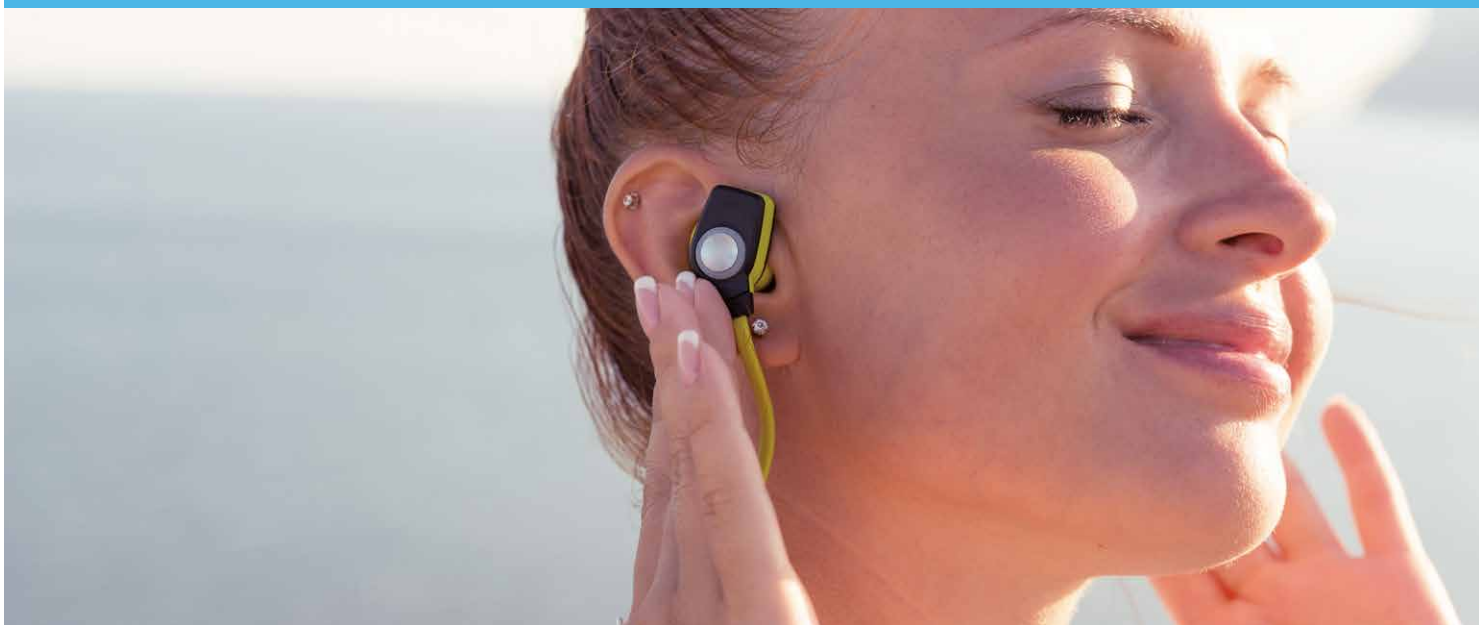
# LIS25BA

# Low-noise, high-bandwidth accelerometer with TDM interface



## 3-axis MEMS digital output motion sensor with a dedicated TDM interface and high shock survivability

The LIS25BA is the latest generation of our high-performance 3-axis MEMS accelerometers with low-noise, high-bandwidth and Time-Division Multiplexing (TDM).

Due to its high bandwidth, the LIS25BA is particularly suitable for hearables or smart headphones, where it can significantly improve the audio quality especially in systems using ST MEMS microphones to implement noise canceling functions.

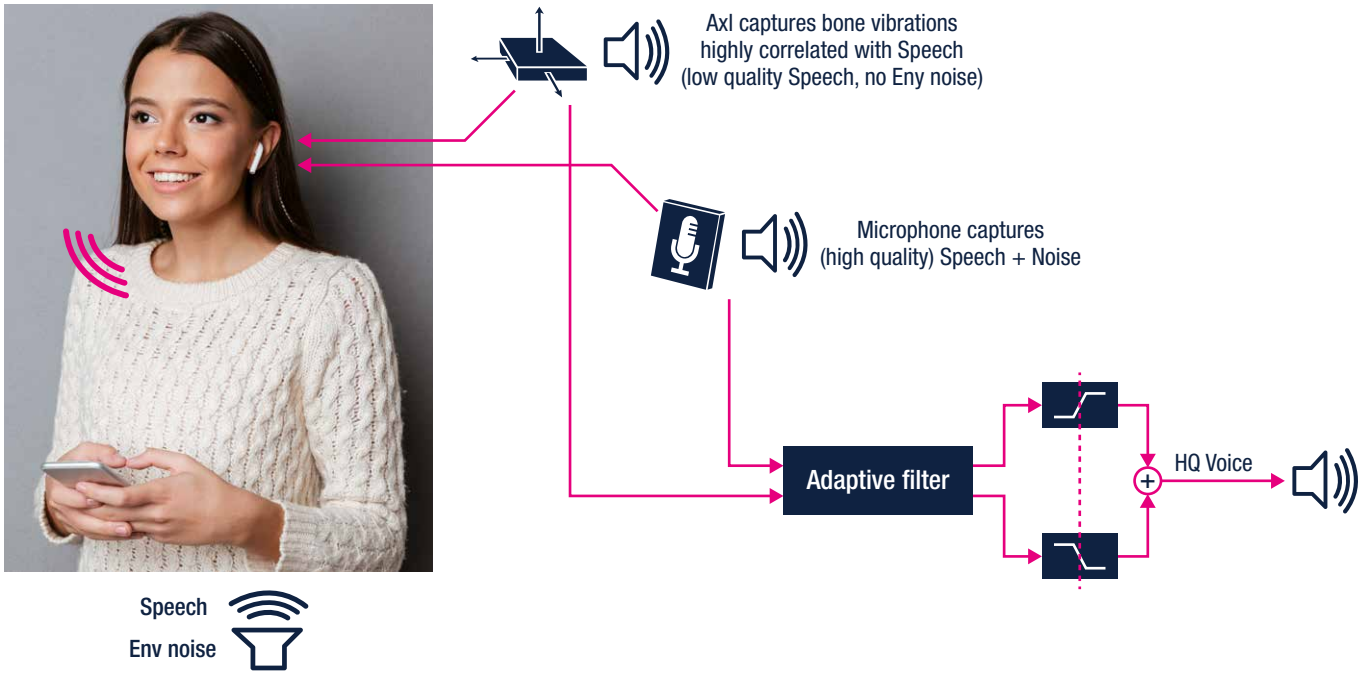
### KEY FEATURES

- Acceleration range: ± 3.85 g
- Signal bandwidth: 2340 Hz
- 16-bit data output
- 20,000 g high shock survivability

### KEY APPLICATIONS

- Bone vibration detection
- Beam forming enhancement
- Voice detection enhancement

## The working principle of noise reduction using a MEMS digital accelerometer and microphone

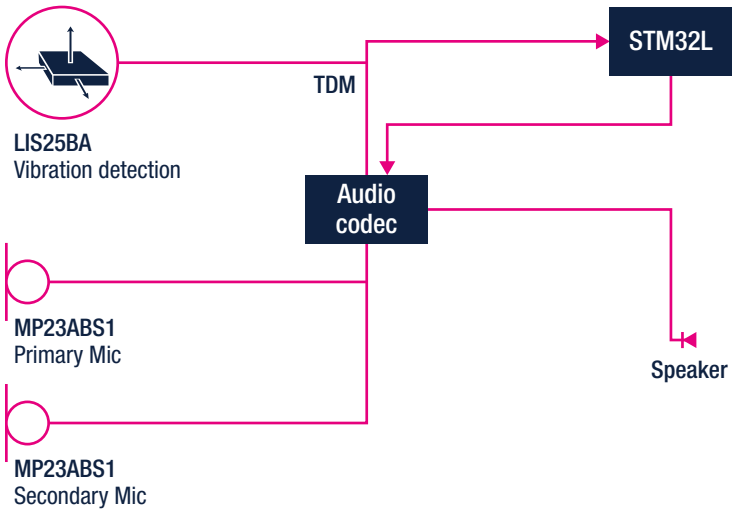



## Basic principle for using microphones and inertial sensors to improve audio quality

In contact with the head of the speaking person (like a headset), the hearable device has both microphones and an accelerometer.

- Voice is captured by microphones as acoustic waves (propagation medium: air)
- Voice is captured by accelerometer as vibrations (propagation medium: human body)
- The accelerometer is immune to acoustic noise

The Time-Division Multiplexing (TDM) interface synchronizes the signals (vibrations) from the accelerometer with the signals (acoustic waves) from the microphone and outputs an audio signal with reduced noise.




- Reference System Architecture based on TDM Interface
- Key advantages:
  - Single interface for multiple devices
  - Reduces complexity, scalable architecture
  - Reduces power consumption on Host (lower RAM requirements, no need of signals interleaving)

For further information please visit **https://www.st.com/en/evaluation-tools/steval-mki211v1k.html**