



X-NUCLEO-IKS01A1

Open.MEMS





STM32 Nucleo expansion board

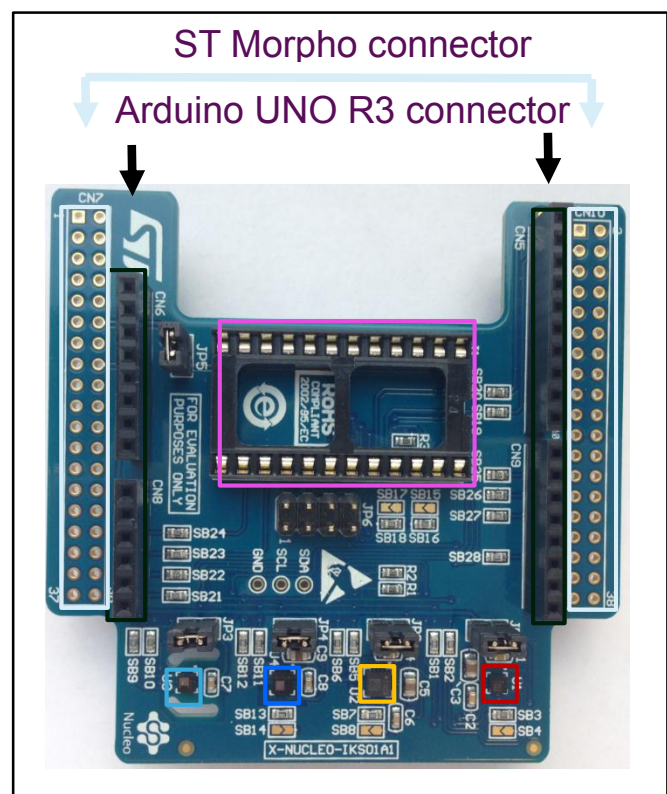
X-NUCLEO-IKS01A1

The X-NUCLEO-IKS01A1 is a motion MEMS and environmental sensors evaluation board system. The X-NUCLEO-IKS01A1 interfaces with the STM32 microcontroller via the I²C, and allows sensors current consumption evaluation via dedicated jumpers. The X-NUCLEO-IKS01A1 is the reference hardware expansion board for the Open.MEMS software program.

Key Products on Board

- **LSM6DS0**: MEMS 3D accelerometer ($\pm 2/\pm 4/\pm 8$ g) + 3D gyroscope ($\pm 245/\pm 500/\pm 2000$ dps)
- **LIS3MDL**: MEMS 3D magnetometer ($\pm 4/\pm 8/\pm 12/16$ gauss)
- **LPS25HB**: MEMS pressure sensor, 260-1260 hPa absolute digital output barometer
- **HTS221**: Capacitive digital relative humidity and temperature
- **DIL 24-pin**: Socket available for additional MEMS adapters and other sensors (e.g. LSM6DS3)

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|--|---|
|  HTS221 |  LSM6DS0 |
|  LPS25HB |  LIS3MDL |
|  DIL 24-pin | |



Order Code: X-NUCLEO-IKS01A1

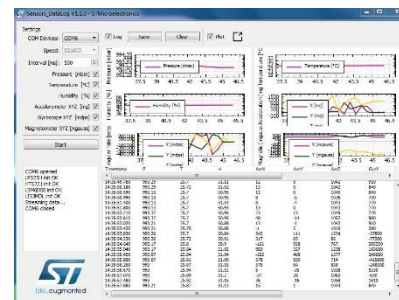
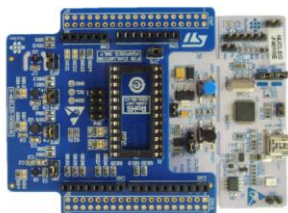
X-NUCLEO-IKS01A1 - What can I do?

The X-NUCLEO-IKS01A1 development kit integrates powerful source code examples (for NUCLEO-L053R8, NUCLEO-F401RE and NUCLEO-L152RE) enabling to quickly evaluate ST sensors in many different application scenarios (3D orientation estimation, activity recognition, ...) including combinations with other X-NUCLEO boards i.e. BlueNRG network processor and a BLE smartphone.

→ Evaluate ST digital MEMS sensors thanks to X-CUBE-MEMS1 package.

The package contains source code examples (Keil, IAR, System Workbench for STM32 IDE ...) based on NUCLEO-L053R8, NUCLEO-F401RE and NUCLEO-L152RE allowing:

- Acquisition of MEMS & sensor data in Data logger PC GUI
- Evaluation of SW examples in source code (e.g. freefall)

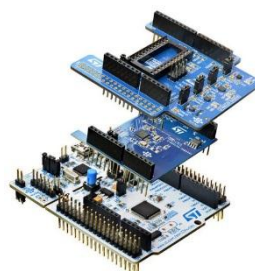


→ Open.MEMS Sensor Fusion and activity recognition

- **OsxMotionFX**
 - Real-time motion 6 and 9-axis sensor fusion software expansion for STM32Cube
 - Gyroscope bias and Magnetometer calibration
- **OsxMotionAR**
 - Real-time Activity Recognition software expansion for STM32Cube
 - Stationary, Walking, Fast walking, Jogging, Biking, Driving

→ Evaluate, prototype your applications based on Open.MEMS libraries with BLUEMICROSYSTEM1:

- Expansion software package for STM32Cube
- Motion MEMS sensor fusion (osxMotionFX) over BLE link on Smart phone display
- Smart phone Apps in src code (Android, iOS)



X-NUCLEO-IKS01A1 - Quick Start Guide

Name	Description	Web link
X-NUCLEO-IKS01A1	Motion MEMS and environmental sensors expansion board	http://www.st.com/web/catalog/tools/FM116/CL1620/SC1971/PF261191
Open.MEMS	Libraries and processing algorithms for sensor fusion and activity recognition (under Open.MEMS license)	http://www.st.com/openmems
X-CUBE-MEMS1	Motion MEMS and environmental sensors software expansion for STM32Cube	http://www.st.com/web/en/catalog/tools/PF261412
BLUEMICROSYSTEM1	Bluetooth low energy and sensors software expansion for STM32Cube (under Open.MEMS license)	http://www.st.com/web/catalog/tools/FM147/CL1818/SC1998/PF261772