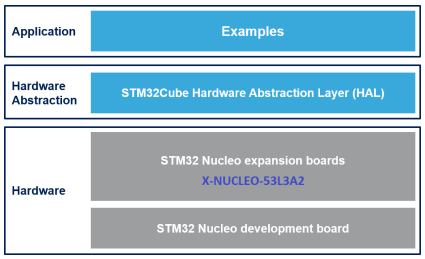
X-CUBE-TOF1

Data brief

Time-of-Flight sensors software expansion for STM32Cube



Features

- Complete software to build applications using VL53L3CX ranging sensor with multi target detection for X-NUCLEO-53L3A2 and VL53L3CX-SATEL
- Several examples to show the innovative technology for the accurate distance ranging capability
- Sample application to transmit real-time sensor data to a PC
- Pre-compiled binaries available on the X-NUCLEO-53L3A2 and VL53L3CX-SATEL boards connected to a NUCLEO-F401RE or NUCLEO-L476RG development board.
- Package compatible with STM32CubeMX, can be downloaded from, and installed directly into, STM32CubeMX
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

The x-cube-TOF1 expansion software package for STM32Cube runs on the STM32 and includes drivers that recognize the sensors and perform simple ranging on single or multi 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-53L3A2 expansion boards connected to a featured STM32 Nucleo development board.

The software provides sample applications such as: simple ranging for expansion board and breakout boards, multi sensors ranging, and calibration.

Device summary	
Time-of-Flight sensors software expansion for STM32Cube	X-CUBE-TOF1
Time-of-Flight sensors expansion boards for STM32 Nucleo	X-NUCLEO-53L3A2
Time-of-Flight breakout boards	VL53L3CX-SATEL
STM32 Nucleo development board	STM32 Nucleo

1 Detailed description

1.1 What is STM32Cube?

STM32Cube is a combination of a full set of PC software tools and embedded software blocks running on STM32 microcontrollers and microprocessors:

- STM32CubeMX configuration tool for any STM32 device; it generates initialization C code for Cortex-M cores and the Linux device tree source for Cortex-A cores
- STM32CubeIDE integrated development environment based on open-source solutions like Eclipse or the GNU C/C++ toolchain, including compilation reporting features and advanced debug features
- STM32CubeProgrammer programming tool that provides an easy-to-use and efficient environment for reading, writing and verifying devices and external memories via a wide variety of available communication media (JTAG, SWD, UART, USB DFU, I2C, SPI, CAN, etc.)
- STM32CubeMonitor family of tools (STM32CubeMonRF, STM32CubeMonUCPD, STM32CubeMonPwr) to help developers customize their applications in real-time
- STM32Cube MCU and MPU packages specific to each STM32 series with drivers (HAL, low-layer, etc.), middleware, and lots of example code used in a wide variety of real-world use cases
- STM32Cube expansion packages for application-oriented solutions

1.2 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 the hardware low-level details and allow the applications to access sensor data in a hardware-independent manner.

Sensor data can be logged to a file selected by the user.

The package is compatible with STM32CubeMX. It can be downloaded from and installed directly into STM32CubeMX, as detailed in UM1718 (freely available on www.st.com).

Revision history

Table 1. Document revision history

Date	Version	Changes
22-Mar-2021	1	Initial release
20-May-2021	2	Section 1.2 How does this software complement STM32Cube? updated