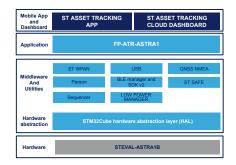# FP-ATR-ASTRA1

STM32Cube function pack for the STEVAL-ASTRA1B multiconnectivity asset tracking reference design

Product summary	
Function pack for the STEVAL-ASTRA1B multiconnectivity asset tracking reference design	FP-ATR-ASTRA1
Multiconnectivity asset tracking reference design based on STM32WB5MMG and STM32WL55JC	STEVAL-ASTRA1B
ST asset tracking application for Android and iOS	STAssetTracking
Cloud Amazon-based web application for asset tracking	DSH-ASSETRACKING
Applications	Asset Tracking Smart Farming

Features

- Complete asset tracking firmware application to manage long-range connectivity (LoRaWAN) and short-range connectivity (Bluetooth® Low Energy and NFC)
- Environmental and motion sensor management to monitor asset status
- Outdoor localization and geo-fencing based on a GNSS NMEA string available on Teseo-LIV3F
- Secure element personalization and certificate retrieving
- Power/battery management with low-power operating modes
- Flexible state machine to support different use cases
- Predefined customizable use cases:
  - Fleet management
  - Livestock monitoring
  - Goods monitoring
  - Logistics
  - Custom
- Implementation available for the STEVAL-ASTRA1B
- Fully integrated in an end-to-end, proof-of-concept ecosystem, which includes:
  - the DSH-ASSETRACKING web cloud dashboard
  - the STAssetTracking mobile app available on Google Play and App Store

Description

The FP-ATR-ASTRA1 is an STM32Cube function pack that implements a complete asset tracking application, which supports long-range connectivity and short-range connectivity. This application reads the data from the environmental and motion sensors, retrieves the geo-position from GNSS and sends them to the cloud using Bluetooth® Low Energy and LoRaWAN connectivity.

The FP-ATR-ASTRA1 package supports low-power profiles and the related transitions to ensure long battery autonomy. Moreover, it provides key features such as secure element management, the possibility to add custom algorithms, debugging interfaces, and expansion capability.

The firmware is available as a standard source code .zip file.

DB4631 - Rev 1 - April 2022
For further information contact your local STMicroelectronics sales office.

www.st.com

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.

1.3 How does this function pack complement STM32Cube?

To simplify the customization of this function pack, the FP-ATR-ASTRA1 has been fully integrated into STM32CubeMX.

You can select the desired use cases and configure the parameters inside STM32CubeMX to generate the final complete application without an in-depth knowledge of the source code.

Revision history

Table 1. Document revision history

Date	Revision	Changes
21-Apr-2022	1	Initial release.

IMPORTANT NOTICE – READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgment.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.