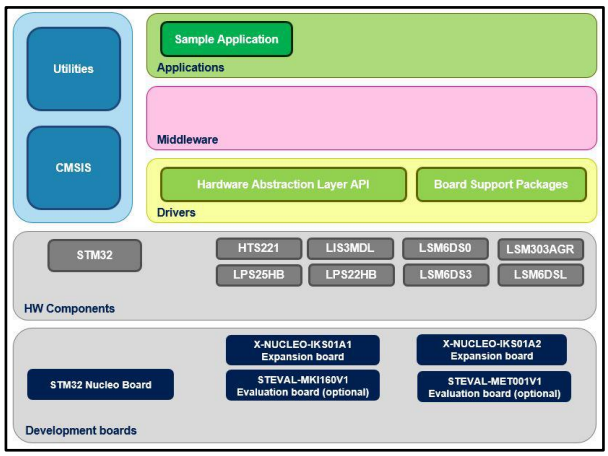
X-CUBE-MEMS1

Motion MEMS and environmental sensor software expansion for STM32Cube

Data brief



Features

- Complete software to build applications using temperature and humidity sensors (HTS221 for both X-NUCLEO-IKS01A1 and X-NUCLEO-IKS01A2), pressure sensor (LPS25HB for X-NUCLEO-IKS01A1 and LPS22HB for X-NUCLEO-IKS01A2) and motion sensors (LIS3MDL and LSM6DS0 for X-NUCLEO-IKS01A1 and LSM303AGR and LSM6DSL for X-NUCLEO-IKS01A2)
- Easy portability across different MCU families, thanks to STM32Cube
- Sample application to transmit real-time sensor data to a PC
- PC-based application (Windows®) to log sensor data
- Free, user-friendly license terms
- Sample implementation available on X-NUCLEO-IKS01A1 or X-NUCLEO-IKS01A2 board connected to a NUCLEO-F401RE, NUCLEO-L152RE, NUCLEO-L476RG or NUCLEO-L053R8 development board

Description

The X-CUBE-MEMS1 expansion software package for STM32Cube runs on the STM32 and includes drivers that recognize the sensors and collect temperature, humidity, pressure and motion data from the HTS221, LPS25HB, LSM6DS0, LSM6DS3, LPS22HB, LSM6DSL, LSM303AGR and LIS3MDL devices.

The expansion is built on STM32Cube software technology to ease portability across different STM32 microcontrollers.

The software comes with a sample implementation of the drivers running on the X-NUCLEO-IKS01A1 or X-NUCLEO-IKS01A2 expansion boards connected to a NUCLEO-F401RE, NUCLEO-L053R8, NUCLEO-L152RE or NUCLEO-L476RG development board.

What is STM32Cube?

STMCube™ represents the STMicroelectronics initiative to make developers' lives easier by reducing development effort, time and cost. STM32Cube covers the STM32 portfolio.

STM32Cube version 1.x includes:

- STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards.
- A comprehensive embedded software platform specific to each series (such as the STM32Cube for the STM32 series), which includes:
  - the STM32Cube HAL embedded abstraction-layer software, ensuring maximized portability across the STM32 portfolio
  - a consistent set of middleware components such as RTOS, USB, TCP/IP and graphics
  - all embedded software utilities with a full set of examples

How does this software complement STM32Cube?

This software is based on the STM32CubeHAL hardware abstraction layer for the STM32 microcontroller. The package extends STM32Cube by providing a board support package (BSP) for the sensor expansion board. The drivers abstract low-level details of the hardware and allow the applications to access sensor data in a hardware-independent manner. The package includes a sample application that the developer can use to start experimenting with the code. The sample application was developed to enable sensor data logging on a PC. For this purpose, a Windows PC utility is also included in the package. With this utility, the developer can choose between various sensors available on the expansion board and set the appropriate delay/interval between consecutive data points. Sensor data can be logged in a user-selected file.

Revision history

Table 1: Document revision history

Date	Rev	Changes
07-Nov-2014	1	First release.
19-Dec-2014	2	Modified the document title, features and description text on the cover page. Added Section 1: Detailed description.
17-Jun-2015	3	Updated: Title on the cover page.
20-Oct-2015	4	Updated: Overall system architecture, features and description on the cover page.
21-Dec-2015	5	Updated cover image
22-Dec-2015	6	Updated *How does this software complement STM32Cube?*
04-Nov-2016	7	Updated cover image Updated hardware compatibility information for X-NUCLEO-IKS01A2 expansion board and associated sensors.

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