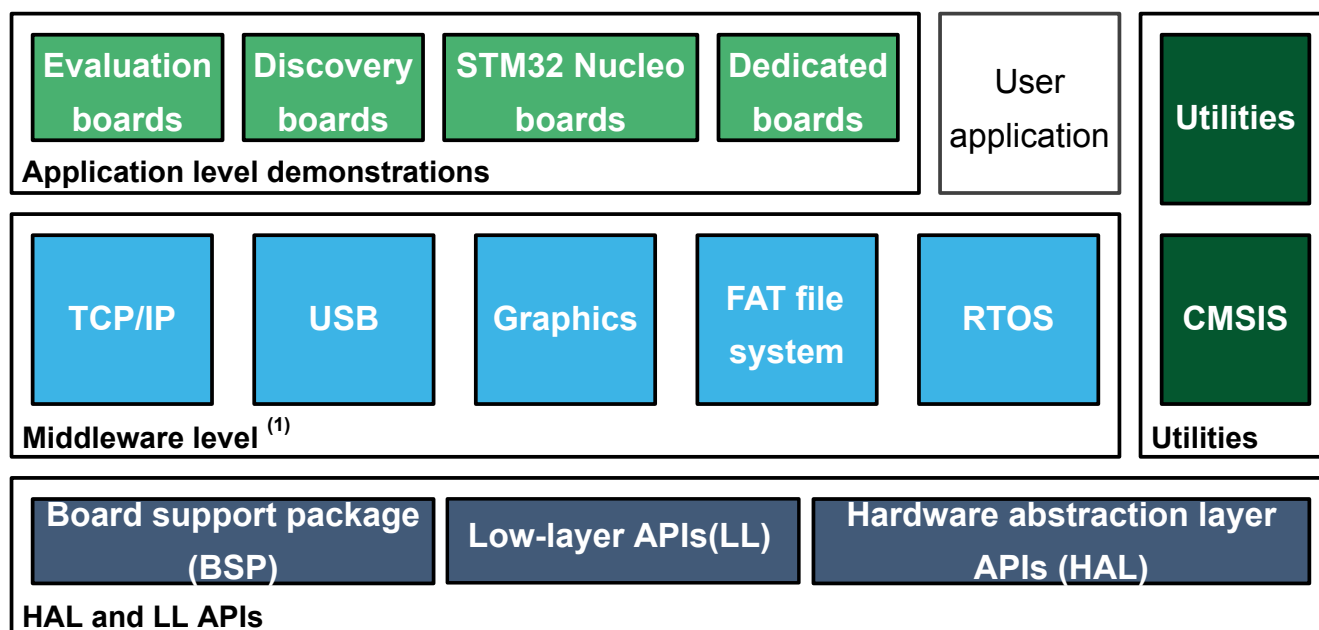


STM32Cube MCU package for STM32F2 series with HAL, LL drivers and dedicated middleware



(1) The set of middleware components depends on the product series.

Product status link
STM32CubeF2



Features

- Consistent and complete embedded software offer that frees the user from dependency issues
- Maximized portability between all STM32 series supported by [STM32Cube](#)
- More than 80 examples for easy understanding
- HAL and LL APIs, developed in compliance with MISRA C[®]:2004 guidelines, and elimination of possible runtime errors with CodeSecure[®] CodeSonar[®] static analysis tool
- STM32CubeF2-dedicated middleware including USB Device, and touch sensing library
- Free-of-charge, user-friendly license terms
- Update mechanism with new-release notification capability

1 Description

STM32Cube is an STMicroelectronics original initiative to improve designer productivity significantly by reducing development effort, time, and cost. STM32Cube covers the whole STM32 portfolio.

STM32Cube includes STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards.

It also comprises the STM32CubeF2 MCU package composed of the STM32Cube hardware abstraction layer (HAL) and the low-layer (LL) APIs, plus a consistent set of middleware components (RTOS, USB, FAT file system, graphics, and STM32 touch sensing). All embedded software utilities are delivered with a full set of examples running on STMicroelectronics boards.

The STM32Cube HAL is an STM32 embedded software layer that ensures maximized portability across the STM32 portfolio, while the LL APIs make up a fast, light-weight, expert-oriented layer, which is closer to the hardware than the HAL. HAL and LL APIs can be used simultaneously with a few restrictions.

Both the HAL and LL drivers have been developed in compliance with V-Model requirements for design, implementation, and tests. Furthermore, the STMicroelectronics-specific validation process adds a deeper qualification level, such as compliance with MISRA C[®]:2004 guidelines, and elimination of possible runtime errors with the CodeSecure[®] CodeSonar[®] static analysis tool. Reports are available on demand.

STM32CubeF2 gathers in one single package all the generic embedded software components required to develop an application on ST32F2M microcontrollers. Following the STM32Cube initiative, this set of components is highly portable, not only within the series but also to other STM32 series. In addition, the low-layer APIs provide an alternative, high-performance, low-footprint solution to the STM32CubeF2 HAL at the cost of portability and simplicity.

HAL and LL APIs are available under an open-source BSD license for user convenience.

2 General information

The **STM32CubeF2** MCU Package runs on STM32 microcontrollers based on the Arm® Cortex® processor.

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2.1 Ordering information

STM32CubeF2 is available for free download from www.st.com.

2.2 What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to improve designer productivity significantly by reducing development effort, time, and cost. **STM32Cube** covers the whole STM32 portfolio.

STM32Cube includes:

- A set of user-friendly software development tools to cover project development from conception to realization, among which are:
 - **STM32CubeMX**, a graphical software configuration tool that allows the automatic generation of C initialization code using graphical wizards
 - **STM32CubeIDE**, an Eclipse®-based IDE, providing code edition, compilation, programming, and debugging capabilities
 - **STM32CubeCLT**, an all-in-one command-line development toolset with code compilation, board programming, and debug features
 - **STM32CubeIDE for Visual Studio Code (STM32VSCode)**, a complete IDE based on VS Code® platform
 - **STM32CubeProgrammer (STM32CubeProg)**, a programming tool available in graphical and command-line versions
 - **STM32CubeMonitor (STM32CubeMonitor, STM32CubeMonPwr, STM32CubeMonRF, STM32CubeMonUCPD)**, powerful monitoring tools to fine-tune the behavior and performance of STM32 applications in real time
 - **STM32CubeWiSE (STM32CubeWiSEbe, STM32CubeWiSEce, STM32CubeWiSEcg, STM32CubeWiSEre, STM32CubeWiSE8e)**, graphical tools designed to evaluate and test the capabilities of RF radios and protocols (Bluetooth® LE, sub-GHz, IEEE 802.15.4)
- **STM32Cube MCU and MPU Packages**, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as **STM32CubeF2** for the STM32F2 series), which include:
 - **STM32Cube hardware abstraction layer (HAL)**, ensuring maximized portability across the STM32 portfolio
 - **STM32Cube low-layer APIs**, ensuring the best performance and footprints with a high degree of user control over hardware
 - A consistent set of middleware components such as ThreadX, FileX, LevelX, USBX, touch library, mbed-crypto, MCUboot, and OpenBL
 - All embedded software utilities with full sets of peripheral and applicative examples
- **STM32Cube Expansion Packages**, which contain embedded software components that complement the functionalities of the **STM32Cube MCU and MPU Packages** with:
 - Middleware extensions and applicative layers
 - Examples running on some specific STMicroelectronics development boards



3 License

STM32CubeF2 is delivered under the [SLA0048](#) software license agreement and its Additional License Terms.

Revision history

Table 1. Document revision history

Date	Revision	Changes
31-Mar-2014	1	Initial release.
28-Jun-2017	2	Cover page: • moved list of middleware components from document title to list of features. • added low-layer APIs (LL) to features list • updated STM32CubeF2 firmware component block diagram. • updated description. In Section : STM32CubeF2 MCU package, removed FatFS NAND support and last sentence of section. Normalized term 'low-layer' (hyphen and lower case).
29-Nov-2017	3	Updated title and schematic. Updated Features, Description and STM32CubeF2 MCU Package to introduce the 'STM32CubeF2 MCU package' denomination.
25-Mar-2026	4	Updated Features and Description . Added Section 2.2: What is STM32Cube? . Removed section <i>STM32CubeF2 MCU Package</i> . Minor text changes.

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