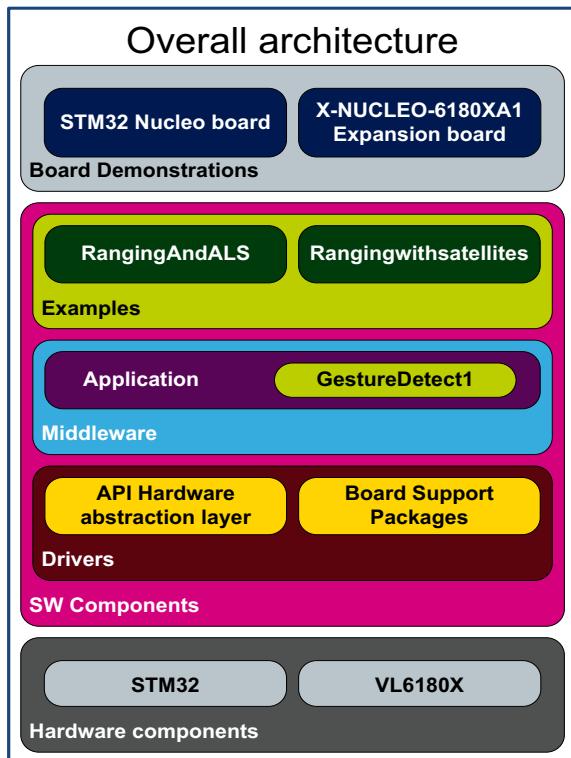


Proximity, gesture, ambient light sensor software expansion for STM32Cube

Data brief



Description

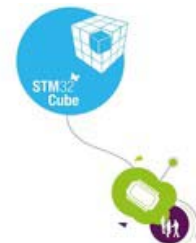
The X-CUBE-6180XA1 software package is an expansion for STM32Cube, associated with the X-NUCLEO-6180XA1 expansion board for STM32.

The source code of this package is based on STM32Cube and is aligned with the “Multi-Platform” file & directory structure to ease portability and code sharing across different STM32 MCU families.

The VL6180X is the latest product based on ST’s patented FlightSense™ technology. This is a ground-breaking technology allowing absolute distance to be measured independent of target reflectance. Instead of estimating the distance by measuring the amount of light reflected back from the object (which is significantly influenced by color and surface), the VL6180X precisely measures the time the light takes to travel to the nearest object and reflect back to the sensor (Time-of-Flight).

Features

- Driver layer (VL6180X API) for complete management of the VL6180X proximity & ambient light sensor (ALS) integrated in the X-NUCLEO-6180XA1 expansion board.
- Easy portability across different MCU families, thanks to STM32Cube.
- Free, user-friendly license terms.
- Example code for ranging and ALS measurement.
- Example code for ranging with multiple VL6180X sensors. Up to 4x VL6180X devices can be controlled using the X-NUCLEO-6180XA1 expansion board equipped with 3x satellites (VL6180X-SATEL).
- Example code of gesture recognition.



What is STM32Cube?

STM32Cube™ represents an original initiative by STMicroelectronics to ease developers' life by reducing development effort, time and cost. STM32Cube covers the STM32 portfolio.

Version 1.x of STM32Cube includes:

- STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards
- A comprehensive embedded software platform, delivered per series (such as the STM32CubeF4 for STM32F4 series)
- STM32Cube HAL, an STM32 abstraction layer embedded software, ensuring maximized portability across the STM32 portfolio
 - A consistent set of middleware components, such as RTOS, USB, TCP/IP, graphics
 - All embedded software utilities, including a full set of examples

How does this software complement STM32Cube?

The proposed software is based on the STM32CubeHAL, the hardware abstraction layer for the STM32 microcontroller. The package extends STM32Cube by providing a Board Support Package (BSP) for the X-NUCLEO-6180XA1 expansion board and a VL6180X API component (in Drivers\BSP\Components\vl6180x directory) to program, control and get ranging/ALS values from the VL6180X device.

Several example projects are included in the Projects\Multi\Examples\VL6180X and in Projects\Multi\Applications\VL6180X\GestureDetect1 directories, the developer can use these examples to start experimenting with the code. These examples are ready to be compiled using Keil (MDK-ARM), IAR (EWARM) or STM32 Workbench (SW4STM32):

- **RangingAndALS** example features
 - Ranging or ALS modes
 - Selectable scaling in ranging mode
 - Interrupt mode in ranging mode
 - Ranging and ALS measures displayed on 7-segments display
- **RangingWithSatellites** example features
 - Simultaneous ranging from main VL6180X plus up to 3 satellites
 - Ranging measures displayed on 7-segments display
- **GestureDetect1** example features
 - With the VL6180X of the X-NUCLEO-6180XA1 expansion board.
 - With two VL6180X satellites (left and right).

Revision history

Table 1. Document revision history

Date	Revision	Changes
15-Apr-2015	1	Initial release.
05-May-2015	2	Add: – STM32Cube logo – What is STM32Cube? section – How does software complement STM32Cube?
19-May-2015	3	Change document title
02-Jun-2015	4	Update Features section
12-Nov-2015	5	Add GestureDetect1 feature

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