Global navigation satellite system software expansion for STM32Cube

**Features**

- Complete software to build applications using Teseo-LIV3F GNSS device
- Middleware for the NMEA protocol and for Assisted GNSS (A-GNSS) support
- FreeRTOS task scheduling to ensure better asynchronous message parsing
- Easy portability across different MCU families, thanks to STM32Cube
- Sample application to transmit GNSS data to a PC and for A-GNSS support
- Free, user-friendly license terms

**Description**

The X-CUBE-GNSS1 is an expansion software package for STM32Cube. The software runs on STM32 and includes drivers for the Teseo-LIV3F global navigation satellite system (GNSS) device, middleware for the NMEA protocol support and FreeRTOS for task scheduling to ensure better asynchronous message parsing.

It is built on top of STM32Cube software technology for easy portability across different STM32 microcontrollers.

The software comes with sample implementations for the drivers running on the X-NUCLEO-GNSS1A1 expansion board, when connected to a NUCLEO-F401RE, NUCLEO-L476RG, or NUCLEO-L073RZ board.

The software also includes a sample application for Assisted GNSS provided by the Teseo-LIV3F GNSS device. The application is tailored for the B-L475E-IOT01A Discovery kit for IoT nodes.

**Product summary**

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<tr>
<th>GNSS software expansion for STM32Cube</th>
<th>X-CUBE-GNSS1</th>
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<tr>
<td>GNSS standalone module</td>
<td>Teseo-LIV3F</td>
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<td>GNSS expansion board based on Teseo-LIV3F module for STM32 Nucleo</td>
<td>X-NUCLEO-GNSS1A1</td>
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<td>STM32L4 Discovery kit IoT node</td>
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<td>STM32 Nucleo-64 development boards with STM32F401RE/STM32L476RG/STM32L073RZ MCUs</td>
<td>NUCLEO-F401RE/NUCLEO-L476RG/NUCLEO-L073RZ</td>
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1 Detailed description

1.1 What is STM32Cube?

STM32Cube™ is an STMicroelectronics initiative that helps you reduce development effort, time and cost. STM32Cube covers the STM32 portfolio.

STM32Cube version 1.x includes:

• STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards.

• A comprehensive embedded software platform specific to each series (such as the STM32CubeF4 for the STM32F4 series), which includes:
  – the STM32Cube HAL embedded abstraction-layer software, ensuring maximized portability across the STM32 portfolio
  – a consistent set of middleware components such as RTOS, USB, TCP/IP and graphics
  – all embedded software utilities with a full set of examples

1.2 How does this software complement STM32Cube?

This software is based on the STM32CubeHAL hardware abstraction layer for the STM32 microcontroller. The package extends STM32Cube by providing a board support package (BSP) for the global navigation satellite system expansion board and the drivers for serial communication with a PC.

The drivers abstract low-level details of the hardware and allow the middleware components and applications to access GNSS data in a hardware independent manner.

The software package also includes a sample application to help the developer start experimenting with the code, a Java tool application to update the Teseo-LIV3F firmware to latest version and the related application for the STM32 Nucleo board.
## Revision history

### Table 1. Document revision history

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<tr>
<th>Date</th>
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<tbody>
<tr>
<td>05-Dec-2017</td>
<td>1</td>
<td>Initial release.</td>
</tr>
<tr>
<td>10-May-2018</td>
<td>2</td>
<td>Updated cover page image, features and description.</td>
</tr>
<tr>
<td>11-Oct-2018</td>
<td>3</td>
<td>Updated cover page image, features and description.</td>
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<tr>
<td>19-Apr-2019</td>
<td>4</td>
<td>Updated cover page image.</td>
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