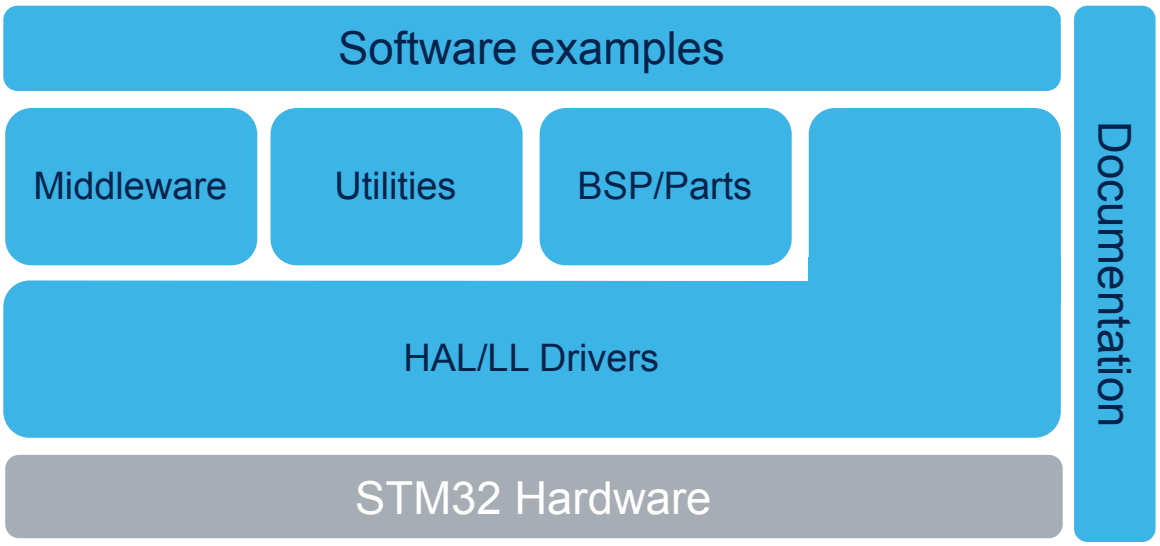
STM32CubeH7P

Data brief

STM32Cube MCU Package for STM32H7P4/P5 MCUs (HAL2, LL APIs and CMSIS, middleware, RTOS, utilities, part drivers - coming with examples running on ST boards)



Product link
STM32CubeH7P

Features

- Consistent and complete embedded software that provides hardware abstraction to easily develop end-user firmware
- HTML format documentation, including getting started, for online browsing or download
- Maximized portability between all STM32 series supported by STM32Cube
- More than 300 examples, also browsable from STM32 Example Library, for easy understanding, compatible with STM32CubeMX2 to facilitate the configuration through a graphical tool
- User-customized package through features selection from STM32 Package Creator online 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
- Automated machine-readable SBOM documents, in CycloneDX format
- Optimized and ported selection of market reference middleware and other in-house
- 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
- Improved performance and footprint
- HAL services calling exclusively the LL ones whenever applicable
- More service granularity, with split between Initialization and configuration APIs
- Better integration with RTOS
- Enhanced online documentation, with flowcharts and user sequences
- Detailed guidelines and script for API update and migration from HAL V1.x.x

1 Description

STM32Cube MCU Package for STM32H7P4/P5 is composed of the STM32Cube hardware abstraction layer (HAL) and the low-layer (LL) APIs, plus a consistent set of middleware and utilities. All embedded software components are delivered with a full set of examples running on STMicroelectronics boards.

The HAL is introduced in its version 2.0.0 bringing many enhancements, especially in terms of performance and footprint and is compatible with a new version of STM32CubeMX configuration tool, named STM32CubeMX2. A STM32 Package Creator available on st.com enables users to build and download their own STM32Cube Software Package based on HAL2, selecting software features according to their project need. Software is available on ST GitHub as well.

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.

STM32CubeH7P gathers in one single package all the generic embedded software components required to quickly develop and debug an application on STM32H7P4/P5 microcontrollers. Following STM32Cube initiative, this set of components is highly portable to other STM32 series. In addition, the low-layer APIs provide an alternative, high-performance, low-footprint solution to the STM32CubeH7P HAL at the cost of portability and simplicity.

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

2 General information

The STM32CubeH7P MCU Package runs on STM32 microcontrollers based on the Arm® Cortex® processor.

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arm

2.1 Ordering information

STM32CubeH7P 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, STM32CubeWiSEna), 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 STM32CubeH7P for the STM32H7P4/P5 devices), 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 FreeRTOS™ kernel, USBX, FileX, LevelX
  - 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

STM32CubeH7P is delivered under the SLA0048 software license agreement and its Additional License Terms.

Revision history

Table 1. **Document revision history**

Date	Revision	Changes
29-Sep-2026	1	Initial release.

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