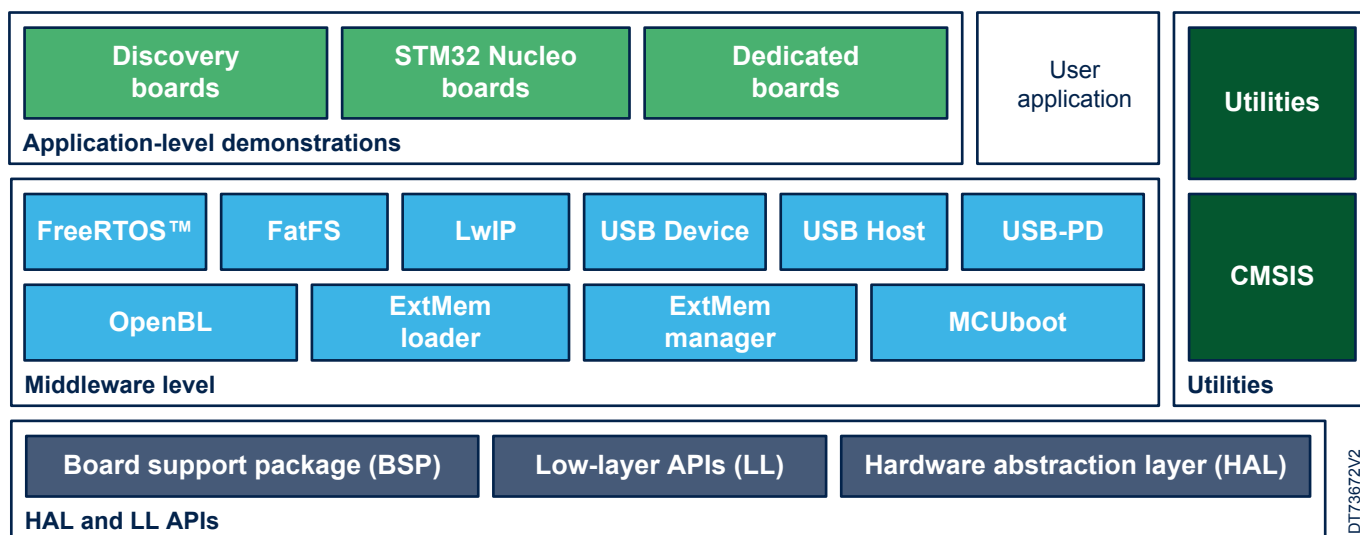




STM32Cube embedded software for STM32H7Rx/7Sx MCUs including LL/HAL drivers, USB, TCP/IP, file system, RTOS, and external memory manager

**Product status link**[STM32CubeH7RS](#)

Features

- Consistent and complete embedded software that provides hardware abstraction to easily develop end-user firmware
- Maximized portability between all STM32 series supported by [STM32Cube](#), with many examples and applications for easy understanding, all compatible with [STM32CubeMX](#) to facilitate the configuration through a graphical tool
- HAL and LL APIs, developed in compliance with MISRA C®:2012 guidelines, elimination of possible runtime errors with Synopsys® Coverity® static analysis tool, and code coverage by running tests on STM32 hardware with the LDRA dynamic analysis tool (on new drivers or with recent significant updates)
- CMSIS CORE, DSP, and RTOS software components
- FAT file system based on open-source FatFS solution, supporting USB MSC and SD-card memory access
- Comprehensive STM32H7Rx/7Sx-dedicated middleware offer including USB Host and Device supporting many classes, TCP/IP, Ethernet, USB Power Delivery, OpenBootloader, and MCUboot
- New STM32_ExtMem_Manager and STM32_ExtMem_Loader middleware, providing software implementation that facilitates external memory integration
- Free-of-charge, user-friendly license terms
- Update mechanism with new-release notification capability
- Published on GitHub in addition to www.st.com to propagate bug fixes and improvements faster, open for pull requests and issues to facilitate user contributions and direct feedback

1 Description

STM32Cube is an STMicroelectronics original initiative to make the life of the developer easier by reducing development effort, time, and cost. STM32Cube covers the entire 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 STM32CubeH7RS MCU Package, composed of the STM32Cube hardware abstraction layer (HAL) and the low-layer (LL) APIs, a consistent set of middleware components, such as RTOS, USB Host, USB Power Delivery, FAT file system, TCP/IP, Ethernet, USB Power Delivery, OpenBootloader, and MCUboot. 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®:2012 guidelines, elimination of possible runtime errors with the Synopsys® Coverity® static analysis tool, and code coverage by running tests on STM32 hardware with the LDRA dynamic analysis tool (on new drivers or with recent significant updates). Reports are available on demand.

STM32CubeH7RS gathers in one single package all generic embedded software components required to develop an application on STM32H7Rx/7Sx MCUs. Following the STM32Cube initiative, this set of components is highly portable, not only within the STM32H7Rx/7Sx series, but also to other STM32 series.

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

2 General information

The STM32CubeH7RS MCU Package runs on STM32 microcontrollers based on the Arm® Cortex® processor.

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2.1 Ordering information

STM32CubeH7RS 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 STM32CubeH7RS for the STM32H7Rx/7Sx MCUs), 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 RTOS, FAT file system, TCP/IP, USB Host and Device, USB PD, OpenBL, external memory loader and manager, and MCUboot
 - 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

STM32CubeH7RS is delivered under the [SLA0048](#) software license agreement and its Additional License Terms.

Revision history

Table 1. Document revision history

Date	Version	Changes
14-Mar-2024	1	Initial release.
26-Mar-2026	2	Updated Features and Description . Minor text changes.

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