

## Bluetooth® Low Energy manager software expansion for STM32Cube

Application	X-CUBE-BLEMGR
Middleware	BLE, BLE_Manager
Hardware Abstraction	STM32Cube Hardware Abstraction Layer (HAL)
Hardware	STM32 Nucleo expansion boards X-NUCLEO-BNRG2A1 (Connect)  STM32 Nucleo development board



### Features

- Sample implementation of a Bluetooth® Low Energy connection to the STBLESensor mobile application
- STM32\_BLE\_Manager library to manage the Bluetooth® Low Energy service according to the Bluetooth® Low Energy middleware APIs
- Sample applications that the developer can use to start experimenting with the code
- References to free Android and iOS apps that can be used with the sample applications
- Compatible with STM32CubeMX, can be downloaded from and installed directly into STM32CubeMX
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

### Description

The X-CUBE-BLEMGR is an expansion software package for STM32Cube for the Bluetooth® Low Energy manager and runs on the STM32.

This expansion software includes the STM32\_BLE\_Manager library, which provides APIs to manage the Bluetooth® Low Energy service according to the BlueNRG-MS, BlueNRG-1, BlueNRG-2, and BlueNRG-LP middleware APIs.

The software is available also on [GitHub](#), where the users can signal bugs and propose new ideas through [Issues] and [Pull Requests] tabs.

Product summary	
Bluetooth® Low Energy manager software expansion for STM32Cube	X-CUBE-BLEMGR
Bluetooth® Low Energy expansion board based on the BlueNRG-M2SP module for STM32 Nucleo	X-NUCLEO-BNRG2A1
Bluetooth® Low Energy wireless system-on-chip	BlueNRG-2
STM32 Nucleo-64 development board with STM32L476RG MCU, supports Arduino and ST morpho connectivity	NUCLEO-L476RG
Programmable Bluetooth Low Energy 5.3 Wireless SoC	BlueNRG-LP
Applications	Connectivity Mobility services Sensing Smart farming Virtual - Augmented Reality

## 1 Detailed description

### 1.1 What is STM32Cube?

STM32Cube is a combination of a full set of PC software tools and embedded software blocks running on STM32 microcontrollers and microprocessors:

- [STM32CubeMX](#) configuration tool for any STM32 device; it generates initialization C code for Cortex-M cores and the Linux device tree source for Cortex-A cores
- [STM32CubeIDE](#) integrated development environment based on open-source solutions like Eclipse or the GNU C/C++ toolchain, including compilation reporting features and advanced debug features
- [STM32CubeProgrammer](#) programming tool that provides an easy-to-use and efficient environment for reading, writing and verifying devices and external memories via a wide variety of available communication media (JTAG, SWD, UART, USB DFU, I2C, SPI, CAN, etc.)
- STM32CubeMonitor family of tools ([STM32CubeMonRF](#), [STM32CubeMonUCPD](#), [STM32CubeMonPwr](#)) to help developers customize their applications in real-time
- [STM32Cube MCU and MPU packages](#) specific to each STM32 series with drivers (HAL, low-layer, etc.), middleware, and lots of example code used in a wide variety of real-world use cases
- [STM32Cube expansion packages](#) for application-oriented solutions.

### 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 [BlueNRG-2](#) network processor (embedded in the [BlueNRG-M2SP](#) module) and middleware components for communication with other Bluetooth LE devices and to help the users to manage the Bluetooth connectivity, for example with mobile application such as [STBLESensor](#).

The package includes a sample applications and is compatible with [STM32CubeMX](#). It can be downloaded from and installed directly into [STM32CubeMX](#), as detailed in UM1718 (freely available on [www.st.com](http://www.st.com)).

## Revision history

**Table 1. Document revision history**

Date	Revision	Changes
04-Jul-2022	1	Initial release.
02-Mar-2023	2	Added reference to GitHub.
06-Jun-2023	3	Updated Features. Added STM32CubeMX compatibility.
07-Nov-2023	4	Updated Product summary. Added BlueNRG-LP.

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