

AlgoBuilder firmware template generator expansion for STM32Cube



Features

- Generation of firmware templates for [AlgoBuilder](#) applications
- Support for connected [X-NUCLEO-IKS01A2](#), [X-NUCLEO-IKS01A3](#) and custom board
- Support for Cortex-M3 and Cortex-M4 MCUs
- [AlgoBuilder](#) firmware template examples using [STM32CubeMX](#), [STM32CubeIDE](#) and [STM32CubeFW](#) drivers
- Smooth interoperability with [STM32CubeFW](#), [STM32CubeMX](#) and [STM32CubeIDE](#)

Description

The [X-CUBE-ALGOBUILD](#) is an [STM32CubeMX](#) plugin which allows the user to select STM32 microcontrollers, specific MEMS sensors and [STM32 Nucleo](#) expansion boards, configure the necessary peripherals and then generate firmware templates for the [AlgoBuilder](#) application. The firmware templates can be generated for all the supported IDEs.

[AlgoBuilder](#) is an advanced free-of-charge application for building and executing data processing algorithms. It allows rapid tests of new applications for STM32 microcontrollers and MEMS sensors, including existing algorithms (i.e., sensor fusion or pedometer), user-defined data processing blocks and other functions. The application simplifies proof of concept process using a graphical interface, without requiring specific knowledge of a programming language.

The [AlgoBuilder](#) firmware template uses sensor drivers and board extensions from the [X-CUBE-MEMS1](#) software expansion, which has to be installed in [STM32CubeMX](#).

Product summary	
AlgoBuilder firmware template generator expansion for STM32Cube	X-CUBE-ALGOBUILD
Application for the graphical design of algorithms	AlgoBuilder
Development board	STM32 Nucleo
Motion MEMS and environmental sensor expansion board for STM32 Nucleo	X-NUCLEO-IKS01A2 or X-NUCLEO-IKS01A3
Sensor and motion algorithm software expansion for STM32Cube	X-CUBE-MEMS1
STM32Cube initialization code generator	STM32CubeMX
Applications	Factory Automation Climate Control Connectivity Sensing Wearable

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 sensor expansion board. The drivers abstract the hardware low-level details and allow the applications to access sensor data in a hardware-independent manner.

The package includes several sample applications that the developer can use to start experimenting with the code. A sample application has been developed to enable sensor data logging on a PC; a Windows PC utility (**Unicleo-GUI**) is available on www.st.com, to allow choosing among various sensors available on the expansion board and set the appropriate delay/interval among consecutive data points. Sensor data can be logged to a file selected by the user.

The package 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	Version	Changes
04-Feb-2020	1	Initial release.

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