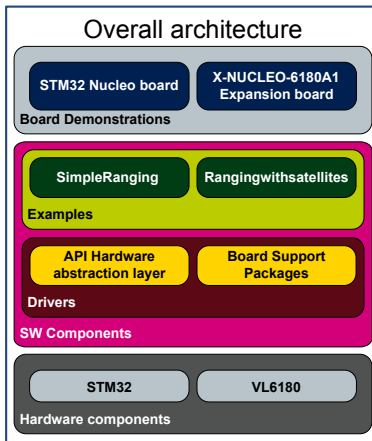


Proximity sensor software expansion for STM32Cube



Features

- Driver layer (VL6180 API) for complete management of the VL6180 proximity sensor integrated in the X-NUCLEO-6180A1 expansion board
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms
- Example code for ranging measurement
- Example code for ranging with multiple VL6180 sensors: up to 4 VL6180 devices can be controlled using the X-NUCLEO-6180A1 expansion board which is equipped with 3 breakout boards (VL6180-SATEL)

Description

The X-CUBE-6180A1 software package is an expansion for the STM32Cube, associated with the X-NUCLEO-6180A1 expansion board for the STM32.

The source code of this package is based on the STM32Cube and is aligned with the "multiplatform" file and directory structure to ease portability and code sharing across different STM32 MCU families.

The VL6180 is a proximity sensor 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 VL6180 precisely measures the time the light takes to travel to the nearest object and reflect back to the sensor (Time-of-Flight).

1 What is STM32Cube ?

The STM32Cube represents an original initiative by STMicroelectronics to ease the life of developers by reducing development effort, time and cost. The 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

2 How does X-CUBE-6180A1 software complement STM32Cube

The proposed X-CUBE-6180A1 software is based on the STM32CubeHAL, the hardware abstraction layer for the STM32 microcontroller. The package extends the STM32Cube by providing a board support package (BSP) for the X-NUCLEO-6180A1 expansion board and a VL6180 API (application programming interface) component to program, control and get ranging values from the VL6180 device.

Several example projects are included in the Projects\STM32F401RE-Nucleo\Examples\6180A1\ or Projects\STM32L476RG-Nucleo\Examples\6180A1\ and 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 CubeIDE.

- SimpleRanging example features:
 - Selectable scaling in Ranging mode
 - Interrupt mode in Ranging mode
 - Ranging measurements are displayed on a 7-segments display
- RangingWithSatellites example features:
 - Simultaneous ranging from main VL6180 plus up to 3 breakout boards
 - Ranging measurements are displayed on a 7-segments display

Revision history

Table 1. Document revision history

Date	Version	Changes
06-Mar-2020	1	Initial release

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