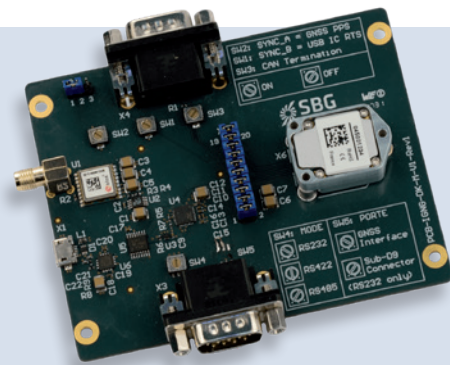
## Development Kit for an Easy Integration



### Software

The Windows-based sbgCenter software allows:

- » Real-time data visualization
  - » Easy configuration through motion profiles
  - » Data Analysis by zooming through time
  - » Export into Excel, Matlab, Google Earth formats
- A C library, and some code source examples are provided.



### Evaluation Board

The Evaluation board integrates:

- » A ublox module for INS applications (Model E)
- » All the cables and accessories

There is no MOQ when ordering the Ellipse 2 Micro Development Kit.

## Technical Support

When investing in a Development Kit (DK), you access free technical support by phone and email, and unlimited firmware updates.

# Specifications

## IMU SENSORS

	Accelerometers	Gyroscopes	Magnetometers
Range	± 16 g	± 450 °/s	± 50 Gauss
Gain stability	1000 ppm	500 ppm	< 0.5 %
Non-linearity	1500 ppm	50 ppm	< 0.1 % FS
Bias stability	± 5 mg	± 0.2 °/s	± 1 mGauss
Random walk/ Noise density	57 µg/√Hz	0.15 °/√hr	3 mGauss
Bias in-run instability*	14 µg	7 °/h	1.5 mGauss
VRE	50 µg/g <sup>2</sup> RMS	1 °/h/g <sup>2</sup> RMS	-
Alignment error	< 0.05 °	< 0.05 °	< 0.1 °
Bandwidth	390 Hz	133 Hz	22 Hz

\* Allan Variance, @ 25 °C

## AHRS ACCURACY

Roll & Pitch	0.1 °
Heading	0.8 ° Magnetic** Heading
Heave	5 cm

## INS ACCURACY

Roll & Pitch	0.1 °
Heading	0.8 ° Magnetic ** or External GNSS
Position	External GNSS
Heave	5 cm
Aiding Equipment	GNSS and Odometer

\*\*Under homogenous magnetic field

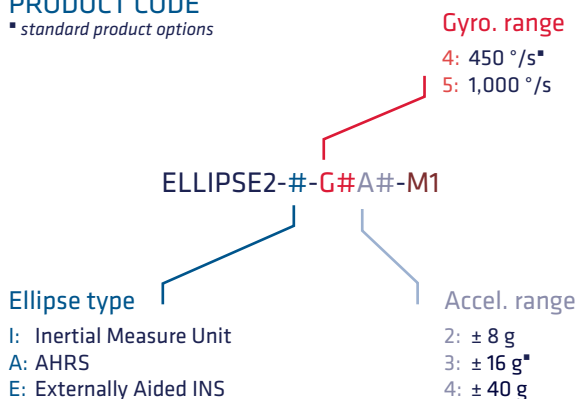
## INTERFACES

Available data for A and E models	Euler angles, quaternion, velocity, position, heave, calibrated sensor data, delta angles & velocity, status
Aiding sensors	GNSS: NMEA, UBX, Septentrio, Novatel
Output rate	200 Hz
Main Serial Interface	1 RS422 or 2 RS232, USB - up to 921,600 bps
Serial protocols	Binary eCom protocol, NMEA, ASCII, TSS
CAN interface	CAN 2.0A/B - up to 1 Mbit/s
Pulses	Inputs: Events, PPS, DMI Outputs: Synchronization (PPS) 2 inputs / outputs

All parameters apply to full specified temperature range, unless otherwise stated. Full specifications can be found in the Ellipse 2 Micro Series user manual available upon request.

## PRODUCT CODE

▪ standard product options



## MECHANICAL

	Specification	Remarks
Size	26.8 x 18.8 x 9.5 mm	
Weight	10 g	
Shocks	< 2000 g	
Operating Vibrations	3 g RMS - 20 Hz to 2 kHz STD - 810 g	A2 range
	8 g RMS - 20 Hz to 2 kHz STD - 810 g	A4 range
Enclosure	Aluminium	

## ENVIRONMENTAL

Specified Temperature	-40 to 85 °C (-40 to 185 °F)
Humidity	98 % - Non condensing
MTBF (computed)	50 000 hours

## ELECTRICAL

Input voltage	4 - 17 V
Power consumption	400 mW



## SBG ⊕ SERVICES: GET STARTED WITH YOUR SENSOR

### ⊕ TRAINING

Full training based on your specific needs to help you shorten your project development.

### ⊕ REMOTE QUICK START

A 2-hour session with an SBG Support Engineer, using a remote access software.