

# Ensuring sustainability & intelligence

An overview of ST MEMS & Sensors products to help you understand the use cases and the benefits they bring to people's lives.



## FOLLOW OUR JOURNEY TO A SUSTAINABLE ONLIFE ERA

With the increasing fusion of technology in our daily lives, sensors are essential for improving our interactions with the world around us. Now, in a world facing new environmental challenges, people have even greater expectations. More than just making our lives better, these devices must be efficient and help protect the planet, while remaining centered on humans.

ST is enabling the transition to a **sustainable Onlife era** with an extensive MEMS sensor portfolio based on more than 25 years of experience and innovation. Our MEMS sensors are smart, open, accurate, and designed to help you build human-centric solutions that boost user creativity and interaction with the world, while optimizing energy efficiency in embedded systems.



### SMART

Sensors are capable of directly processing the data they capture and delivering meaningful insights to the host device. By processing data locally, smart sensors reduce transmitted data and cloud processing requirements, thus lowering power consumption at the system level.

Our unique offers: **machine learning core (MLC) and intelligent sensor processing unit (ISPU).**



### OPEN

Sensors that can interface with other sensors. This allows third parties to benefit from ST on-sensor processing innovations, while contributing to an ecosystem that creates value for customers.

Our unique offers: **ST MEMS sensor hub and ST MEMS sensor ecosystem.**



### ACCURATE

Sensors can provide high-precision data that allows better quality decisions and smoother and more natural user interactions. These sensors also reduce factory calibration time and resources to reduce energy requirements even further.

Our unique offers: **sensor fusion low power (SFLP), adaptive self-configuration (ASC).**

At STMicroelectronics  
we create  
technology that  
starts with You



Order code: BR2503MEMSSENSOR

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## MEMS and Sensors Quick Reference Guide





OUR MEMS SUSTAINABLE SOLUTIONS MATCH YOUR NEEDS



MEMS sensors in your hands (AXL, PS, IMU)\*

- Smartphones, tablets, foldable phones
- Personal trackers
- Gaming devices
- Remote control
- Notebooks, laptops
- Cameras



MEMS sensors in your training (AXL, PS, IMU)\*

- Watches, rings, smart band
- True wireless stereo (TWS)
- Pedometers
- Treadmills and barbells



MEMS sensors in your home (AXL, PS, IMU, IR)\*

- Home alarm systems and car garages
- White goods
- Smart speakers
- Smart home automation control
- Electric, gas/water meters



MEMS sensors in your car (AXL, IMU)\*

- Telematic boxes and security systems (car alarms)
- Body applications
- In-dash car navigation, precise positioning, ADAS
- Vehicle dynamics, stability and roll control systems and active suspensions
- Smart keys and road noise canceling systems



MEMS sensors in smart manufacturing (AXL, PS, IMU, IR)\*

- Industrial IoT and connected devices
- Robotics, automation, and drones
- Precision inclinometers and leveling instruments
- Weather station equipment
- Smart filters, and gas and water meters
- Equipment condition monitoring
- Power tools
- Asset trackers



MEMS sensors in healthcare (AXL, IMU, Biosensors)\*

- Helmets
- Earning aids
- Vital signs monitoring
- Rehabilitation devices
- Healthcare mobility
- Implantable medical devices
- Biopotential signals



\*AXL: accelerometers, PS: pressure sensors, IMU: inertial measurement units, IR: infrared sensors

A UNIQUE OFFERING BRINGING INTELLIGENCE TO THE EDGE

ST **smart sensors** allow developers to maximize the functionality of their application while improving overall system efficiency. By leveraging machine learning techniques, we enable true **edge processing** to improve accuracy and reduce power consumption.

**Machine learning core**  
In-sensor classification engine based on decision tree logic

**Intelligent sensor processing unit**  
Highly specialized DSP for machine learning and processing

- **Extremely low-power** sensors
- **Increased accuracy** with better context detectability
- **Offloading** the main processor and improving system efficiency

- **Ultralow power** consumption at **system level** thanks to **optimized data transfer**
- High processing capability with **AI-enabled programmable core**
- Comprehensive **ecosystem**

**Sensor hub** feature, enabling connection of external standard sensors

MEET OUR FEATURED PRODUCTS

Motion sensors		Environmental sensors	Infrared sensors
Accelerometers	Inertial measurement units	Pressure sensors	Infrared sensors
LIS2DU12	LSM6DSV16X	LPS22DF	STHS34PF80
LIS2DUX12	LSM6DSV16BX	LPS22HH	
LIS2DUXS12	LSM6DSV32X	LPS27HHW	
LIS2DW12	LSM6DSV80X	LPS28DFW	
LIS25BA	LSM6DSV320X	ILPS22QS	ST1VAFE3BX
H3LIS331DL	LSM6DSO16IS	ILPS28QSW	ST1VAFE6AX
IIS2ICLX	LSM6DSV		
IIS2DULPX	LSM6DSR	Temperature sensors	
IIS3DWB	ISM330IS(N)	STTS22H	
IIS2DLPC	ISM330DHCX		
IIS3DHHC	ISM330BX	MEMS microphones	
AIS2DW12	ASM330LHH	MP23DB01HP	
AIS2IH	ASM330LHB	MP23ABS1	
AIS328DQ	ASM330LHBG1	IMP23ABSU	
AIS25BA	ASM330LHHX		
MIS2DH	ASM330LHHXG1		

- Consumer
- Industrial
- Automotive
- Healthcare

Sensors embedding Qvar technology

Waterproof pressure sensor

MLC: machine learning core

ISPU: intelligent sensor processing unit

A COMPLETE AND USER-FRIENDLY ECOSYSTEM TO SUPPORT YOUR DESIGN:

Boards

**Evaluate**  
ProfiMEMS STEVAL-MKI109D

**Develop**  
STM32Nucleo expansion X-NUCLEO-IKS41

**Prototype**  
SensorTile.box PRO + adapter STEVAL-MKBOXPRO

MEMS sensor adapter

STM32Nucleo expansion X-NUCLEO-IKS02A1

STWIN.box + adapter STEVAL-STWINBX1

Consumer

Industrial

Automotive

Software solutions

For sensors and MLC:

**MEMS Studio**  
Software tool for MEMS sensors with graphical no-code design of algorithms and embedded AI features development

Additional tool for ISPU:

**ISPU Toolchain**

**NanoEdge AI Studio**

FIND THE SENSOR YOU NEED IN ST.COM



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Whether you're looking for motion sensors, environmental sensors, or any other MEMS & Sensors products, our portfolio offers a wide range of products that are designed to meet the highest standards of quality and reliability.

Visit our website to find the perfect sustainable solution for your needs.