

## Global navigation satellite system software expansion for STM32Cube

Application	Sample Applications
Middleware	NMEA A-GNSS FreeRTOS cJSON
Hardware Abstraction	STM32Cube Hardware Abstraction Layer (HAL)
Hardware	STM32 Nucleo expansion boards X-NUCLEO-GNSS1A1 (Sense)  STM32 Nucleo development board



### 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	
GNSS software expansion for STM32Cube	<a href="#">X-CUBE-GNSS1</a>
GNSS standalone module	<a href="#">Teseo-LIV3F</a>
GNSS expansion board based on Teseo-LIV3F module for STM32 Nucleo	<a href="#">X-NUCLEO-GNSS1A1</a>
STM32L4 Discovery kit IoT node	<a href="#">B-L475E-IOT01A</a>
STM32 Nucleo-64 development boards with STM32F401RE/ STM32L476RG/ STM32L073RZ MCUs	<a href="#">NUCLEO-F401RE/</a> <a href="#">NUCLEO-L476RG/</a> <a href="#">NUCLEO-L073RZ</a>

## 1 Detailed description

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### 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**

Date	Version	Changes
05-Dec-2017	1	Initial release.
10-May-2018	2	Updated cover page image, features and description.
11-Oct-2018	3	Updated cover page image, features and description.
19-Apr-2019	4	Updated cover page image.

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