STM32Cube function pack for IoT tracker node with LoRa connectivity, GNSS and sensors

Features

- Complete firmware to connect an IoT node to a LoRaWAN network, sending geo-position coming from GNSS and environmental and sensor data
- Middleware libraries supporting LoRaWAN specification 1.0.3 class A and USB 2.0
- Teseo-LIV3F based GNSS positioning and geofencing
- LoRaWAN keys provisioning via USB
- Power/battery management with low-power operating modes
- Datalogging on external EEPROM for STEVAL-STRKT01 and on internal RAM for B-L072Z-LRWAN1, with data download over-the-air or off-line via USB
- Sample implementation available for STEVAL-STRKT01 evaluation board and for X-NUCLEO-GNSS1A1 and X-NUCLEO-IKS01A2 expansion boards connected to a B-L072Z-LRWAN1 development board
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

FP-ATR-LORA1 is an STM32Cube function pack which lets you read data from environmental and motion sensors, retrieve geo-position from GNSS and send collected data via LoRaWAN connectivity.

The package implements low power profiles and related transitions to ensure long battery autonomy.

This software together with the suggested combination of STM32 and ST devices can be used, for example, to develop asset tracking, fleet management and pet/child tracking applications.

The software runs on the STM32 microcontroller and includes drivers for the LoRa radio, Teseo-LIV3F GNSS module, the motion and environmental sensors, and the power management.

Product summary	
STM32Cube function pack for IoT tracker node with LoRa connectivity, GNSS and sensors	FP-ATR-LORA1
GNSS expansion board based on Teseo-LIV3F module for STM32 Nucleo	X-NUCLEO-GNSS1A1
Motion MEMS and environmental sensor expansion board	X-NUCLEO-IKS01A2
STM32L0 Discovery kit LoRa, Sigfox, low-power wireless network	B-L072Z-LRWAN1
LoRa® IoT tracker	STEVAL-STRKT01

1 Detailed description

1.1 What can you do with STM32Cube function packs?

The STM32Cube function packs leverage the modularity and interoperability of STM32 Nucleo and X-NUCLEO boards, and STM32Cube and X-CUBE software, to create function examples, embodying some of the most common use cases, for each application area.

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

Moreover, function packs may include additional libraries and frameworks which do not present the original X-CUBE packages, thus enabling new functionalities and creating a real and usable system for developers.

1.2 What is STM32Cube?

STMCube™ 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

1.3 How does this function pack complement STM32Cube?

This software is based on the STM32CubeHAL. It extends STM32Cube by providing a board support package (BSP) for the LoRaWAN communication, the environmental and motion MEMS sensors expansion board and for Teseo-LIV3F GNSS expansion board.

The drivers abstract low-level details of the hardware and allow the middleware components and applications to leverage LoRaWAN communication and to access GNSS and sensors data in a hardware-independent manner.

Revision history

Table 1. Document revision history

Date	Version	Changes
06-Sep-2018	1	Initial release.
07-Jan-2019	2	Updated cover image and features. Added references to STEVAL-STRKT01 evaluation board.
22-May-2019	3	Updated cover page features.

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