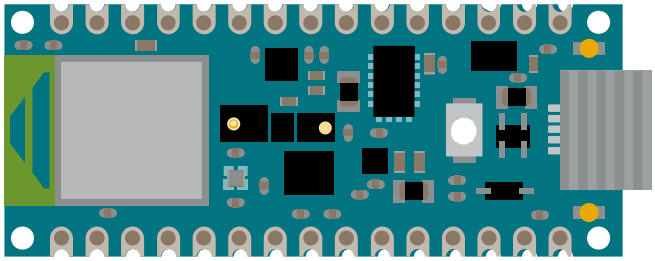

Nano 33 BLE Sense

The Arduino Nano 33 BLE Sense combines a tiny form factor, different environment sensors and the possibility to run AI using TinyML and TensorFlow™ Lite. Whether you are looking at creating your first embedded ML application or you want to use Bluetooth® Low Energy to connect your project to your phone, the Nano 33 BLE Sense will make that journey easy.

GET STARTED

PINOUT

DATASHEET

Help

professional to get started with embedded machine learning. It is build upon the nRF52840 microcontroller and runs on **Arm® Mbed™ OS**. The Nano 33 BLE Sense not only features the possibility to connect via **Bluetooth® Low Energy** but also comes equipped with **sensors** to detect color, proximity, motion, temperature, humidity, audio and more.

Bluetooth®

A powerful 2.4 GHz Bluetooth® 5 Low Energy module from u-blox, with an internal antenna. Can be used to transmit data between different devices using the ArduinoBLE library.

DOCUMENTATION

LIBRARY

IMU for Motion Detection

The LSM9DS1 inertial measurement unit features a 3D accelerometer, gyroscope and magnetometer allowing you to detect orientation, motion or vibrations in your project.

DOCUMENTATION

LIBRARY

Python® Support

This board can be programmed using MicroPython which is an implementation of the Python® programming language that comes with a subset of the Python® standard library.

DOCUMENTATION

LEARN MORE

capture and analyze sound in real time to create a voice interface for your project. Use the PDM library to implement its functionalities in your projects.

DOCUMENTATION

LIBRARY

built-in APDS9960 sensor and create a gesture control system. Together with the APDS9960 library you can control the built-in RGB LED through hand gestures.

DOCUMENTATION

LIBRARY

pressure data output between 260 to 1260 hPa. This data can also be processed to calculate the height above sea level of the current location.

DOCUMENTATION

LIBRARY

Temperature and Humidity Sensor

The HTS221 capacitive digital sensor measures relative humidity and temperature. It has an accuracy of ± 0.5 °C and is thereby perfectly suited to detect ambient temperature.

Tech Specs

Compatibility

Essentials

Guides

Quickstart Guide

All you need to know to get started with your new Arduino board.

Suggested Libraries

ArduinoBLE

The ArduinoBLE library is designed for Arduino boards that have hardware enabled for Bluetooth® Low Energy and

sensors, supported serial & wireless protocols, pins and much more.

Nano Hardware Design Guide

Learn how to create your own custom hardware that is compatible with the Arduino Nano Family.

Community Projects

Discover interesting projects from the community based on the Nano 33 BLE Sense board.

The Arduino_LSM9DS1 library is designed to be used with the LSM9DS1 IMU module, which includes a 3-axis accelerometer, 3-axis gyroscope and a 3-axis magnetometer.

Arduino_HTS221

The Arduino_HTS221 library is designed for reading temperature and humidity values from the HTS221 sensor.

PDM

The PDM library allows you to use PDM (Pulse-density modulation) microphones, like the MP34DT05

Arduino_APDS9960

The Arduino_APDS9960 library allows you to use the APDS9960 sensor available on the Arduino Nano 33 BLE Sense to read gestures, color, light intensity and proximity.

Arduino Basics

Built-in Examples

Built-in Examples are sketches included in the Arduino IDE and demonstrate all basic Arduino commands.

Learn

Discover interesting articles, principles

Language References

Arduino programming language can be divided in three main parts: functions, values (variables and constants), and structure.

Tutorials

LPS22HB barometric pressure sensor on the Nano 33 BLE Sense board.

Barometric pressure Sensor

Connecting Nano 33 BLE Devices over Bluetooth®

Learn about the history of Bluetooth®, how Bluetooth® Low Energy works and how to connect two Nano BLE devices over Bluetooth®.

Bluetooth® Bluetooth® Low Energy

Nano 33 BLE Sense Python® Guide

Discover how to access the features on the Nano 33 BLE Sense using Python® scripts.

MicroPython OpenMV

Sense board over Bluetooth®, using an app on your phone.

Bluetooth® Bluetooth® Low Energy

Nano 33 BLE Sense Cheat Sheet

Learn how to set up the Nano 33 BLE Sense, get a quick overview of the components, information regarding pins and how to use different Serial (SPI, I2C, UART) and Wireless (Wi-Fi, Bluetooth®) protocols.

Installation I2C SPI UART Bluetooth® IMU

Nano 33 BLE Sense Community Projects

Discover interesting projects from the community based on the Nano 33 BLE Sense board.

Picovoice Magic Wand

using Edge Impulse.

Machine Learning Edge Impulse Microphone

Gesture Recognition with the Nano 33 BLE Sense

Learn how to use the built in gesture sensor of the Nano 33 BLE Sense to control the built in RGB LED.

Gesture RGB Sensor

Get Started With Machine Learning on Arduino

Learn how to train and use machine learning models with the Arduino Nano 33 BLE Sense

Machine learning Tensorflow Lite Micro

Nano 33 BLE (sense) board so that it may be used with OpenMV IDE, allowing to program it with MicroPython.

OpenMV MicroPython Bootloader

Reading Temperature & Humidity on Nano 33 BLE Sense

Learn how to measure and print out the humidity and temperature values of your surroundings using the Nano 33 BLE Sense

Humidity Temperature Sensor

Connecting Two Nano 33 BLE Sense Boards Through I2C

Learn how to send data from one Nano 33 BLE Sense board to another board via I2C.

I2C Communication

BLE Sense through the LSM9DS1 IMU sensor.

IMU Accelerometer

Accessing Gyroscope Data on Nano 33 BLE Sense

Learn how to measure the direction of force to emulate an object's crash using the Nano 33 BLE Sense.

IMU Gyroscope

Accessing Magnetometer Data on Nano 33 BLE Sense

Learn how to detect disturbances in the magnetic field around an electronic device using the Nano 33 BLE Sense board.

IMU Magnetometer

use the Lauterbach TRACE32 GDB front-end debugger to debug multiple Arduino applications via GDB on a serial interface.

Debugging Lauterbach TRACE32

Controlling the On-Board RGB LED with Microphone

Learn how to create a soundmeter using the built-in microphone on the Nano 33 BLE Sense.

Microphone Sound Sensor

Proximity Detection with the Nano 33 BLE Sense

Learn how to control the built in RGB LED using the built in proximity sensor of the Nano 33 BLE Sense.

Proximity Sensor

object using the built in RGB sensor on the Nano 33 BLE Sense

RGB Color detection Sensor

Nano 33 BLE Sense board to another board via UART.

UART Communication

Voice Commands With The Arduino Speech Recognition Engine

Control your device with voice commands using the Arduino Speech Recognition Engine

speech recognition voice commands machine learning

Get Inspired

Discussions from the forum

↗ ARDUINO FORUM

LSM9DS1: how to change sampling frequency and acceleration ranges

Started by: **riccardo_nardi...** Last post: **Aug 30, 202**

Connecting BLE Sense to the PC

Started by: **Jingze_Gu** Last post: **May 7, 2021 1:57:28 PM**

Arduino Nano 33 BLE Sense Driver Problem.

Started by: **DereKoder** Last post: **May 7, 2021 1:57:3**

[Solved] Unknown USB Device on the Arduino Nano 33 BLE Sense

Started by: **bentay** Last post: **May 7, 2021 1:57:26 PM**

Resources

Interactive Viewer

Interact with the schematics, the PCB and a 3D model of the product.

Open Viewer

your product.

Open Diagram

Downloads

Datasheet

Fritzing Files

Full Pinout

Schematics

CAD Files

Troubleshooting

↗ HELP CENTER

Enable 5 V power on the VUSB or VBUS pin on Nano boards

How to change the ADC resolution

Nano boards that can be powered directly with 3.3 V

Use the built-in sensors on Nano 33 BLE Sense