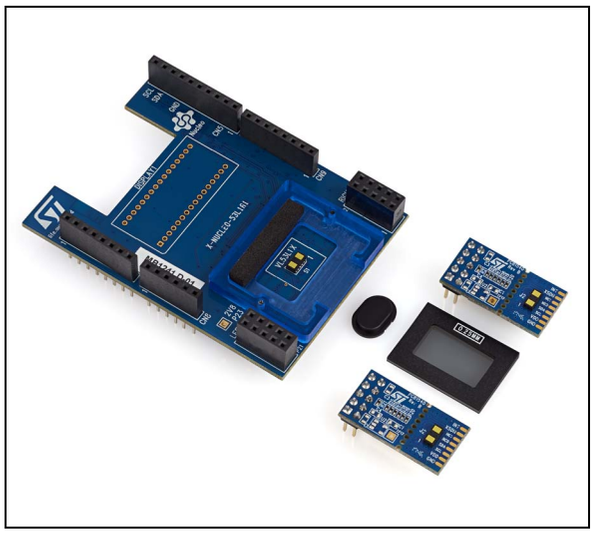
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X-NUCLEO-53L1A1

Long distance ranging Time-of-Flight sensor expansion board based on VL53L1X for STM32 Nucleo

Data brief



Features

- VL53L1X Time-of-Flight (ToF), long-distance ranging sensor module
- Accurate absolute ranging distance, independent of the reflectance of the target
- 0.25, 0.5 and 1 mm spacers to simulate air gaps
- Two different cover windows
- Two VL53L1X breakout boards
- Compatible with STM32 Nucleo board family
- Equipped with Arduino™ UNO R3 connector
- RoHS compliant
- Full system SW is supplied, including code examples and graphical user interface. All this can be downloaded from the folder “TOOLS AND SOFTWARE, section Ecosystems” on www.st.com/VL53L1X

Description

The X-NUCLEO-53L1A1 is an expansion board for the NUCLEO-F401RE and NUCLEO-L476RG development boards. It provides a complete evaluation kit allowing anyone to learn, evaluate, and develop their applications using the VL53L1X ToF, long-distance ranging sensor technology.

The X-NUCLEO-53L1A1 expansion board is delivered with a cover glass holder in which three different spacers of 0.25, 0.5 and 1 mm height can be fitted below the cover glass to simulate various air gaps.

Two VL53L1X breakout boards can be connected using two 10-pin connectors.

The X-NUCLEO-53L1A1 expansion board is compatible with the STM32 nucleo board family, and with the Arduino UNO R3 connector layout.

Several ST expansion boards can be superposed through the Arduino connectors which allows, for example, the development of VL53L1X applications with Bluetooth or Wi-Fi interfaces.

Table 1. Device summary

Order code	Description
X-NUCLEO-53L1A1	Expansion board for STM32 nucleo board family

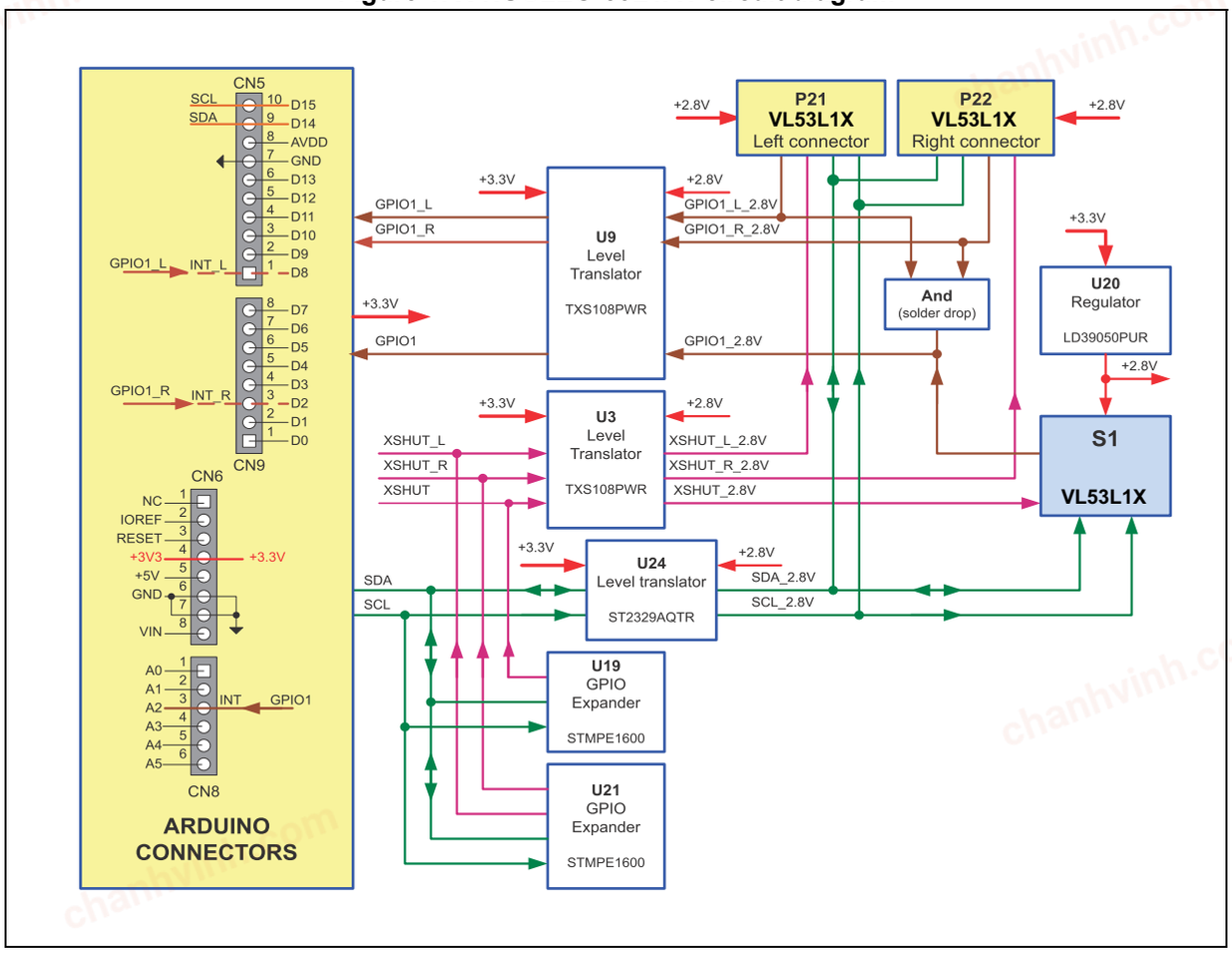
For further information contact your local STMicroelectronics sales office. www.st.com

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1 Block diagram

Figure 1 describes the X-NUCLEO-53L1A1 expansion board features.

Figure 1. X-NUCLEO-53L1A1 circuit diagram



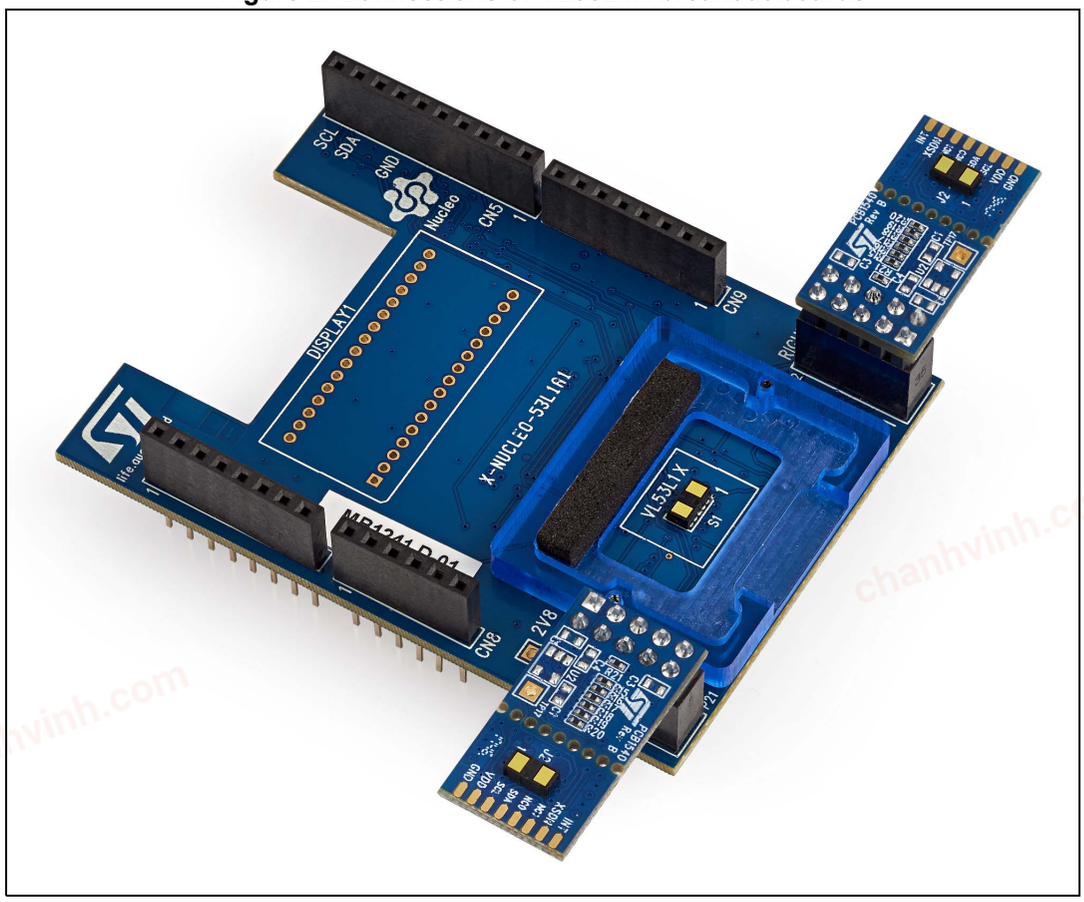
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2 Optional VL53L1X breakout boards

The VL53L1X breakout boards can be directly plugged onto the VL53L1X expansion board through two 10-pin connectors or they can be connected to the board through flying leads.

When connected through flying leads, developers should break off the mini PCB from the breakout board, and use only the “VL53L1X mini PCB” which is smaller and integrates more easily into customers devices.

Figure 2. Connections of VL53L1X breakout boards



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3 Laser considerations

The VL53L1X contains a laser emitter and corresponding drive circuitry. The laser output is designed to remain within Class 1 laser safety limits under all reasonably foreseeable conditions including single faults in compliance with IEC 60825-1:2014 Edition 3. The laser output remains within Class 1 limits as long as STMicroelectronic's recommended device settings are used and the operating conditions specified in the datasheet are respected. The laser output power must not be increased by any means and no optics should be used with the intention of focusing the laser beam.

Figure 3. Class 1 laser product label



4 ECOPACK®

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: *www.st.com*. ECOPACK® is an ST trademark.

5 Revision history

Table 2. Document revision history

Date	Revision	Changes
02-Feb-2018	1	Initial release
20-Feb-2018	2	Updated title Replaced cover image Updated *Features* Updated *Description* Replaced "satellite boards" with "breakout boards" Updated title of *Figure 1: X-NUCLEO-53L1A1 circuit diagram*. Replaced *Figure 2: Connections of VL53L1X breakout boards*.

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