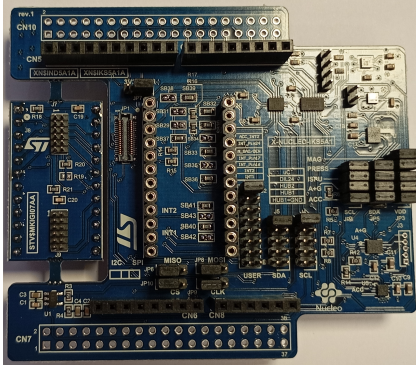


STM32 NUCLEO motion and environmental MEMS expansion board for industrial applications



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-MKGIO7A](#): 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
Main board for X-NUCLEO-IKS5A1 , which hosts the motion MEMS and environmental sensors	X-NUCLEO-IND5A1
Detachable add-on board for X-NUCLEO-IKS5A1 , which hosts two industrial connectors	STEVAL-MKGIO7A
Intelligent IMU with simultaneous low-g and high-g acceleration detection	ISM6HG256X
6-axis IMU, always-on 3-axis accelerometer and 3-axis gyroscope with ISPU	ISM330IS
Intelligent ultralow power accelerometer for industrial applications	IIS2DULPX

Product summary	
Dual full-scale, 1260 hPa and 4060 hPa, absolute digital output barometer	ILPS22QS
High accuracy, ultralow power, 3-axis digital output magnetometer	IIS2MDC
Applications	Industrial sensors

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

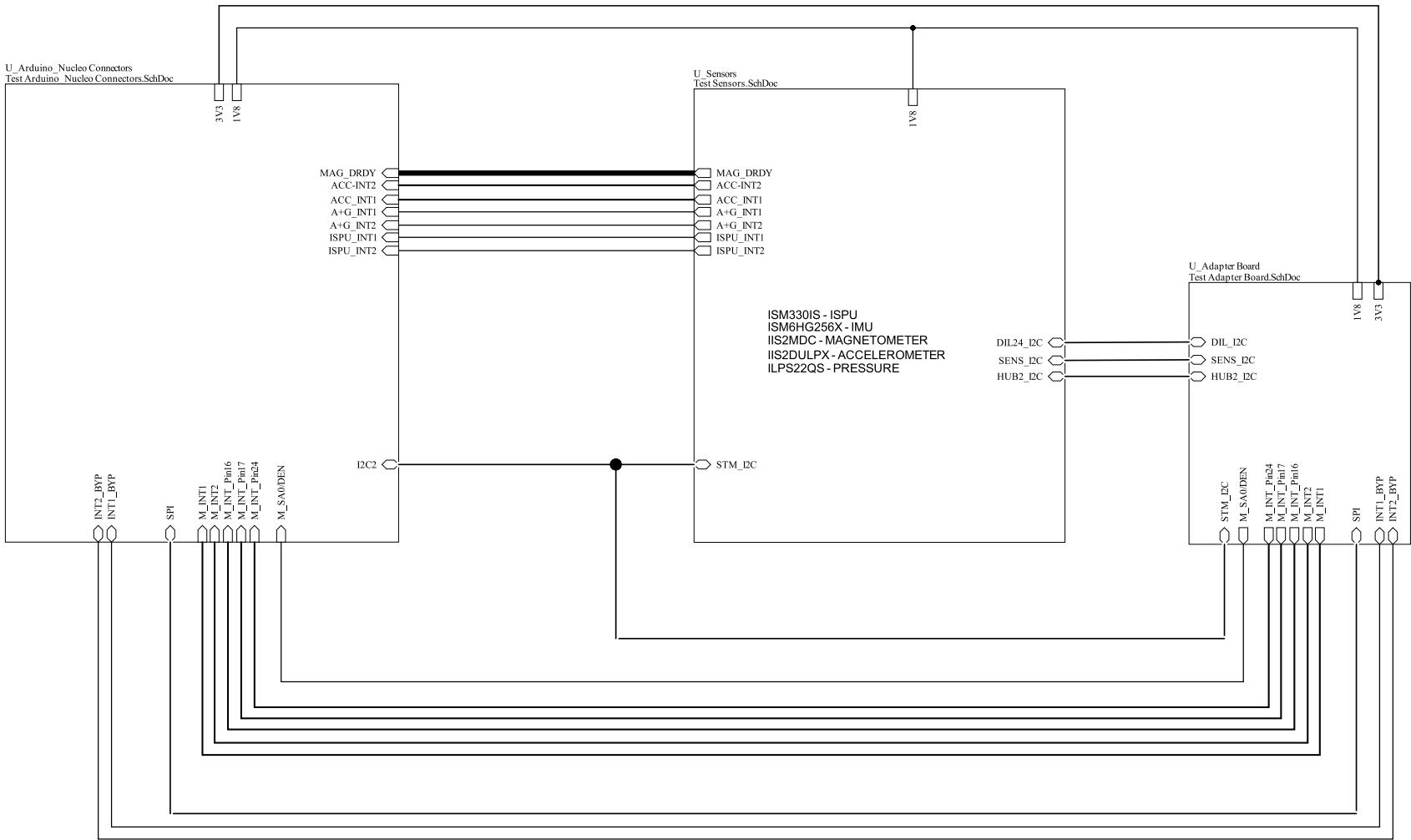
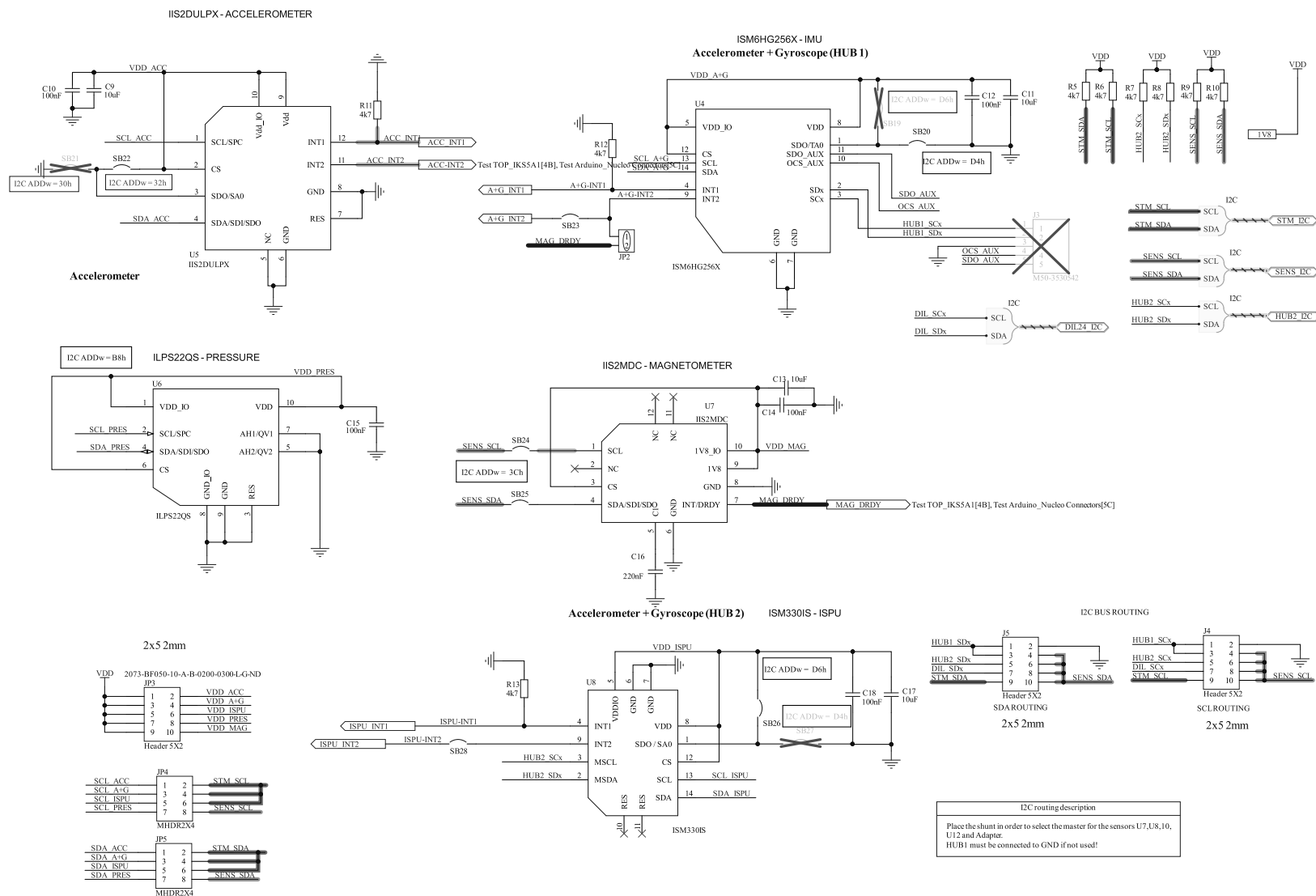


Figure 2. X-NUCLEO-IKS5A1 circuit schematic (2 of 4)



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



X-NUCLEO-IKS5A1

Schematic diagrams

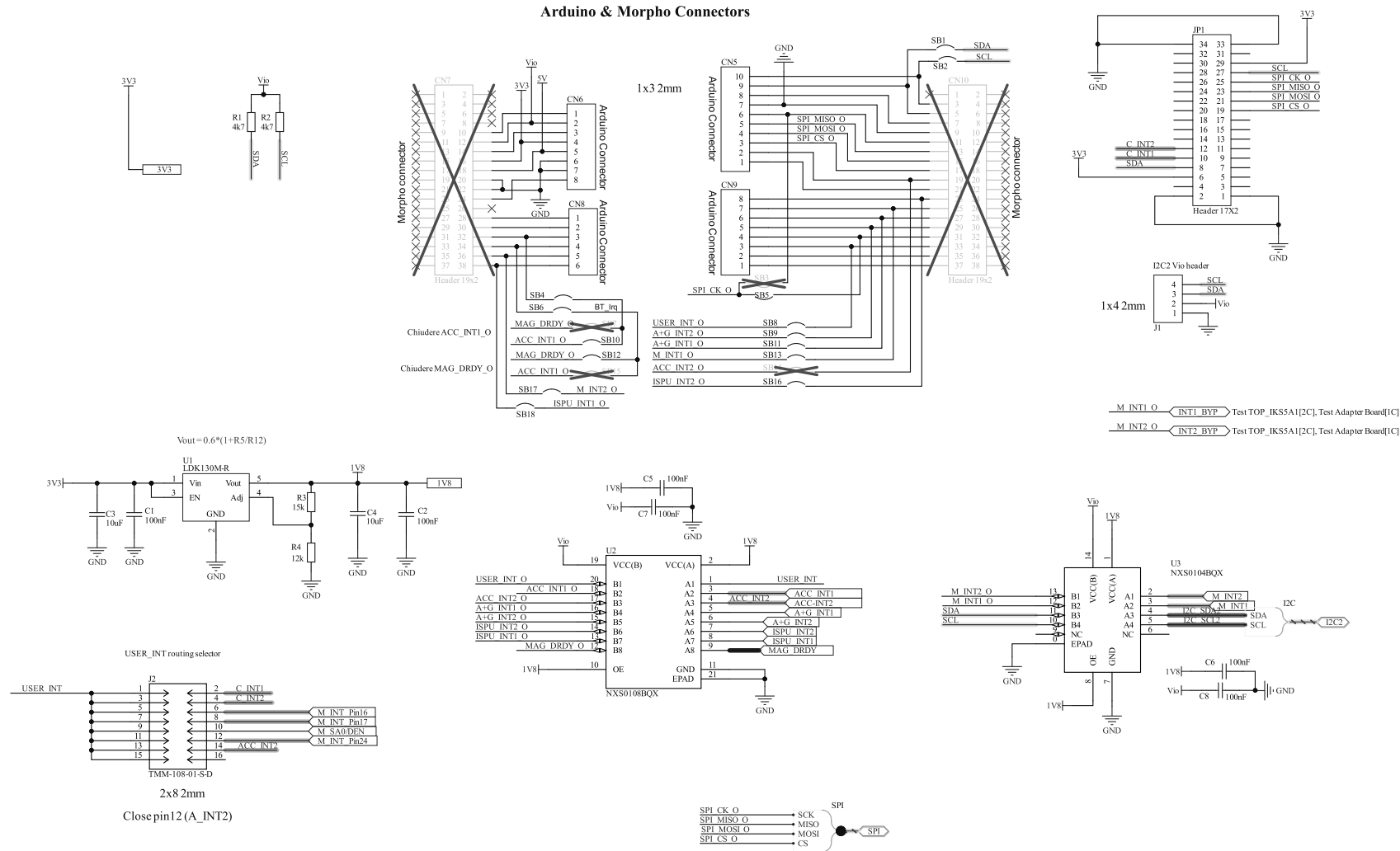
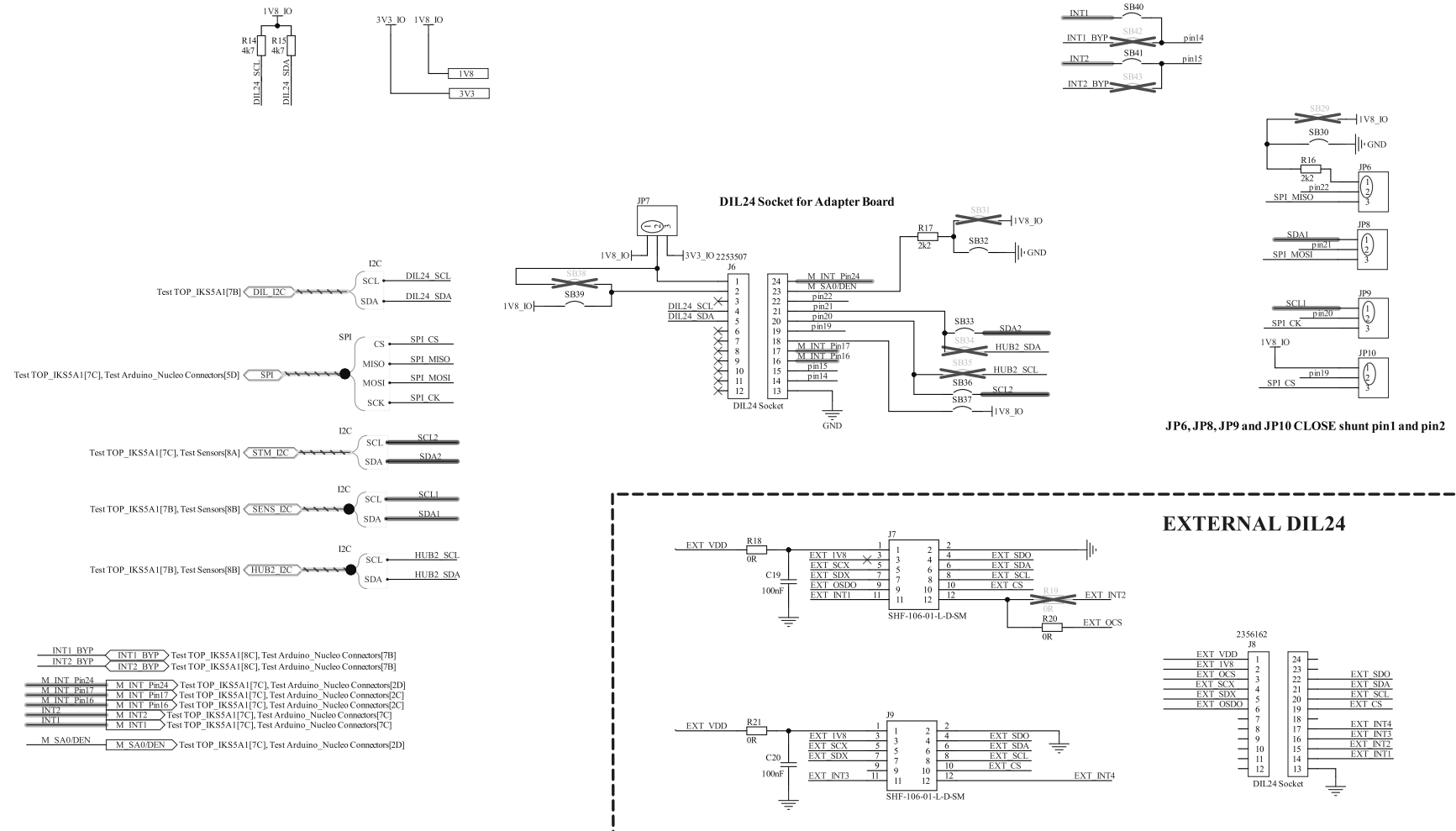


Figure 4. X-NUCLEO-IKS5A1 circuit schematic (4 of 4)



Revision history

Table 1. Document revision history

Date	Revision	Changes
24-Jul-2025	1	Initial release.

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