AN4663
Application note

VL6180X expansion boards - Description of version 1 and version 2

Introduction

ST has developed two expansion boards for the VL6180X proximity sensor and ambient light sensor module based on ST's patented FlightSense[TM] technology.

A first generation, named in this document as "expansion board version 1".

A second generation named in this document as "expansion board version 2".

The audience of this application note are developers who have already used the expansion board version 1 and want to use the expansion board version 2.

This application note details the limitation of the expansion board version 1 and how this has been fixed in the expansion board version 2.

From March 2015, only expansion board version 2 can be ordered under the reference X-NUCLEO-6180XA1

Figure 1. VL6180X expansion boards

Expansion board version 1   Expansion board version 2

X-NUCLEO-6180XA1
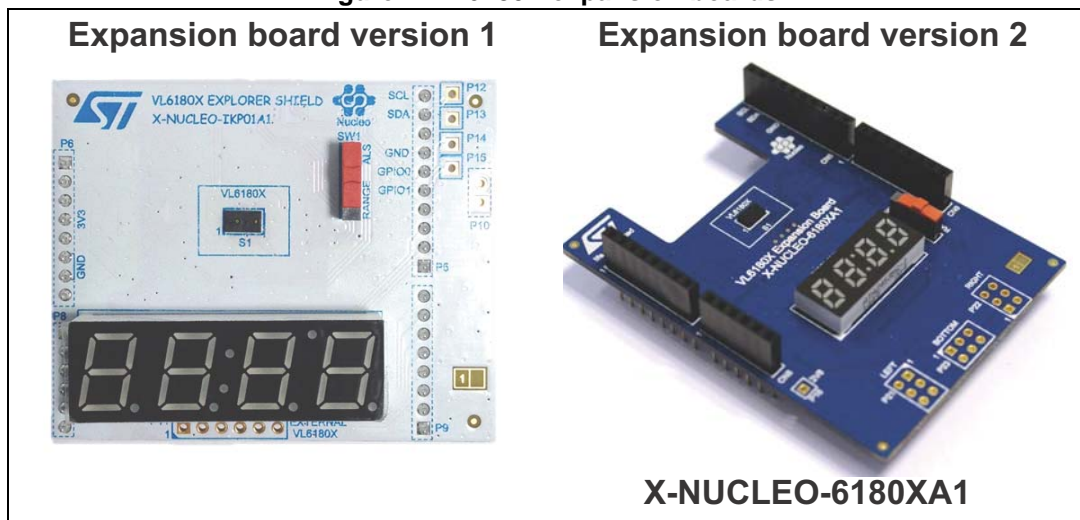
VL6180X expansion board version 1 limitation

On VL6180X expansion board version 1 the display was directly connected on the Arduino connector.

Drawback was that all Arduino GPIO's were used to interface with the display and as a consequence, it was no more possible to plug any other expansion board, like for example a Bluetooth expansion board, between the STM32 Nucleo board and the VL6180X expansion board version 1 (see *Figure 2*).

With this limitation VL6180X expansion board version 1 was not "Nucleo" compatible and was available only as a kit with a STM32 F401RE board under the reference: EVALKIT-VL6180X.

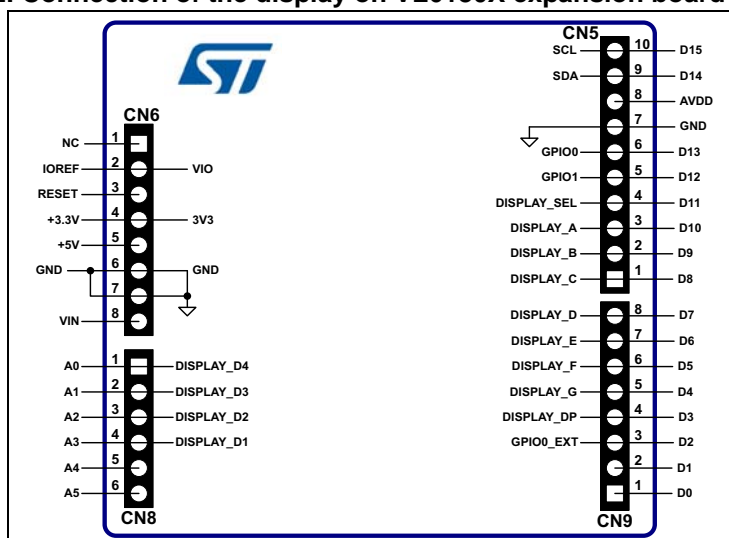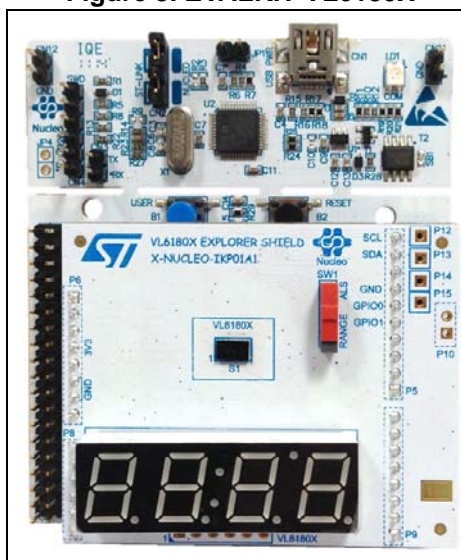**Figure 2. Connection of the display on VL6180X expansion board version 1**

Figure 3. EVALKIT-VL6180X

Detailed information on EVALKIT-VL6180X are given in the EVALKIT-VL6180X data brief on www.st.com/vl6180x.

VL6180X expansion board version 2

To solve the limitation of VL6180X expansion board version 1, a GPIO expander has been added to the VL6180X expansion board version 2, in order to control the display. Thanks to this modification several GPIO's on the Arduino connectors are free and can be used by other expansion boards allowing the superposition of several expansion boards on a STM32 Nucleo board (see *Figure 4* and *Figure 5*).

Figure 4. GPIO expander to control the display
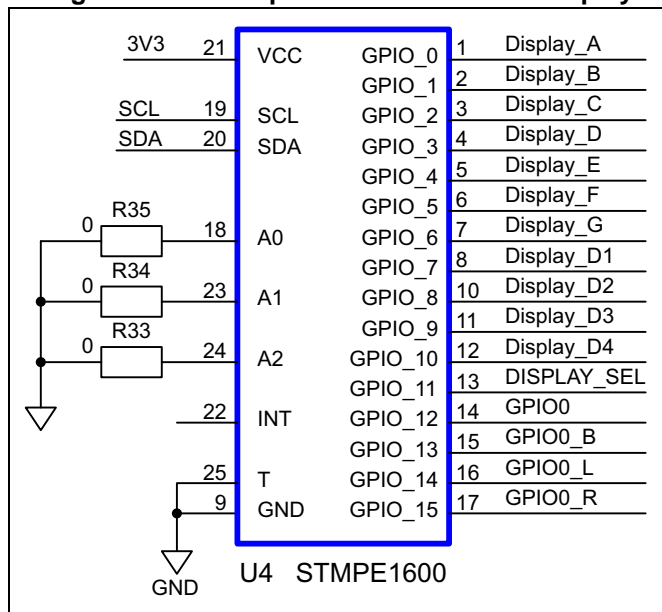
Figure 5. Arduino connector layout
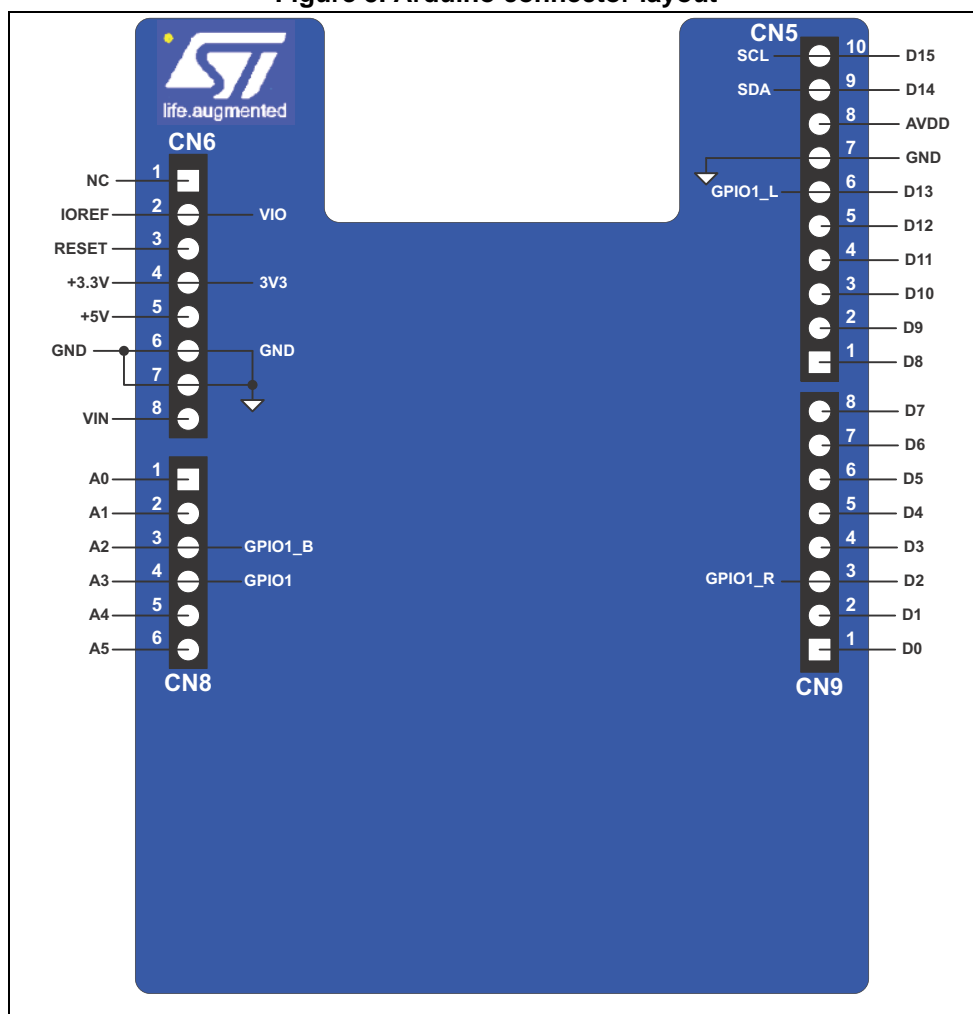
Detailed information on VL6180X expansion board version 2 are given in X-NUCLEO-6180XA1 data-brief on www.st.com/vl6180x.

Using VL6180X expansion board version 2 with multiple external VL6180X satellites

The VL6180X expansion board version 2 introduces the possibility to connect up to three VL6180X satellite boards which enables the development of new creative applications, like for example basic gesture recognition or multiple sensors systems (see *Figure 6*).
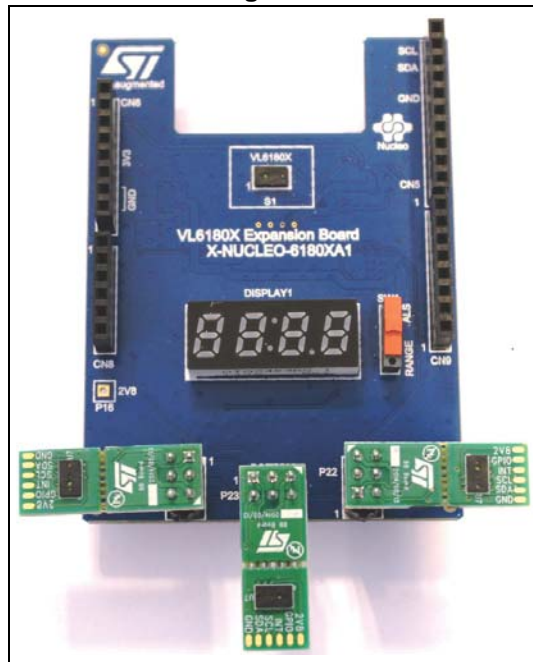
Figure 6.

Figure 7. VL6180X satellite boards

Ordering information

On www.st.com

Table 1. Ordering information

Order code	Description
X-NUCLEO-6180XA1	VL6180X expansion board for STM32 Nucleo board family.
VL6180X-SATEL	Two VL6180X satellite boards

Revision history

Table 2. Document revision history

Date	Revision	Changes
12-Mar-2015	1	Initial release.

IMPORTANT NOTICE – PLEASE READ CAREFULLY