LSM6DS3
iNEMO® always-on 6-axis inertial module

3D accelerometer and gyroscope in small package with enhanced embedded features

The new LSM6DS3 iNEMO module offers best-in-class accuracy and efficiency as well as always-on low-power features for an optimal motion experience. The combination of a high-resolution 3D accelerometer and 3D gyroscope in a single package significantly reduces the risk of drift over-time and temperature, while reducing footprint on the final PCB.

KEY FEATURES
- Acceleration range: ±2/±4/±8/±16 g
- Angular rate range: ±125/±245/±500/±1000/±2000 dps
- Smart FIFO up to 8 kbyte
- Noise density (Axl): 90 μg/√Hz
- Rate noise (Gyro): 7 mdps/√Hz
- 16-bit output resolution
- Current consumption (gyro & axl):
  - Normal mode 0.9 mA @ ODR = 208 Hz
  - Low-power mode 0.42 mA @ ODR = 13 Hz
- Supply voltage range: 1.71 to 3.6 V
- Temperature range: -40 to +85 °C
- Embedded sensor hub: up to 4 external sensors data collection
- I²C/SPI digital interfaces
- 14-pin plastic land grid array (LGA) package (2.5 mm x 3 mm x 0.83 mm)

KEY APPLICATIONS
- Full gesture recognition and movement detection
- Activity monitoring
- Gaming applications
- Wearable devices
- Mobile phone and portable devices
- Headsets and virtual reality
- Remote control
- IMU for helicopters, drones and robots
- Dead reckoning
- Electronic Image Stabilization (EIS)

*Best in MEMS & Sensors Innovation Awards -MEMSies- MEMS Industry Group

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ADVANCED FEATURES

Enhanced flexibility with embedded FIFO
- Able to store external data from up to four external different sensors
- Synchronous data collection and possibility to store time stamp data

Advanced sensor hub
- Data coming from external and internal sensors can be stored, elaborated and efficiently sent to the upper-layer MCU.

Ultra-low power consumption
- 0.42 mA in Combo low power mode
- 0.9 mA in Combo normal mode
- 1.25 mA in Combo high-performance mode at up to 1.6 kHz

Higher thermal stability
- For both offset/sensitivity of accelerometer and gyroscope over the whole operating temperature range from -40 to +85 °C

Advanced digital features
- Event detection and fully configurable interrupts: free-fall, wakeup, 6D orientation, tap and double-tap sensing, and activity/inactivity recognition
- Specific embedded IP blocks with negligible power consumption and high-performance:
  - Pedometer functions, step detector and step counters
  - Tilt detection
  - Significant motion detection

APPLICATIONS

- Home
- Navigation
- Handheld applications
- Wearable
- Gaming

EVALUATION TOOLS

<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-NUCLEO-IKS01A1</td>
<td>Expansion board for STM32 Nucleo boards</td>
</tr>
<tr>
<td>STEVAL-MKI160V1</td>
<td>Adapter board for X-NUCLEO-IKS01A1 Nucleo board</td>
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