Motion MEMS and environmental sensor expansion board for STM32 Nucleo

Features

- LSM6DSO16IS: MEMS 3D accelerometer (±2/±4/±8/±16 g) + 3D gyroscope (±125/±250/±500/±1000/±2000 dps) with ISPU (Intelligent Processing Unit)
- LIS2MDL: MEMS 3D magnetometer (±50 gauss)
- LIS2DUXS12: Ultra low-power MEMS 3D accelerometer (±2/±4/±8/±16 g) with Qvar, AI, & anti-aliasing
- LPS22DF: Low-power and high-precision MEMS pressure sensor, 260-1260 hPa absolute digital output barometer
- SHT40AD1B
- STTS22H: Low-voltage, ultralow-power, 0.5 °C accuracy temperature sensor (–40 °C to +125 °C)
- LSM6DSV16X: MEMS 3D accelerometer (±2/±4/±8/±16 g) + 3D gyroscope (±125/±250/±500/±1000/±2000/±4000 dps) with embedded sensor fusion, AI, Qvar
- DIL 24-pin socket available for additional MEMS adapters and other sensors
- Free comprehensive development firmware library and example for all sensors compatible with STM32Cube firmware
- Equipped with Qvar touch/swipe electrode
- I²C sensor hub features on LSM6DSO and LSM6DSV16X available
- MIPI I3C® compatibility for communication with LIS2DUXS12, LSM6DSV16X and LPS22DF
- Compatible with STM32 Nucleo boards
- Equipped with Arduino UNO R3 connector
- Equipped with industrial connector for IR sensor (STHS34PF80) application development. It can be connected at the same time of external MEMS through DIL24 adapter
- Available interface for external camera module applications coupled with LIS2DUXS12 through aux SPI (3/4 w)
- RoHS compliant
- WEEE compliant
- UKCA compliant

Description

The X-NUCLEO-IKS4A1 is a motion MEMS and environmental sensor evaluation board kit consisting of the main board X-NUCLEO-IQS4A1, which hosts the motion MEMS and environmental sensors, and the detachable add-on board STEVAL-MKE001A, which hosts the Qvar swipe electrodes.

This expansion board allows application development with features like sensor HUB (LSM6DSO16IS and LSM6DSV16X), camera module integration and Qvar touch/swipe gestures (thanks to the equipped electrode).

There is also the possibility to integrate presence and motion detection with an IR sensor.
Figure 1. X-NUCLEO-IKS4A1 circuit schematic (1 of 4)
Figure 2. X-NUCLEO-IKS4A1 circuit schematic (2 of 4)
Figure 3. X-NUCLEO-IKS4A1 circuit schematic (3 of 4)
Figure 4. X-NUCLEO-IKS4A1 circuit schematic (4 of 4)
2 Kit versions

Table 1. X-NUCLEO-IKS4A1 versions

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<td>X$NUCLEO-IKS4A1A schematic diagrams</td>
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1. This code identifies the X-NUCLEO-IKS4A1 evaluation kit first version. The kit consists of the main board X-NUCLEO-IQS4A1 whose version is identified by the code X$NUCLEO-IQS4A1A and the detachable board STEVAL-MKE001A whose version is identified by the code STEVAL$MKE001AA.
## Revision history

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<td>11-Oct-2023</td>
<td>1</td>
<td>Initial release.</td>
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**Table 2. Document revision history**