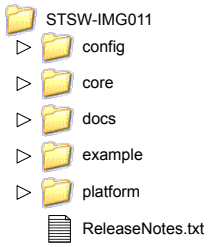
STSW-IMG011

Data brief

VL6180 application programming interface (API)



Features

- VL6180 application programming interface (API) source code (C language)
- Full ranging features control
- API structured in a way it can be easily ported/compiled on any microcontroller platform
- Several examples showing how to use API to perform ranging measurements
- Complete Nucleo STM32 F401 project (source code + binary) working with VL6180 expansion board (under Keil IDE)
- API documentation (.chm and .html)

Description

The VL6180 API is a set of C functions controlling the VL6180 (init, ranging, etc.) to enable the development of end-user applications. This API is structured in a way it can be compiled on any kind of platforms through a well-isolated platform layer (mainly for low level I2C access). Several code examples are provided to show how to use API and perform ranging measurements. A complete Nucleo F401 and VL6180 expansion board project is also provided (Keil IDE required to compile this project) as well as the pre-compiled binary that can be used directly.

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

The VL6180 device combines an IR emitter and a range sensor in a two-in-one ready-to- use reflowable package (see VL6180 module).

Product status link
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Figure 1. VL6180 module

1 Quick start guide for API integration

The VL6180 API is integrated in a software project in two steps.

Step 1

The developer has to add/link the files listed in the table and figure below to his source and include the code path. Some files may require modifications to comply with the final application or the hardware/software capabilities.

Table 1. API header files

Names	Description
vl6180_cfg.h	Application configuration **May require modifications**
vl6180_api.c and vl6180_api.h	All operations function at high and low levels to control the sensor **Must not be modified**
vl6180_def.h	Definition of constants and structures used in the API **Must not be modified**
vl6180_platform.h	Target platform specific declarations/prototypes **May require modifications**
vl6180_types.h	Basic types definition **May require porting**

Step 2

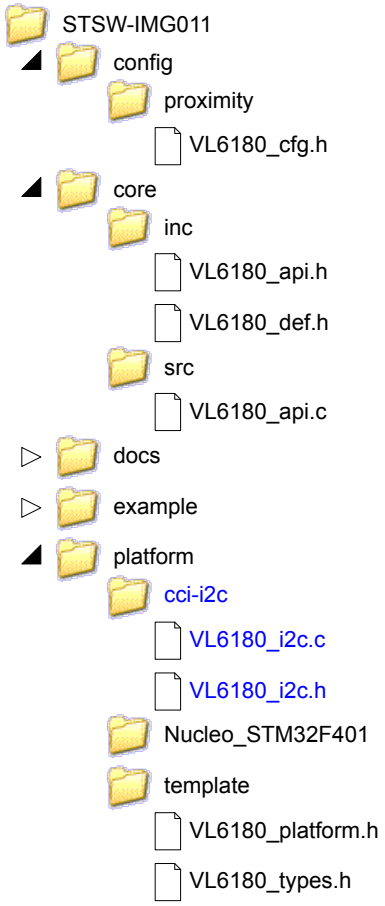
To manage the data communication between the VL6180 and the host, the developer has to design a camera control interface (CCI) register communication driver.

Note: The CCI interface is supplied at 2.8 V and uses the I2C protocol.

The API low-level functions rely on the following set of seven read and write functions which give CCI register access to the device: VL6180_WrByte(); VL6180_WrWord(); VL6180_WrDWord(); VL6180_UpdateByte(); VL6180_RdByte(); VL6180_RdWord(); and VL6180_RdDWord().

To implement these seven functions, it is recommended to use vl6180_i2c.c and vl6180_i2c.h files in the platform/cci_i2c directory (see figure below).

Figure 2. Iheader and CCI service files in the API



Revision history

Table 2. **Document revision history**

Date	Version	Changes
27-Nov-2019	1	Initial release

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