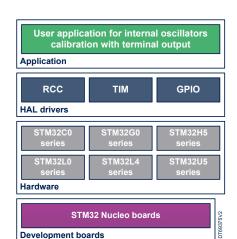


Data brief

Internal oscillator calibration software expansion for STM32Cube







Features

- STM32C0 series microcontrollers:
 - Calibrated oscillators: HSI16, MSI, HSI48
 - Measured oscillator: LSI
- STM32G0 series microcontrollers:
 - Calibrated oscillators: HSI16, MSI, HSI48
 - Measured oscillator: LSI
- STM32H5 series microcontrollers:
 - Calibrated oscillators: HSI16, MSI, HSI48
 - Measured oscillator: LSI
- STM32L0 series microcontrollers:
 - Calibrated oscillators: HSI16, MSI, HSI48
 - Measured oscillator: LSI
- STM32L4 series microcontrollers:
 - Calibrated oscillators: HSI16, MSI, HSI48 (only for STM32L432xx microcontrollers)
 - Measured oscillator: LSI
- STM32U5 series microcontrollers:
 - Calibrated oscillators: HSI16, MSI, HSI48
 - Measured oscillator: LSI

Description

The X-CUBE-RC-CALIB Expansion Package describes how to measure and calibrate internal oscillators. It also describes which internal features are used for calibration or measurement.

Each oscillator trimming functionality is implemented in a separate file, so that users can easily select the file they need, without using the whole software package.

The X-CUBE-RC-CALIB Expansion Package is built on top of the STM32Cube HAL drivers.

For more details, refer to the application notes available on www.st.com:

- Using X-CUBE-RC-CALIB software to calibrate STM32C0 Series internal RC oscillator (AN5857)
- How to calibrate internal oscillators on STM32G0 MCUs (AN5126)
- How to calibrate internal RC oscillators on STM32H5 MCUs (AN6202)
- How to calibrate an STM32L0xx internal RC oscillator (AN4631)
- How to calibrate STM32L4 Series microcontrollers internal RC oscillator (AN4736)
- How to calibrate internal RC oscillators on STM32U3 and STM32U5 series MCUs (AN5676)



1 General information

The X-CUBE-RC-CALIB Expansion Package runs on STM32 microcontrollers based on Arm® cores.

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

arm

1.1 Ordering information

X-CUBE-RC-CALIB 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
 - STM32CubeCLT, an all-in-one command-line development toolset with code compilation, board programming, 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 STM32CubeH5 for the STM32H5 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, NetX Duo, USBX, USB PD, 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

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2 License

X-CUBE-RC-CALIB is delivered under the SLA0048 software license agreement and its Additional License Terms.

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Revision history

Table 1. Document revision history

Date	Revision	Changes
10-Apr-2015	1	Initial release.
24-Nov-2015	2	Updated Features and Description.
06-Oct-2016	3	Updated Features to add calibration information for STM32L432 line.
30-Sep-2021	4	Extended document scope to the STM32U5 series. Updated the entire document: Updated title and cover page Updated Features and Description Added What is STM32Cube? and License
21-Mar-2025	5	Extended document scope to the STM32C0 series, STM32G0 series, and STM32H5 series: Updated the cover image Updated Features and Description Updated License and What is STM32Cube?

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