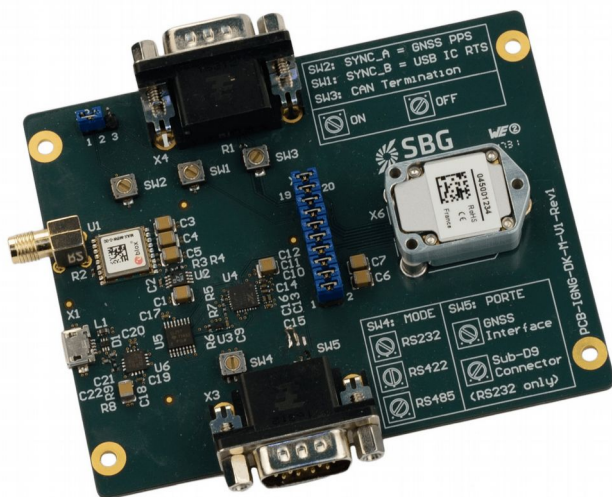


# — Ellipse Micro AHRS & INS

## High perf, Micro Inertial Systems

## Quick Start Guide



Document  
Revision

ELLIPSEMQSG  
Jul 10, 2018

Support

support@sbg-systems.com  
+33 1 80 88 43 70

*Following instructions will help you to start quickly with your new Ellipse Micro Device.*

## Content of a development Kit

---

- A transport case
- This quick start guide
- An evaluation board with USB cable
- A USB Stick containing
  - sbgCenter analysis tool, sbgECom C library + code examples
  - Full documentation including Firmware reference manual and Hardware manual

## Software Development Kit Installation

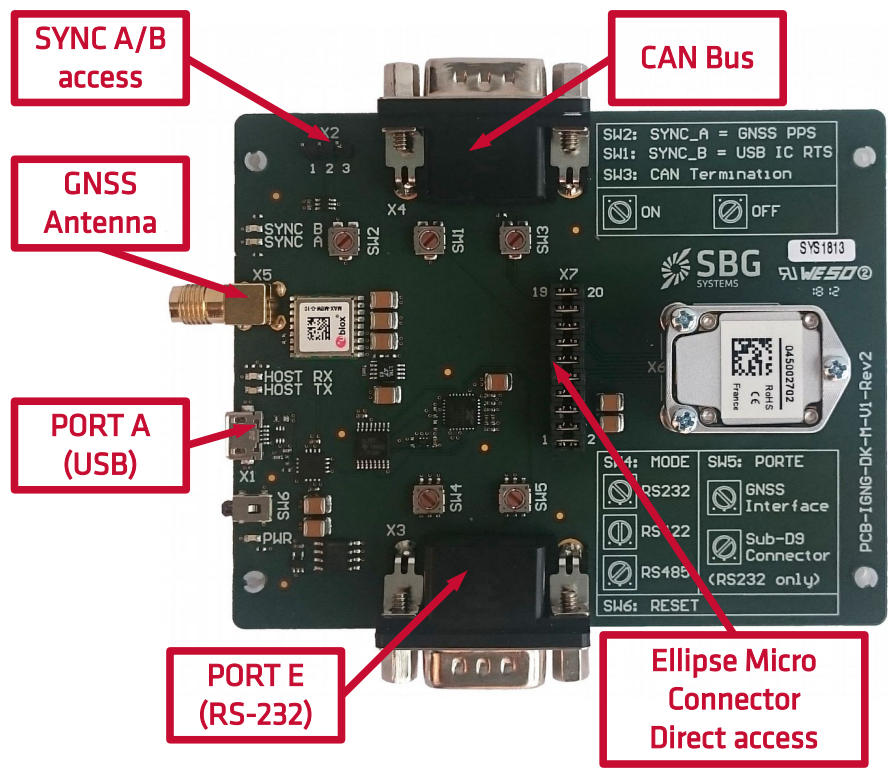
---

- Plug the USB Stick
- Launch the Inertial SDK executable
- Follow the instructions.
- The SDK installer will ask you for your License Key. The License key is composed of five blocks of five digits/letters. You can find it on your Ellipse DK suit case:



# Starting with the development board

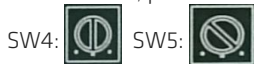
The evaluation board has been designed to test most of the Ellipse Micro functions and also to configure the device without the need to develop specific cabling.



## First use of the evaluation board – typical setup for AHRS/IMU applications

By default, the Ellipse Micro M1 is configured in RS-422 mode and M2 in RS-232. Check that the evaluation board is properly configured before running the sbgCenter for the first time:

1. Plug the Ellipse Micro module on the development board
2. To select **RS-422** mode, please set **SW4** and **SW5** in following positions:



3. To select **RS-232** mode, please set **SW4** and **SW5** in following positions:




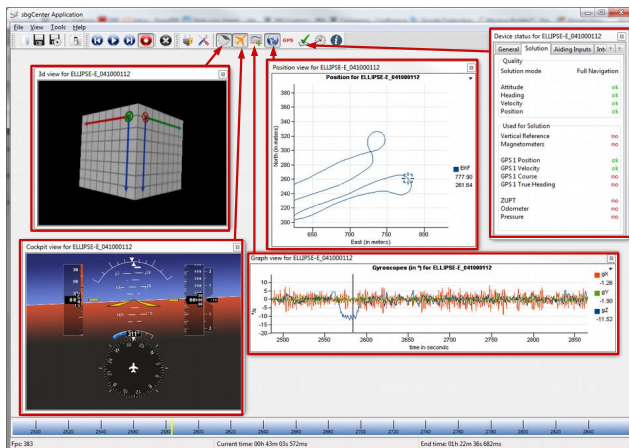
4. SW1, SW2, SW3 can be set to “Disabled”.




## Getting started with Ellipse Micro!

### sbgCenter introduction

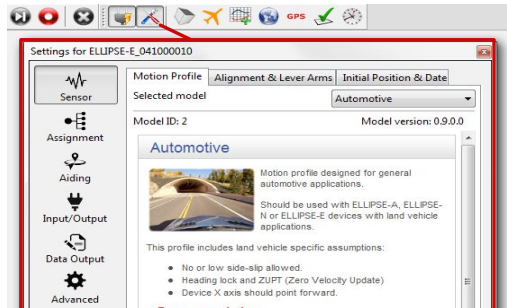
1. Click on the  icon. A window will appear to list every attached device. Click on Refresh button to update the device list, and on “connect” button to start playing with a sensor.
2. Once connected, you can open the different graphs and windows offered by the sbgCenter, as shown in the screenshot below:



## Basic Configuration

In order to configure, click on the toolbox icon  on top of the interface.

You can now navigate through each setting page by using the tabs on the left.



## Configuration steps for INS applications

Several steps should be followed if you want to use the Ellipse Micro as an INS using the development board GNSS receiver.

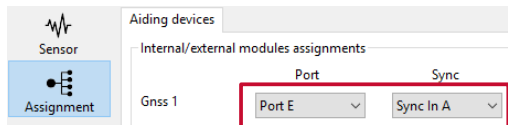
First thing for you is to make sure that you have a proper communication and you can run the sbgCenter to enter new Ellipse micro parameters. For the first use, you will run this configuration steps using a RS-422 mode as it is the default communication mode.

## Configuration steps for ublox GNSS integration

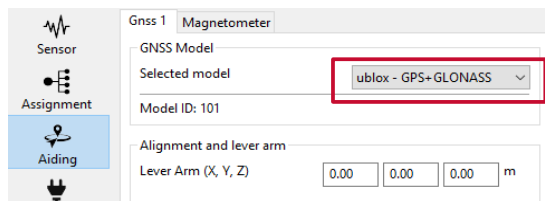
Once connected on the sbgCenter, you have to open the configuration panel to setup GNSS connection:

### *Set assignment and GNSS model*

First step is to enable GNSS operation by selecting its port (**PORT E**) in the assignment window. It should also be associated with the **Sync IN A** for time synchronization purpose.



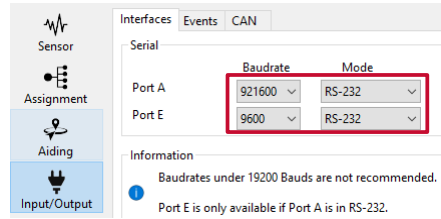
Then enter in the Aiding configuration panel and select the “ublox – GPS+GLONASS” or “ublox – GPS+BEIDOU” model. These models are intended for MAX modules which need to be reconfigured at every boot.



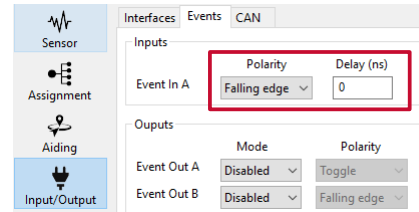
If connecting an external receiver that can be pre-configured, it is possible to select another protocol (ublox – external, Novatel or Septentrio).

### Enable communication with serial port + PPS signal

The **PORT A** must be configured in **RS-232** mode for GNSS interfacing, and **PORT E** should be enabled in **RS-232** as well and set to the default ublox baudrate: **9600bps**. This baudrate will automatically be increased during boot procedure up to 921 600 bps.



The **SYNC IN A** should also be configured in **"falling edge"** mode for proper time synchronization.



**Note:** It is not possible to combine a SYNC IN A function with a SYNC OUT A function as the same pin is shared for these two functions.

### Evaluation board setup for INS applications using embedded GNSS receiver

Once the Ellipse has been reconfigured, you can check that your evaluation board is also configured for GNSS communication.

In order to enable the embedded ublox MAX-M8 receiver use, please configure the evaluation board switches as follows;

1. Set **SW4** and **SW5** in following positions: SW4:



- SW5:



2. Set **SW2** in following position:



3. Connect an active **GNSS antenna** to the evaluation board SMA connector

## Find out more

---

### Useful documentation

The Ellipse Micro **Hardware Manual** provides deep information about your Ellipse features and explains in details how to install and use it. It also details the evaluation board capabilities.

The **Firmware Reference Manual** provides low level protocol specifications.

The **Technical Reference Manual** covers all the theory of operation and general INS / AHRS guidelines.

Several “**Operating Handbooks**” are also available to guide you in a step-by-step way into typical applications configuration.

### Communication with third party systems

#### *Quick and efficient C library: sbgECom*

A convenient way to interface an Ellipse with C programs is to use the sbgECom library. With simple C functions, you can retrieve the device's output very quickly. Library source code is provided with example to help you to start. **Look here:**

“C:\Program Files\SBG Systems\Inertial SDK\Ellipse\Software Development”

#### *Interface with existing systems using NMEA and third party protocols*

The Ellipse provides a wide range of input / output options. NMEA protocol as well as other third party protocols support will ensure seamless integration into your application.

## Support

---

If you have any trouble or question with the use of the Ellipse, please feel free to contact our support team:

**SBG Systems S.A.S.**

1, avenue Eiffel  
78420 Carrières-sur-Seine  
FRANCE

Phone: +33 1 80 88 43 70

Fax: +33 1 80 88 45 01

[sales@sbg-systems.com](mailto:sales@sbg-systems.com) (commercial inquiries)

[support@sbg-systems.com](mailto:support@sbg-systems.com) (technical inquiries)

**SBG Systems North America, Inc**

5932 Bolsa Avenue, Suite #103  
Huntington Beach, CA 92649  
United States

Phone: +1 (657) 549-5807

Fax: +1 (657) 845-1778

[sales.usa@sbg-systems.com](mailto:sales.usa@sbg-systems.com) (commercial inquiries)

[support@sbg-systems.com](mailto:support@sbg-systems.com) (technical inquiries)