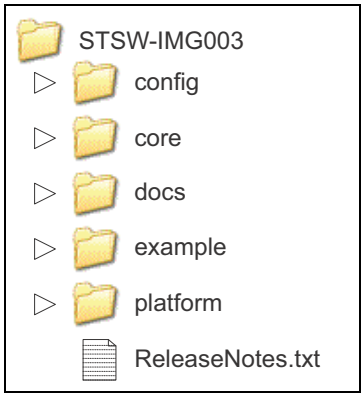
STSW-IMG003

VL6180X application programming interface (API)

Data brief



Features

- VL6180X application programming interface (API) source code (C language)
- Full ranging and ALS features control
- API structured in a way it can be easily ported/compiled on any micro-controller platforms
- Several examples showing how to use API to perform ranging and ALS measurements
- Complete Nucleo STM32 F401 project (source code + binary) working with VL6180X explorer expansion board (under Keil IDE)
- API documentation (.chm and .html)

Description

The VL6180X API is a set of C functions controlling the VL6180X (init, ranging, ALS,…) 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 and ALS measures. A complete Nucleo F401 + VL6180X expansion board project is also provided (Keil IDE required to compile the project) as well as the pre-compiled binary that can be directly used.

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).

Combining an IR emitter, a range sensor and an ambient light sensor in a three-in-one ready-to-use reflowable package.

Figure 1. VL6180X module

Quick start guide for API integration

The VL6180X API is integrated in a software project in two steps

1. Developer has to add/link the files listed in *Table 1* and in *Figure 2* to his source and include 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
vl6180x_cfg.h	Application configuration **May require modifications**
vl6180x_api.c and vl6180x_api.h	All operating functions at high and low level to control the sensor **Must not be modified**
vl6180x_def.h	Definition of constants and structures used in the API **Must not be modified**
vl6180x_platform.h	Target platform specific declarations/prototypes **May requires modifications**
vl6180x_types.h	Basic types definition **May require porting**

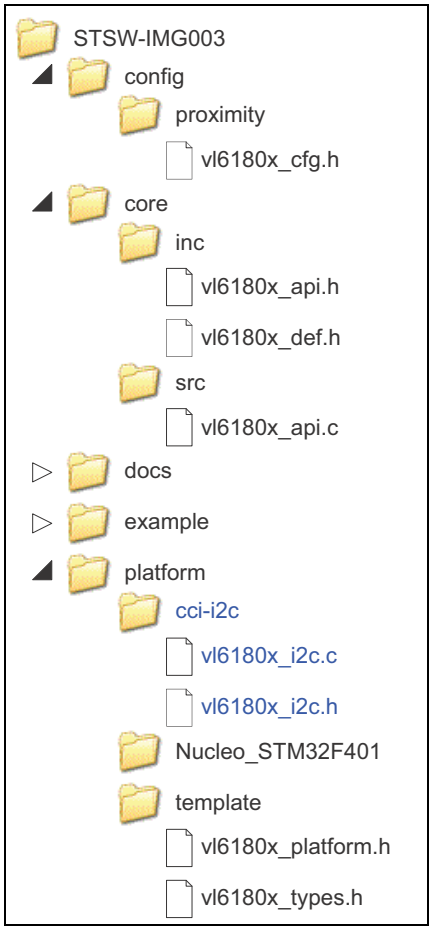
2. To manage the data communication between the VL6180X and the host, developer has to design a camera control interface (CCI) register communication driver[(a)].
   The API low-level functions rely on the following set of 7 read & write functions which perform CCI register access to the device:
   VL6180x_WrByte(); VL6180x_WrWord(); VL6180x_WrDWord(); VL6180x_UpdateByte(); VL6180x_RdByte(); VL6180x_RdWord(); VL6180x_RdDWord().

   To implement these 7 functions, it is recommended to use vl6180x_i2c.c and vl6180x_i2c.h files in *platform/cci_i2c* directory (see *Figure 2*)

Note: Detailed information on these functions can be found in section Modules/CCI to RAW I2C translation layer of the API_Documentation_(version)_proximity.chm delivery

a. CCI interface is supplied at 2.8V and uses the I2C protocol

Figure 2. Iheader and CCI service files in the API



Revision history

Table 2. Document revision history

Date	Revision	Changes
26-Jan-2015	1	Initial release.