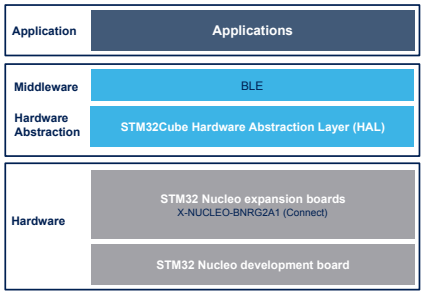
X-CUBE-BLE2

Data brief

Bluetooth low energy software expansion for STM32Cube



Product summary	
Bluetooth® low energy software expansion for STM32Cube	X-CUBE-BLE2
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
Bluetooth® low energy network processor	BlueNRG-2N
STM32 Nucleo-64 development board with STM32L476RG MCU	NUCLEO-L476RG
Applications	Connectivity Mobility services Sensing Smart farming Virtual - Augmented Reality

Features

- Complete middleware to build Bluetooth® low energy applications using BlueNRG-2 and BlueNRG-2N devices
- Easy portability across different MCU families, thanks to STM32Cube
- Numerous examples to aid comprehension of Bluetooth connectivity applications
- Package compatible with STM32CubeMX, can be downloaded from and installed directly into STM32CubeMX
- Free, user-friendly license terms

Description

The X-CUBE-BLE2 expansion software package for STM32Cube runs on the STM32 and includes drivers for BlueNRG-2and BlueNRG-2N Bluetooth® low energy devices.

The expansion is built on STM32Cube software technology to ease portability across different STM32 microcontrollers.

The software comes with sample implementations of the drivers running on the X-NUCLEO-BNRG2A1 when connected to a NUCLEO-L476RG board.

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

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-M2SP module expansion board and some middleware components for communication with other Bluetooth LE devices.

BlueNRG-2 is a very low power Bluetooth low energy (BLE) single-mode wireless processor, while BlueNRG-2N is a BLE network processor, and both are compliant with Bluetooth specifications core 5.0.

The drivers abstract the hardware low-level details and allow the middleware components and applications to access the BlueNRG-based devices in a hardware-independent fashion.

The software implements low power optimizations to allow system power consumption of few micro-amps.

The package includes different 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).

Revision history

Table 1. **Document revision history**

Date	Revision	Changes
12-Dec-2019	1	First release.
09-Jul-2020	2	Added references to BlueNRG-2N device.
17-Apr-2023	3	Added reference to GitHub.