

Sigfox™ software expansion for STM32Cube based on S2-LP

Application	Push Button Demo	CLI Demo
Middleware	Sigfox Library	
Hardware Abstraction	STM32Cube Hardware Abstraction Layer (HAL)	
Hardware	STM32 Nucleo expansion boards X-NUCLEO-S2868A1 (Connect)	
	STM32 Nucleo development board	



Features

- Complete software to build applications using Sigfox™ long range wireless area network running on the **S2-LP** high performance ultra-low power RF transceiver
- **S2-LP** Sigfox™ library with a complete set of APIs to develop embedded applications
- Compatible with the **STSW-S2LP-SFX-DK** graphical user interface (GUI) to register end-device to Sigfox™ network and get ID (Unique Device ID)/PAC (Port Authorization code) /Key from the pool assigned to ST devices
- GUI PC application available as interactive interface to transmit messages to the Sigfox™ network
- Sample implementation available on the **X-NUCLEO-S2868A1** expansion board connected to a **NUCLEO-L053R8**, **NUCLEO-L152RE** or **NUCLEO-L476RG** development board
- ID/PAC/Key stored in internal MCU flash or external EEPROM
- Easy portability across different MCU families, thanks to **STM32Cube**
- Free, user-friendly license terms

Description

The **X-CUBE-SFXS2LP1** expansion software package for **STM32Cube** runs on the STM32 and includes the drivers for **S2-LP** and the library for the Sigfox™ proprietary protocol.

This software together with the suggested combination of STM32 and S2-LP device can be used, for example, to develop applications for smart home/building and smart cities, agriculture, parking, lighting, etc.

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

The software comes with a sample implementation of the drivers running on the **X-NUCLEO-S2868A1** expansion board connected to a **NUCLEO-L053R8**, **NUCLEO-L152RE** or **NUCLEO-L476RG** development board.

Product summary	
Sigfox™ software expansion for STM32Cube based on S2-LP	X-CUBE-SFXS2LP1
Sub-1 GHz RF expansion board based on S2-LP radio for STM32 Nucleo	X-NUCLEO-S2868A1
Ultra-low power, high performance, sub-1 GHz transceiver	S2-LP

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?

The proposed software is based on the STM32CubeHAL, the hardware abstraction layer for the STM32 microcontroller. The package extends STM32Cube by providing a Board Support Package (BSP) for the S2-LP and middleware components for Sigfox.

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

The Sigfox package includes the Push button demo and Command line interface (CLI) demo sample applications.

In the Push button demo, the Sigfox message can be transmitted just by pressing the user button on the STM32 Nucleo board. The message can be seen in the Sigfox website.

The CLI demo is used for serial communication with the Sigfox GUI and provides VCOM port connectivity with a PC. It allows a new node registration. The node gets its ID/PAC (written in the NVM) after registration.

The message to be transmitted can be typed using the keyboard in the uplink tab and transmitted from the GUI by clicking on the “Tx” button. The data logging with ID can be seen in the Sigfox website.

Revision history

Table 1. Document revision history

Date	Version	Changes
11-Sep-2018	1	Initial release.

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