

## Time-of-Flight 8x8 multizone ranging sensor with wide field of view expansion board based on VL53L5CX for STM32 Nucleo



### Features

- VL53L5CX Time-of-Flight 8x8 multizone ranging sensor with wide field of view
- Accurate absolute ranging distance, independent of the reflectance of the target
- 0.25, 0.5, and 1 mm spacers to simulate air gaps
- Cover window to protect sensor from dust
- Compatible with STM32 Nucleo board family
- Equipped with Arduino™ UNO R3 connector
- RoHS, CE, UKCA, and China RoHS compliant
- Full system software (SW) supplied, including code examples and graphical user interface. All this can be downloaded from the VL53L5CX product page on [st.com](http://st.com).

### Description

The X-NUCLEO-53L5A1 is an expansion board for the NUCLEO-F401RE development board. It provides a complete evaluation kit allowing anyone to learn, evaluate, and develop their applications using the VL53L5CX, multizone ranging sensor with wide field of view expansion.

The X-NUCLEO-53L5A1 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.

The X-NUCLEO-53L5A1 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 VL53L5CX applications with Bluetooth or Wi-Fi interfaces.

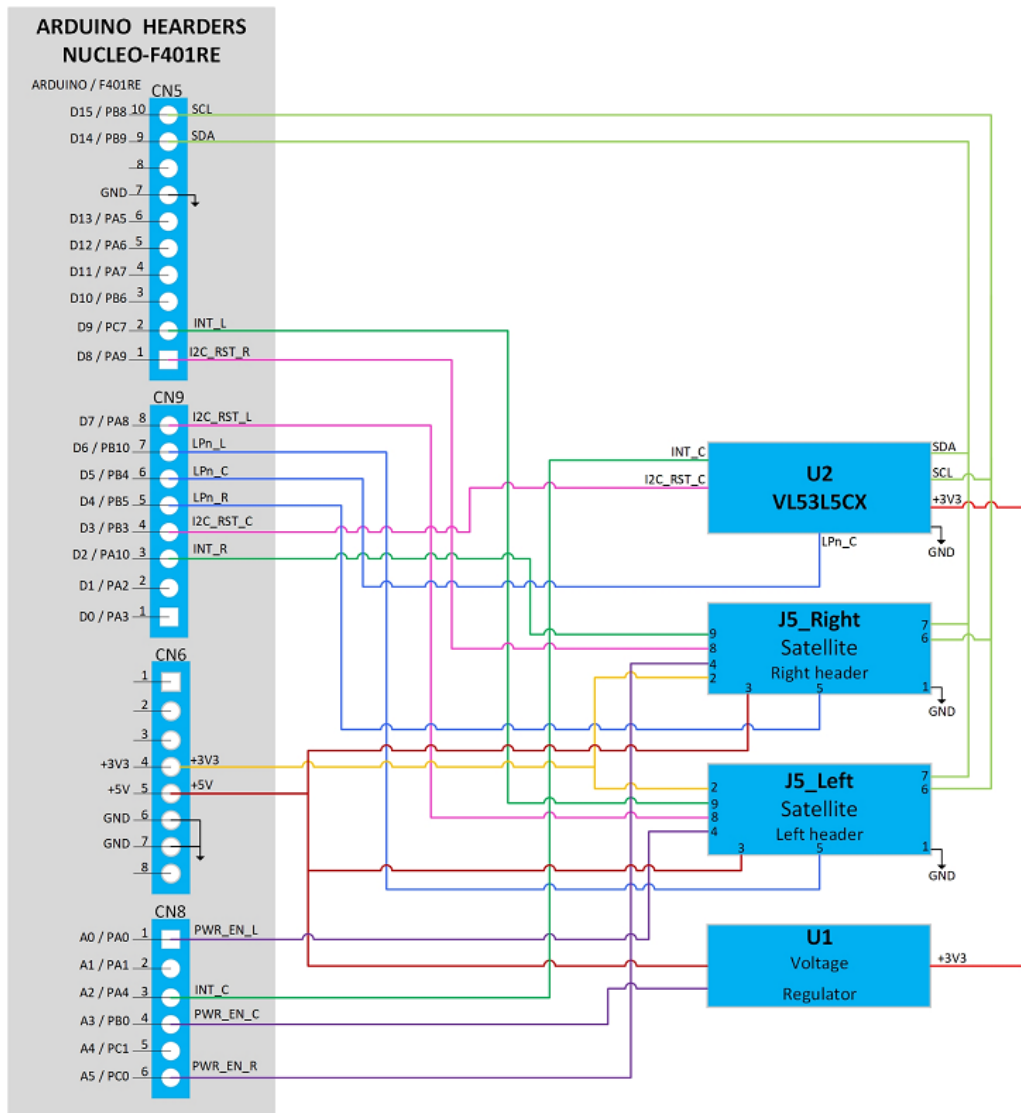


Order code	Description
X-NUCLEO-53L5A1	Expansion board for STM32 nucleo board family

# 1 Block diagram

The figure below describes the X-NUCLEO-53L5A1 expansion board features

Figure 1. X-NUCLEO-53L5A1 circuit diagram



## 2 Optional VL53L5CX breakout boards

The VL53L5CX breakout boards can be directly plugged onto the VL53L5CX expansion board through two 9-pin (see Figure 2. Connections of VL53L5CX breakout boards) connectors or they can be connected to the board through flying wires (see Figure 3. VL53L5CX mini PCB flying wires connection to X-NUCLEO-53L5A1 expansion board).

Breakout boards can be purchased separately using the reference: VL53L5CX-SATEL (link to the page: <https://www.st.com/en/evaluation-tools/vl53l5cx-satel.html>). In this pack, you have two breakout boards.

**Figure 2. Connections of VL53L5CX breakout boards**

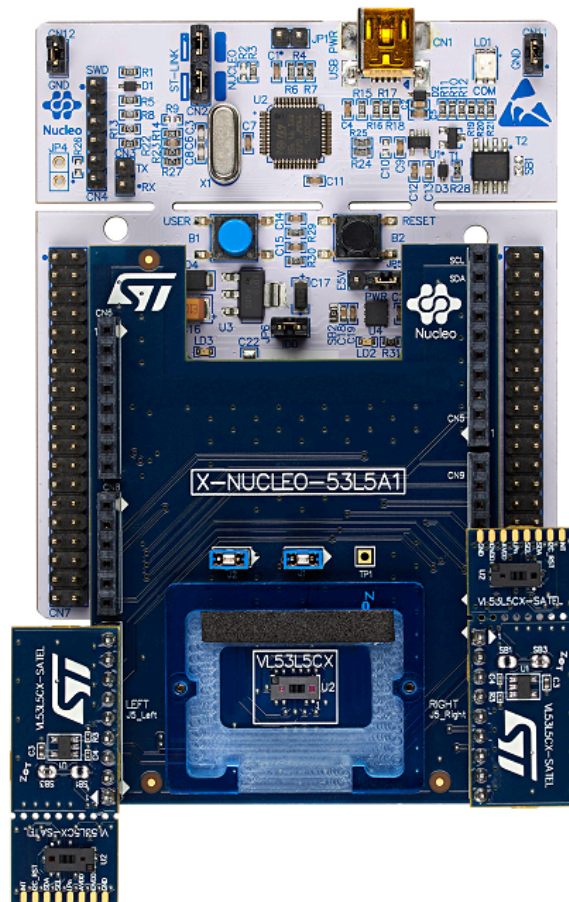
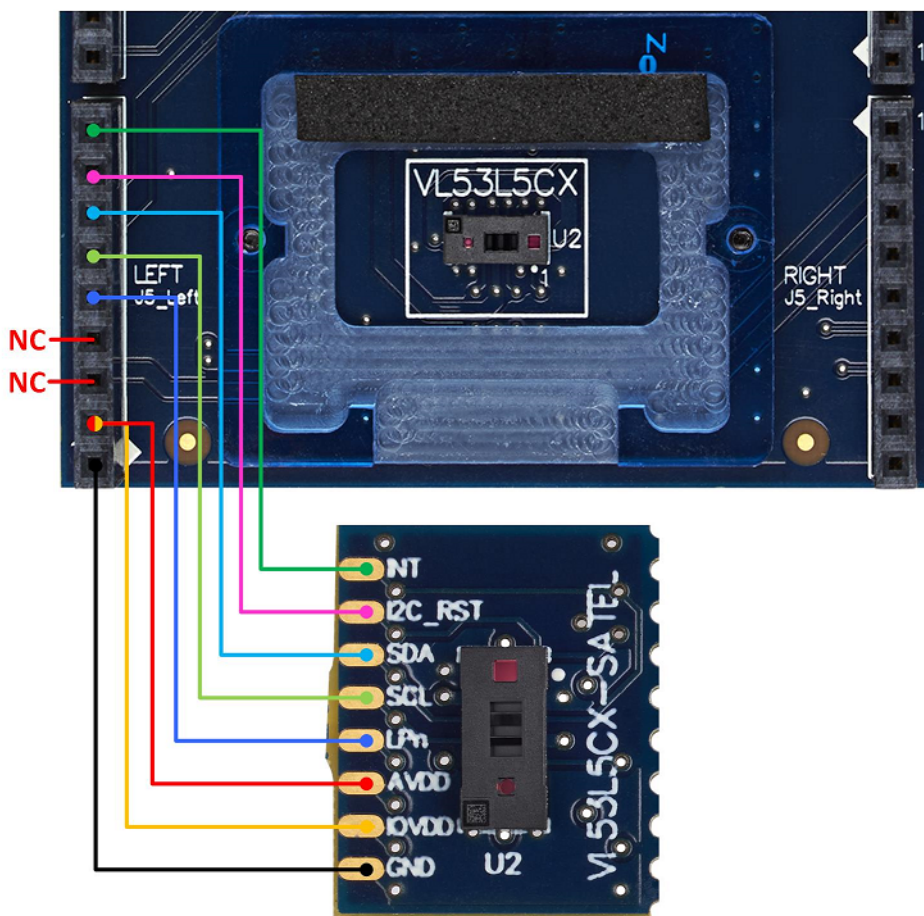


Figure 3. VL53L5CX mini PCB flying wires connection to X-NUCLEO-53L5A1 expansion board



### 3 Laser safety considerations

The VL53L5CX contains a laser emitter and corresponding drive circuitry. The laser output is designed to remain within Class 1 laser safety limits under all reasonable foreseeable conditions, including single faults, in compliance with the IEC 60825-1:2014 (third edition). The laser output remains within Class 1 limits as long as the STMicroelectronics recommended device settings are used and the operating conditions specified in the datasheet are respected. The laser output power must not be increased and no optics should be used with the intention of focusing the laser beam.

**Figure 4. Class 1 laser product label**



## **4** Package information

---

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](http://www.st.com). ECOPACK is an ST trademark.

## Revision history

**Table 1. Document revision history**

Date	Version	Changes
09-Jun-2021	1	Initial release