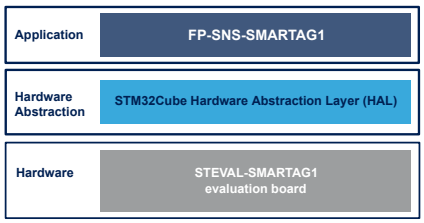
FP-SNS-SMARTAG1

Data brief

STM32Cube function pack for IoT node with Dynamic NFC Tag, environmental and motion sensors



STM32 Open Development Environment

STM32 Cube

Features

- Complete firmware to access data from an IoT node with dynamic NFC tag, environmental and motion sensors
- Ultra-low power operations, with the support of energy harvesting and battery operated use cases
- Compatible, in single-shot mode only, with the STNFCSensor application for Android/iOS for reading and displaying sensor data
- Compatible with the STAssetTracking application for Android/iOS for reading data logs from the NFC tag and for sending them to the DSH-ASSETRACKING cloud-based dashboard
- Sample implementation available for the STEVAL-SMARTAG1 evaluation board
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

FP-SNS-SMARTAG1 is an STM32Cube function pack which allows you to read the motion and environmental sensor data on your IoT node via an NFC enabled reader such as a mobile phone or a tablet. The package supports energy harvesting (enabled by NFC) and battery operated use cases.

This software, together with the suggested combination of STM32 and ST devices can be used, for example, to develop tracking, cold chain, medical, smart sensing, and smart home, city and building applications.

The software runs on an ultra-low power STM32L0 microcontroller and includes drivers for the Dynamic NFC tag and for the motion and environmental sensors.

You can register the NFC Sensor Tag node on the DSH-ASSETRACKING web application for asset tracking that stores and monitors on-board sensor data as well as the geolocalization of the smartphone used to read the IoT node data.

Product summary	
STM32Cube function pack for IoT node with Dynamic NFC Tag, environmental and motion sensors	FP-SNS-SMARTAG1
NFC Dynamic Tag sensor node evaluation board	STEVAL-SMARTAG1
ST Asset Tracking app to configure a Sigfox or a BLE node	STAssetTracking
Cloud Amazon-based web application for asset tracking	DSH-ASSETRACKING
NFC Sensor Tag mobile application	STNFCSensor
Applications	IoT for Smart Home and City Medical and Healthcare Sensing

1 Detailed description

1.1 What can you do with STM32Cube function packs?

STM32Cube function packs leverage the modularity and interoperability of STM32 Nucleo and X-NUCLEO boards together with STM32Cube and X-CUBE software to create function examples for some of the most common use cases of different application technologies.

These software function packs are designed to exploit the underlying STM32 ODE hardware and software components as much as possible to best satisfy the requirements of final user applications.

Moreover, function packs may include additional libraries and frameworks that are not present in the original X-CUBE packages, thus enabling new functionalities allowing real and usable system for developers.

1.2 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.

1.2.1 How does this function pack 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 Dynamic NFC/RFID tag IC expansion board based on ST25DV, for the environmental and motion MEMS sensors expansion board, and for the STEVAL-SMARTAG1 evaluation board. The drivers abstract low-level details of the hardware and allow the sample applications to leverage NFC communication and access sensor data in a hardware-independent manner.

The package supports different use cases featuring ultra-low power modes of operation. An advanced, one-shot mode leverages the energy harvesting feature of the dynamic NFC tag to provide enough energy to power the reading of sensor data.

A battery operated data-logger mode enables continuous sensor data reading, which can be viewed on a mobile device using the ST Asset Tracking application (or ST NFC Sensor application for single-shot mode only). Developers can use this package to prototype ultra-low power IoT applications requiring sensor data reading through NFC communication.

Revision history

Table 1. Document revision history

Date	Version	Changes
06-Mar-2017	1	Initial release.
12-Nov-2019	2	Added X-NUCLEO-IKS01A3 compatibility information. Updated cover page image and product summary table.
11-May-2020	3	Updated cover page product summary table, features and description.
11-Feb-2021	4	Updated cover page features.
14-Jul-2021	5	Removed references to X-NUCLEO-IKS01A2, X-NUCLEO-IKS01A3 and X-NUCLEO-NFC04 expansion boards.