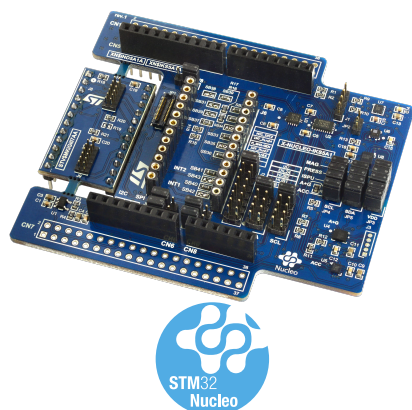


STM32 Nucleo motion and environmental MEMS expansion board for industrial applications



Features

- Wide range of industrial motion and environmental sensors:
 - **ISM6HG256X**: intelligent IMU with simultaneous low-g and high-g acceleration detection
 - **ISM330IS**: 6-axis IMU, always-on 3-axis accelerometer and 3-axis gyroscope with ISPU
 - **IIS2DULPX**: intelligent ultralow power accelerometer for industrial applications
 - **ILPS22QS**: dual full-scale, 1260 hPa and 4060 hPa, absolute digital output barometer
 - **IIS2MDC**: high accuracy, ultralow power, 3-axis digital output magnetometer
- DIL24 socket and industrial connectors for external sensors
- Compatible with **X-CUBE-MEMS1**, an expansion software package for **STM32Cube**
- I²C sensor hub features on ISM330IS and ISM6HG256X available
- Supported by **MEMS-Studio**, a software solution for MEMS sensors with graphical no-code design of algorithms and development of embedded AI features
- Compatible with STM32 Nucleo boards
- Equipped with Arduino® UNO R3 connector
- RoHS compliant and WEEE compliant

Description

The **X-NUCLEO-IKS5A1** is an industrial motion MEMS and environmental sensor evaluation board kit composed by:

- **X-NUCLEO-IND5A1**: the main board, it hosts the motion MEMS and environmental sensors.
- **STEVAL-MKGI07A**: a detachable add-on board, which hosts two industrial connectors.

The **X-NUCLEO-IKS5A1** expansion board allows application development with features like FSM, MLC, ISPU, and sensor hub (with **ISM330IS** and **ISM6HG256X** onboard).

There is also the possibility to use external sensors, which can be connected through:

- DIL24 adapter boards.
- Ribbon flat cable.
- Flex PCB connection.

The board is supported by the ST Edge AI Suite with tools, including **MEMS-Studio** and **HSDataLog**.

Product summary	
STM32 NUCLEO motion and environmental MEMS expansion board for industrial applications	X-NUCLEO-IKS5A1
6-axis IMU, always-on 3-axis accelerometer and 3-axis gyroscope with ISPU	ISM330ISTR
Intelligent ultralow power accelerometer for industrial applications	IIS2DULPXTR
Dual full-scale, 1260 hPa and 4060 hPa, absolute digital output barometer	ILPS22QSTR
High accuracy, ultralow power, 3-axis digital output magnetometer	IIS2MDCTR
Sensor and motion algorithm software expansion for STM32Cube	X-CUBE-MEMS1
Software solution for MEMS sensors with graphical no-code design of algorithms and development of embedded AI features	MEMS-Studio
Applications	Industrial sensors

1

Figure 1. X-NUCLEO-IKS5A1 circuit schematic (1 of 4)

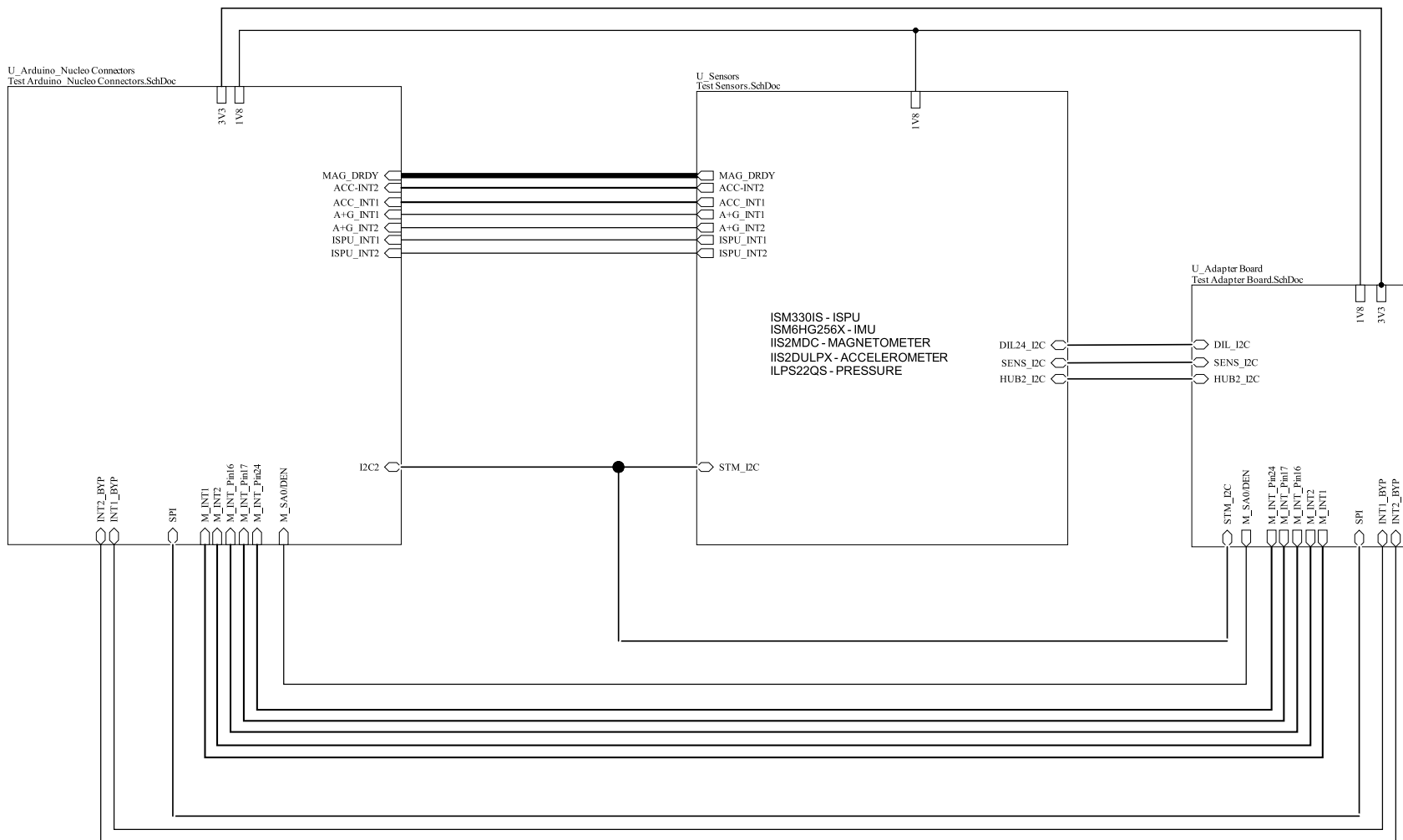
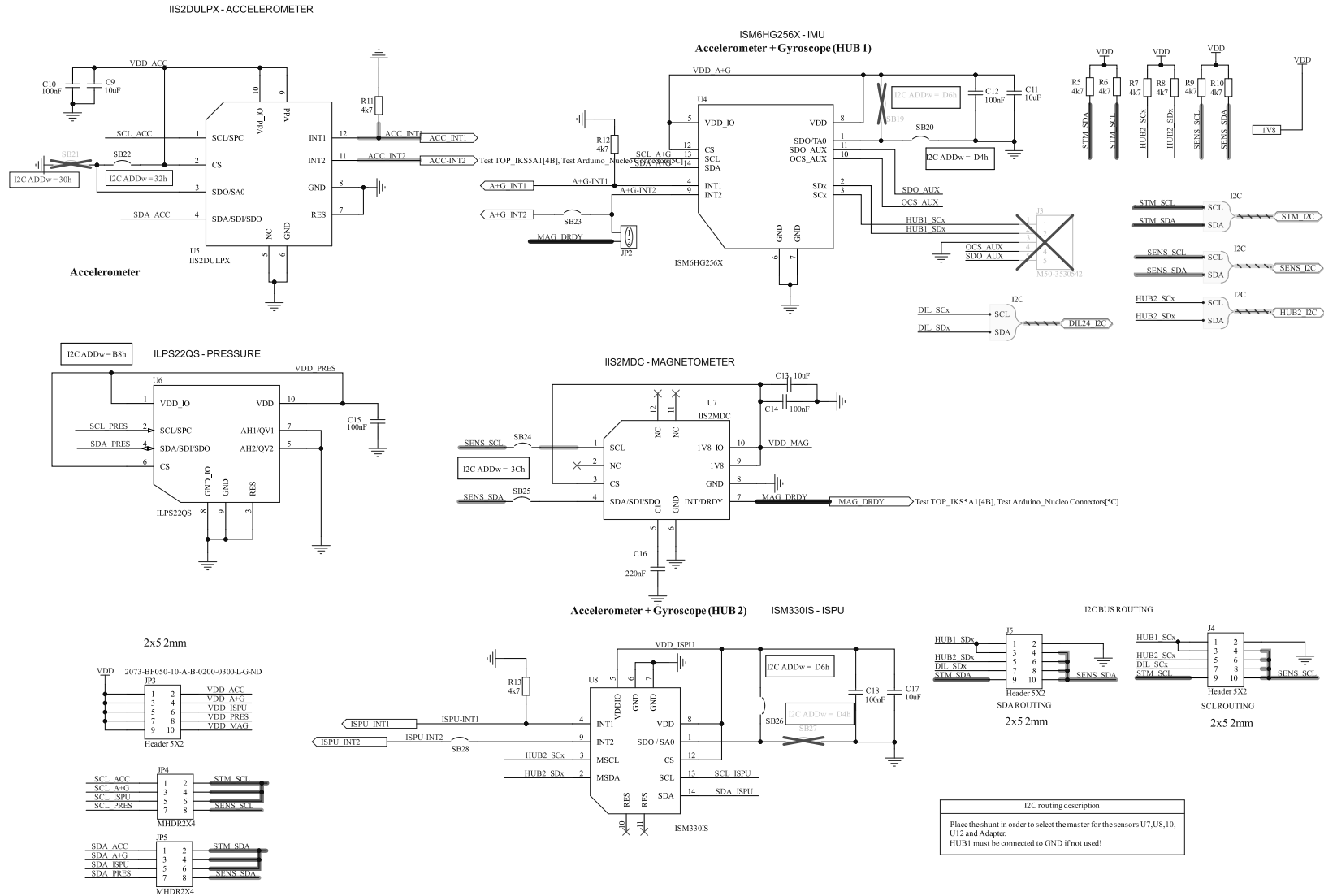


Figure 2. X-NUCLEO-IKS5A1 circuit schematic (2 of 4)



ALL shunt of JP3, JP4 and JP5 (2mm) must be closed





X-NUCLEO-IKS5A1

Schematic diagrams

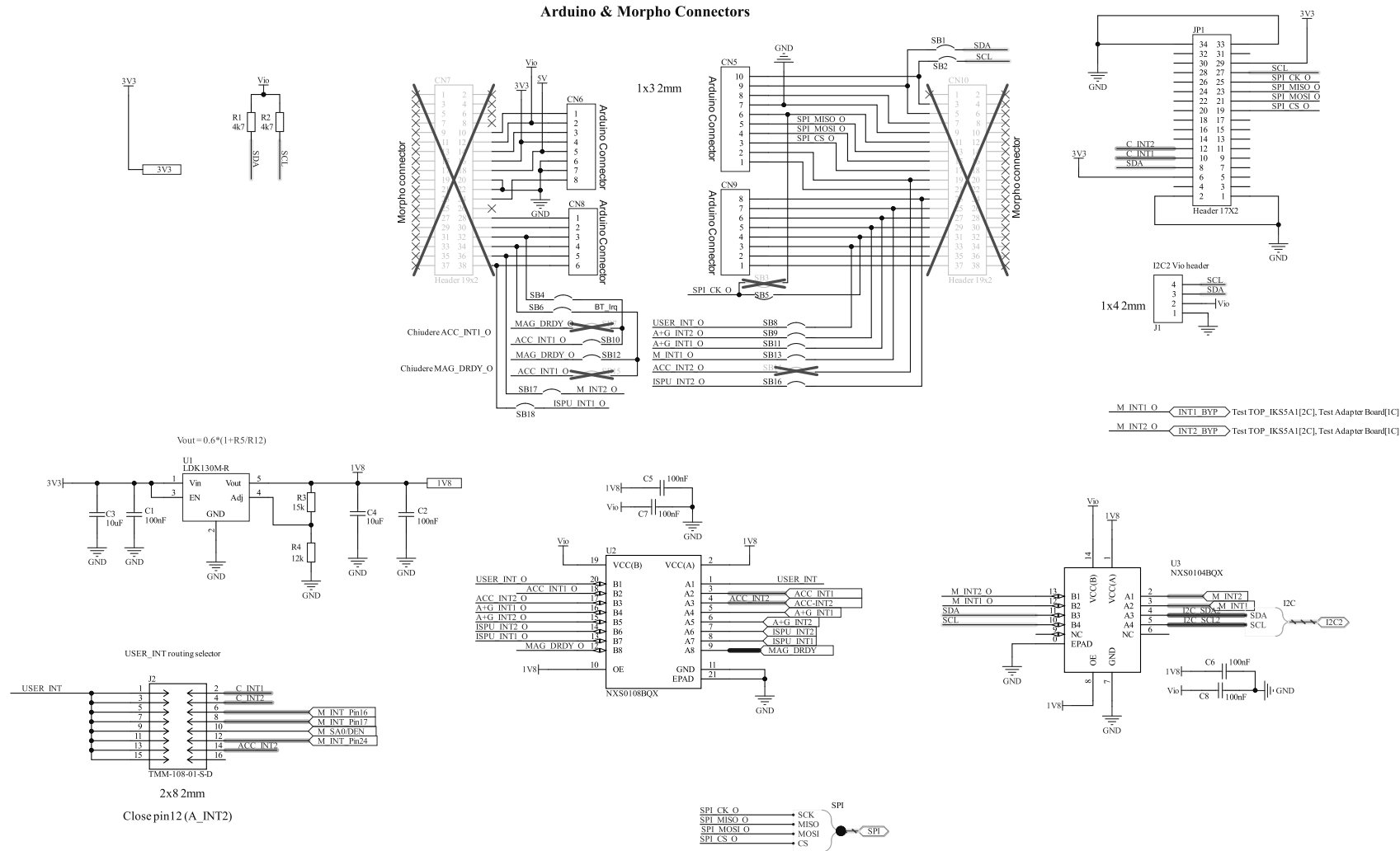
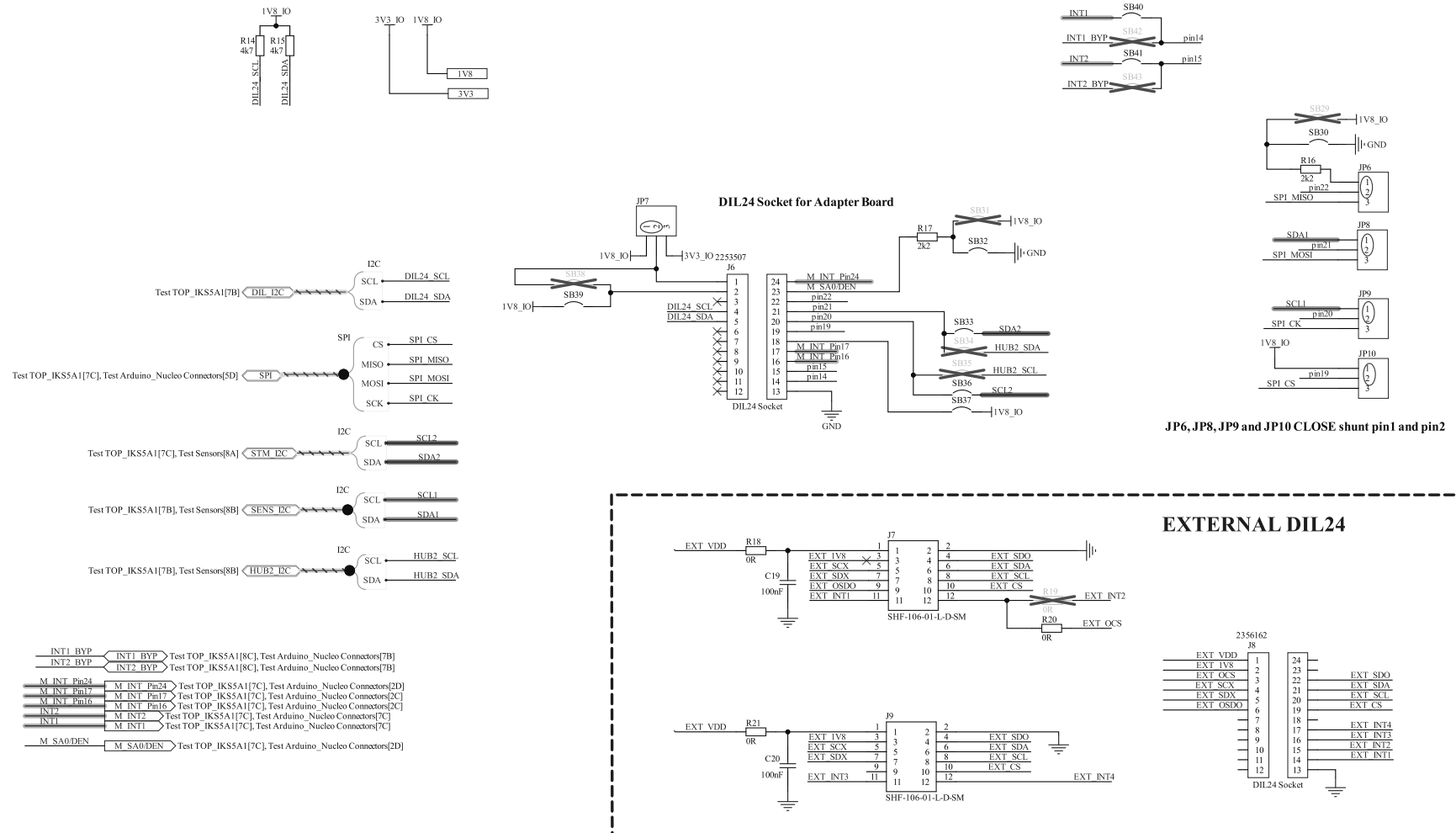


Figure 4. X-NUCLEO-IKS5A1 circuit schematic (4 of 4)



2 Board versions

Table 1. X-NUCLEO-IKS5A1 versions

Finished good	Schematic diagrams	Bill of materials
X\$NUCLEO-IKS5A1 ⁽¹⁾	X\$NUCLEO-IKS5A1 schematic diagrams	X\$NUCLEO-IKS5A1 bill of materials

1. This code identifies the X-NUCLEO-IKS5A1 evaluation board first version.

Revision history

Table 2. Document revision history

Date	Revision	Changes
24-Aug-2025	1	Initial release.
02-Oct-2025	2	Updated cover image and Section Product summary . Minor text changes.

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