seeed studio

INDUSTRIAL PRODUCT DATASHEET

The XIAOML Kit

The XIAOML Kit is a TinyML® development platform with a Harvard-aligned curriculum, enabling vision, sound, and motion AI applications for education, wearables, and health monitoring.

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Overview



The XIAOML Kit delivers a Harvard-aligned TinyML® learning experience through hands-on labs with the XIAO ESP32-S3 Sense, featuring an OV3660 camera, digital microphone, 0.42" OLED display, and 6-axis IMU. It supports edge AI applications in computer vision, audio processing, and motion detection for education, wearables, and health monitoring, and is compatible with Arduino IDE, SenseCraft AI, and TensorFlow Lite.

Key Features

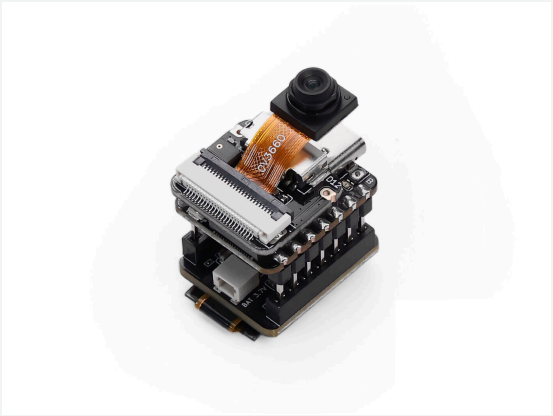
- **Harvard-Aligned Learning Experience:** Following Professor Vijay Janapa Reddi's **Machine Learning Systems** curriculum from Harvard University, the **tinyML4D** group, this kit offers a structured learning path through dedicated hands-on lab sessions. Each lab is carefully designed to build practical skills in TinyML® development, supported by detailed documentation and example code. This academic alignment ensures learners gain both theoretical understanding and practical experience in machine learning implementation.

- **Complete Machine Learning Development Platform:** The kit provides a comprehensive hardware solution centered around the **XIAO ESP32-S3 Sense**, featuring an integrated OV3660 camera and digital microphone. The included expansion board enhances functionality with a crisp 0.42" OLED display and precise 6-axis IMU, while the SD card support enables extensive data logging capabilities. This powerful combination of components creates an ideal platform for developing diverse machine learning applications of Vision, Sound, and Motion.

- **Versatile Application Development:** Unlock endless possibilities in edge AI and tinyML® development across multiple domains. From computer vision applications like image classification and object detection to audio processing for keyword recognition and voice commands, the kit supports a wide range of projects. The integrated motion sensors enable sophisticated gesture recognition and movement analysis, allowing learners, educators, and developers to create innovative IoT and wearable technology solutions.

- **User-Friendly Design**: Engineered for accessibility, the kit features a compact and portable design that's perfect for both classroom development and field deployment. The expansion board connects seamlessly with the MCU, while the USB-C interface ensures convenient programming and power delivery. Compatible with popular development environments like **Arduino IDE**, **no-code AI model training & deployment platform SenseCraft AI**, and **TensorFlow Lite**, the kit removes technical barriers and allows developers to focus on creating innovative applications.

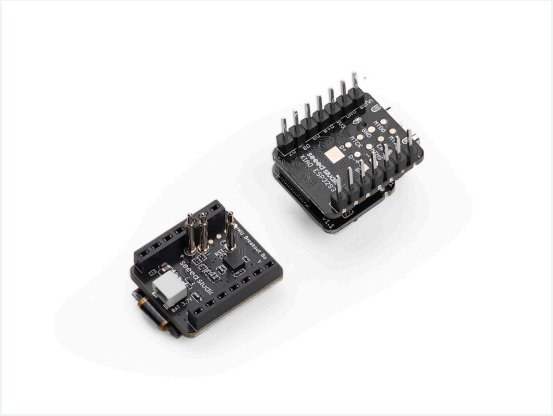
Product Gallery

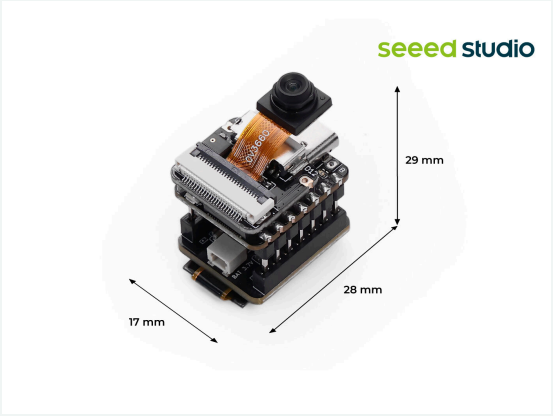














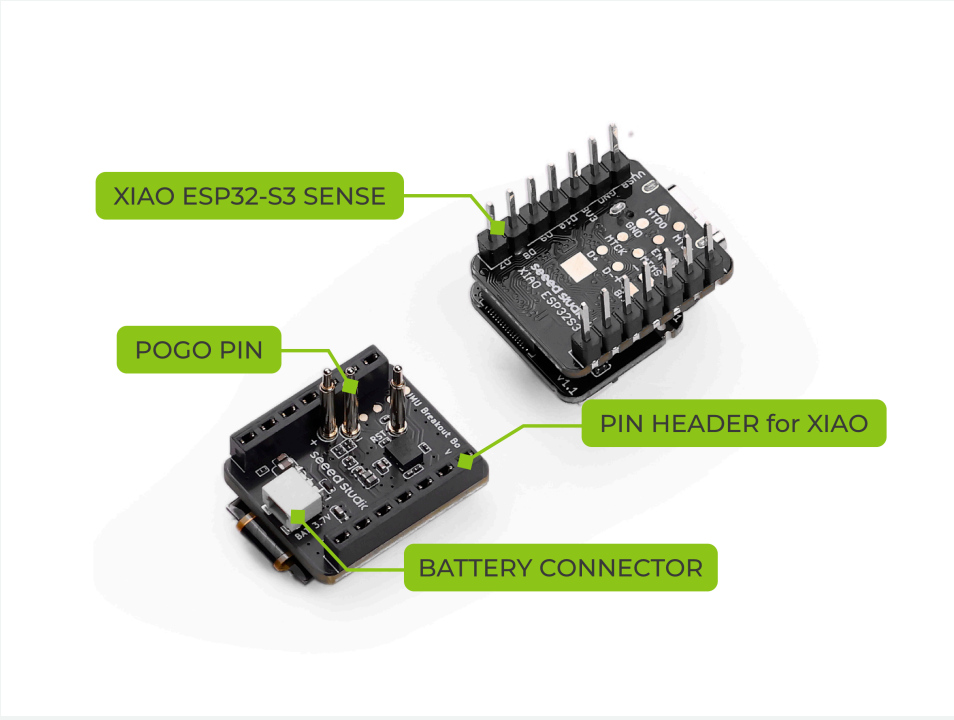


Specification

Parameter	Description
MCU	XIAO ESP32-S3 Sense -Onboard Sensors: OV3660 Camera, Digital Microphone -Wireless Connectivity: Wi-Fi, BLE -SD Card Reader
Display	Driver IC: SSD1315
	0.42-Inch OLED
IMU	Chip: LSM6DS3TR-C
	Type: 6DOF
Button	Reset
BAT Connector	JST 1.0 mm, 2 Pin
Power Supply	Type-C or 3.7V Battery Connector
Dimensions	21×17.8×30 mm
Weight	10.6g

Hardware Overview







Applications

- **Computer Vision:** Image Classification & Object Detection
- **Keyword Detection**
- **Motion Detection**
- **Wearable devices**
- **Health monitoring**
- **Education**

Part List

Seeed Studio XIAO ESP32-S3 Sense (Pre-Soldered) *includes an onboard OV3660 camera, digital microphone, and an SD card reader	×1
IMU Breakout Board for Seeed Studio XIAO ESP32-S3	×1
2.4GHz FPC Antenna (1.16dBi)	×1
Heatsink	x2
Micro SD Card Tool Kit: -SanDisk 32Gb Micro SD Card -USB Type-C to USB Type-A converter -20cm Type-A to Type-C cable	x1

Resource Links

- https://www.seeedstudio.com/The-XIAOML-Kit.html
- OV3660 Camera Datasheet
- ESP32-S3 Datasheet
- ST-LSM6DS3TR Datasheet
- 0.42-Display Datasheet
- TinyML® Case Studies
- IMU Breakout Board for XIAO-SCH.pdf
- XIAO ML Kit 3D Enclosure Case-Developer Jeremy

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