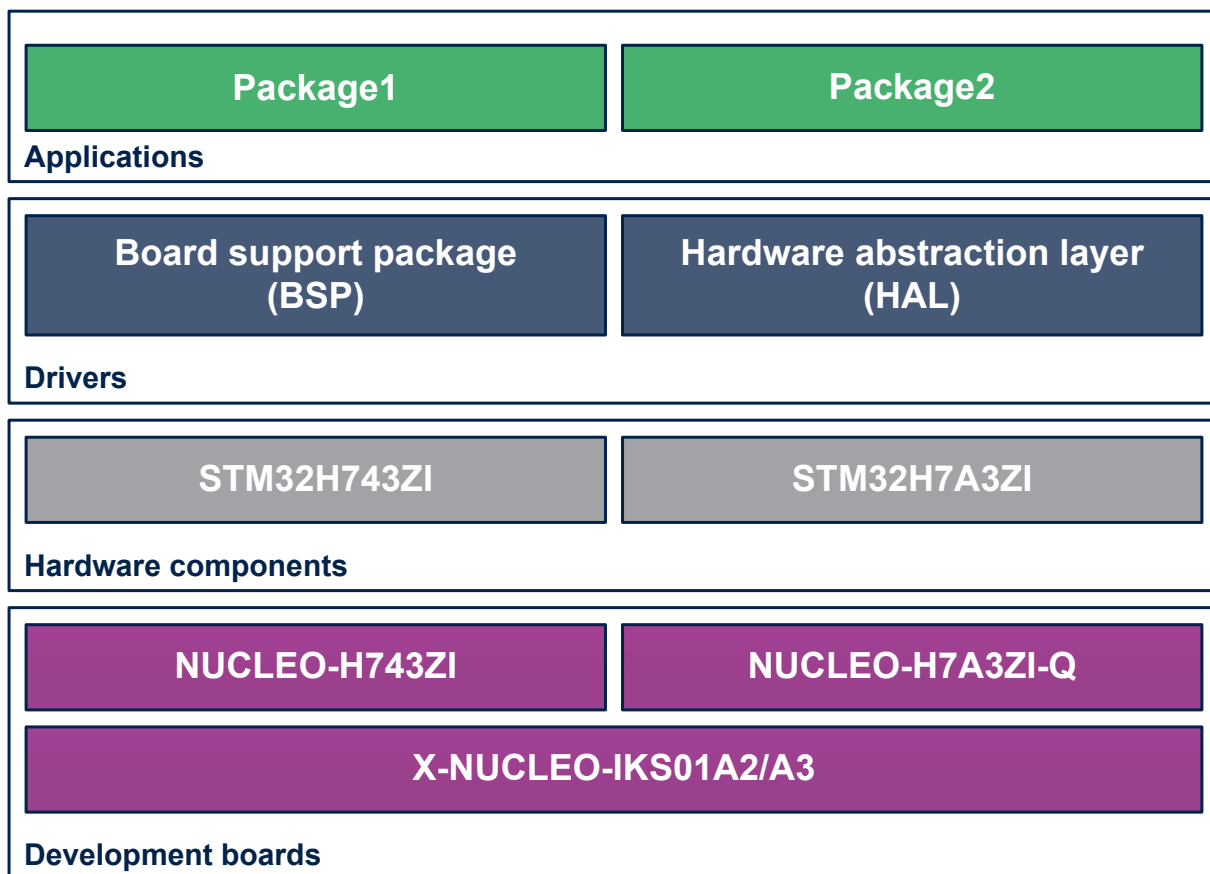


STM32H7x3 smart power management software expansion for STM32Cube



Product status link

[X-CUBE-PWRMGT-H7](#)



Features

- Low power application case
- Support for single-core STM32H7x3 microcontrollers with three power domains
- Support for single-core STM32H7Ax/Bx microcontrollers with two power domains
- Low power modes
- D3 (power domain) and smart run domain (SRD) autonomous modes for respectively STM32H7x3 and STM32H7Ax microcontrollers
- Power consumption management

Description

The X-CUBE-PWRMGT-H7 Expansion Package consists of two low-power application cases. These are based on I²C transmission, for instance between STM32H7x3/A3/B3 devices and the HTS221 humidity and temperature sensor, embedded in the X-NUCLEO-IKS01A2 expansion board.

The purpose of the two packages is to highlight the smart power management of the [STM32H7 Series](#), using three power domains for the STM32H7x3 devices and two power domains for the STM32H7Ax/Bx devices. The goal is also to minimize the power consumption while maintaining some activities running when needed (SRD or D3 autonomous mode: SRD for the STM32H7Ax/Bx devices and D3 for the STM32H7x3 devices).

The X-CUBE-PWRMGT-H7 Expansion Package contains two software packages. Package1 is developed on the [NUCLEO-H743ZI](#) Nucleo board. Package2 is developed on the [NUCLEO-H7A3ZI-Q](#) Nucleo board.

Package1 contains four modes in which the STM32H7x3 exchanges data with the HTS221 temperature sensor. For each mode, the microcontroller power consumption is reduced because of the flexible architecture of STM32H7, which manages power supply per domain.

Package2 contains six modes in which the STM32H7A3x exchanges data with the HTS221 temperature sensor. For each mode, the microcontroller power consumption is reduced because of the flexible architecture of STM32H7, which manages power supply per domain.

A terminal display monitors the two package cases through the USB Virtual COM port communication between the MCU and the PC. The example is developed with the STM32Cube Expansion Package. It is compatible with the IAR Embedded Workbench®, MDK-ARM, and STM32CubeIDE toolchains, and can be easily tailored for any other toolchain.

1 General information

The X-CUBE-PWRMGT-H7 runs on 32-bit microcontrollers based on the Arm® Cortex®-M7 core.

Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.



1.1 Ordering information

X-CUBE-PWRMGT-H7 is available for free download from the www.st.com website.

1.2 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 all-in-one development tool with peripheral configuration, code generation, code compilation, and debug features
 - 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
- STM32Cube MCU and MPU Packages, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeH7 for the STM32H7 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 RTOS, USB Host and Device, TCP/IP, mbedTLS, FAT file system, audio, and graphics
 - 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

2 License

X-CUBE-PWRMGT-H7 is delivered under the *Mix Ultimate Liberty+OSS+3rd-party V1* software license agreement (SLA0048).

The software components provided in this package come with different license schemes as shown in Table 1.

Table 1. Software component license agreements

Software component	Copyright	License
Board support package (BSP)	STMicroelectronics	BSD-3-Clause
Cortex®-M CMSIS	Arm Limited	Apache License 2.0
HAL STM32H7	STMicroelectronics	BSD-3-Clause
STM32H7xx CMSIS	STMicroelectronics	BSD-3-Clause
Project examples	STMicroelectronics	Proprietary

Revision history

Table 2. Document revision history

Date	Revision	Changes
9-Jun-2017	1	Initial release.
27-May-2022	2	Added: <ul style="list-style-type: none"> • Support for two power domain microcontrollers • Package2 in Description Updated: <ul style="list-style-type: none"> • Cover image • Table 1. Software component license agreements

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