

seeed studio

INDUSTRIAL PRODUCT DATASHEET

# Seeed Studio XIAO nRF54L15 Sense (Pre-Soldered)

Seeed Studio XIAO nRF54L15 Sense (Pre-Soldered) with Nordic nRF54L15 SoC, BLE 6.0/Matter/Thread/Zigbee, digital microphone, 6-axis IMU, pre-soldered headers, and ultra-low-power design for wearables, smart home/IoT hubs,...

SKU

114993697

UPDATED

2026-09-20 06:17:54

PRICE

\$16.90(Excl. VAT)



# Overview



The Seeed Studio XIAO nRF54L15 Sense (Pre-Soldered) is a development board powered by Nordic's nRF54L15 SoC with a 128 MHz Arm Cortex-M33 core and RISC-V security coprocessor, supporting BLE 6.0, Matter, Thread, Zigbee, and a 4 Mbps mode for proprietary 2.4 GHz protocols. It integrates a digital microphone, 6-axis IMU, battery charging circuit, and pre-soldered headers, with full support for Nordic nRF Connect SDK and PlatformIO (Zephyr), targeting wearables, smart home and IoT hubs, industrial IoT sensors, and advanced prototyping.

# Key Features

## Note:

- XIAO nRF54L15 does **not support** the **Arduino**. The wiki provides **Nordic SDK** example projects.
- If you plan to use XIAO expansion boards, the models currently supported by XIAO nRF54L15 are: **Expansion Base, Grove Base, ePaper Breakout Board, L76K GNSS Module, 1-Channel Relay, ePaper Driver Board**.
- Other expansion boards are **hardware-compatible** only for now; software adaptation is required by developers.
- Official software support is **in progress** — **please be patient**.
- **Powerful SoC with Advanced Connectivity & Security**

XIAO nRF54L15 Sense (Pre-Soldered) is built on Nordic's nRF54L15 SoC with a 128 MHz Arm Cortex-M33 core (1.5 MB NVM) and dedicated RISC-V security coprocessor. This dev board supports multiple wireless protocols including BLE 6.0, Matter, Thread, and Zigbee (IEEE 802.15.4-2020). It also features new 4 Mbps mode for proprietary 2.4 GHz protocols. And it's compatible with major ecosystems like Amazon Sidewalk, Apple Find My, and Google Find My Device through nRF Connect SDK. Comprehensive security features include secure boot, secure firmware updates, secure storage, TrustZone-enabled trusted execution environment, cryptographic acceleration with side-channel protection, and tamper detection, ensuring robust protection for IoT deployments.

- **Ultra-Low Power Efficiency**

XIAO nRF54L15 Sense (Pre-Soldered) is optimized for long-life battery-powered applications, leveraging the Nordic nRF54L15 SoC's industry-leading efficiency (**0.6uA in the chip's System OFF mode**) and an integrated battery charging circuit. **Final board-level power consumption data is currently being verified for accuracy and will be announced soon.**

- **Audio and Motion Sensing**

XIAO nRF54L15 Sense (Pre-Soldered) integrates a high-quality digital microphone and a 6-axis IMU, making it ready for voice and motion-based projects out of the box.

- **Streamlined Development Experience**

Full support for Nordic nRF Connect SDK and PlatformIO (Zephyr) enables efficient embedded development workflows. (Note: Arduino IDE is not currently supported)

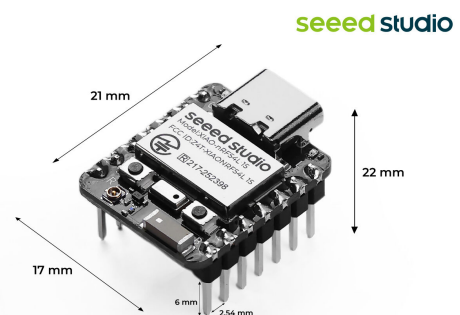
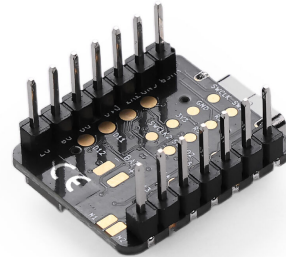
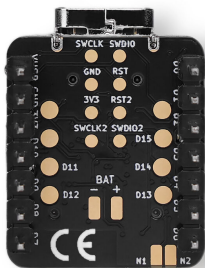
- **Solder-Free for Instant Creation**

The pre-soldered headers mean you can start creating immediately - just unbox and plug into your breadboard. No soldering iron, no waiting, no hassle. Perfect for rapid prototyping, educational workshops, beginner-friendly projects, and time-sensitive development. Because great ideas shouldn't wait for solder to cool.

- **Seeed Fusion PCBA Services**

With our [Seeed Studio Fusion](#) services, you can access competitive **one-stop PCBA manufacturing, component sourcing, and testing, plus free DFA/DFM review** to reduce manufacturing risks and accelerate the journey from prototype to production.

# Product Gallery



## Specification

|              |                            |  |                                  |                                           |
|--------------|----------------------------|--|----------------------------------|-------------------------------------------|
| Product Name | Seeed Studio XIAO nRF54L15 |  | Seeed Studio XIAO nRF54L15 Sense | Seeed Studio XIAO nRF52840 (Pre-Soldered) |
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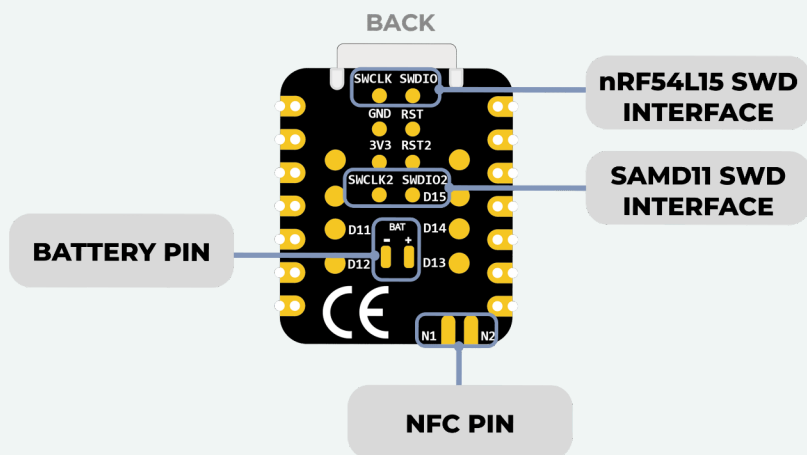
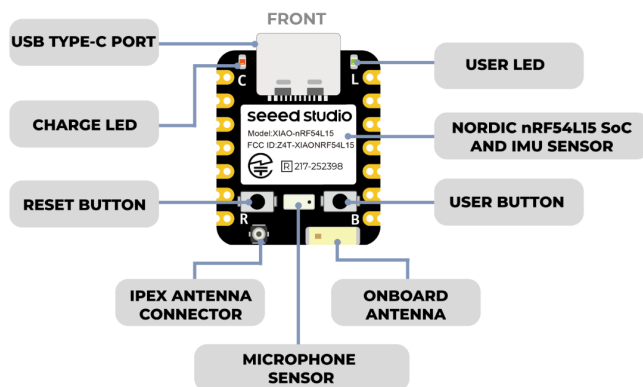
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|------------------------|-------------------------------------------------------------|-------------------|--------------------------------------------|
| Onboard                | 1x User LED (1 Color)                                       |                   | 1x User LED (3 Colors)                     |
|                        | 1x Charge LED (Battery Charging Indicator)                  |                   | 1x Charge LED (Battery Charging Indicator) |
|                        | 1x Reset Button                                             |                   | 1x BlueTooth Antenna                       |
|                        | 1x User Button                                              |                   | 1x Reset Button                            |
|                        | 1x Onboard Ceramic Antenna                                  |                   | 1x Onboard Ceramic Antenna                 |
|                        | 1x IPEX4 Connector (for external antenna)                   |                   | /                                          |
|                        | /                                                           | 1x 6-Axis IMU     | /                                          |
|                        |                                                             | 1x PDM Microphone |                                            |
| Wireless Connectivity  | Bluetooth LE 6.0 (include Channel Sounding)                 |                   | Bluetooth LE 5.2                           |
|                        | Bluetooth Mesh                                              |                   | Bluetooth Mesh                             |
|                        | NFC                                                         |                   | NFC                                        |
|                        | Thread                                                      |                   | Thread                                     |
|                        | Zigbee                                                      |                   | Zigbee                                     |
|                        | Matter                                                      |                   | Matter                                     |
|                        | Amazon Sidewalk                                             |                   | Proprietary 2.4 GHz protocols              |
|                        | Proprietary 2.4 GHz protocols                               |                   | /                                          |
| Power Input            | Type-C: 5V                                                  |                   |                                            |
|                        | Battery: 3.7V                                               |                   |                                            |
| Low Power Mode         | The test results will be finalized soon. Please stay tuned. |                   | 5uA                                        |
| Software Compatibility | Nordic nRF Connect SDK                                      |                   | Arduino IDE                                |
|                        | PlatformIO                                                  |                   | PlatformIO                                 |
|                        | Zephyr RTOS                                                 |                   | MicroPython                                |
|                        | /                                                           |                   | CircuitPython                              |
|                        | /                                                           |                   | Zephyr RTOS                                |
| Working Temperature    | -20°C to 70°C                                               |                   | -40 to 85°C                                |
| Dimensions             | 21 x 17.8mm                                                 |                   |                                            |

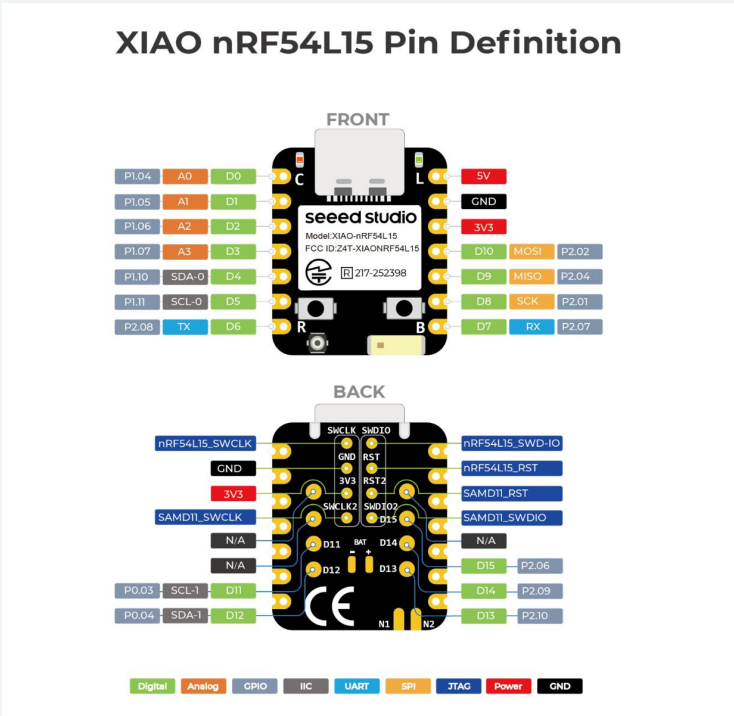
1 x 6 - Axis IMU  
1 x PDM Microphone

1 x 6-Axis IMU  
1 x PDM Microphone

|          |                                                                                                                           |                                                                                                                                           |                                                                                |                                                                                                                                                                                                                                                                                                                              |
|----------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Varients | Seeed Studio XIAO nRF54L15   Tiny BLE dev board with ultra-low power<br>The 3PCS Pack will be available soon. Stay tuned. | Seeed Studio XIAO nRF54L15 Sense   Compact motion and sound sensing in one BLE board<br>The 3PCS Pack will be available soon. Stay tuned. | Seeed Studio XIAO nRF52840 (Pre-Soldered)<br>Seeed Studio XIAO nRF52840 (3PCS) | S<br>e<br>e<br>d<br>S<br>t<br>u<br>d<br>i<br>o<br>X<br>I<br>A<br>O<br>n<br>R<br>F<br>5<br>2<br>8<br>4<br>0<br>(<br>P<br>r<br>e<br>-<br>S<br>o<br>l<br>d<br>e<br>r<br>e<br>d<br>)<br>S<br>e<br>e<br>d<br>S<br>t<br>u<br>d<br>i<br>o<br>X<br>I<br>A<br>O<br>n<br>R<br>F<br>5<br>2<br>8<br>4<br>0<br>(<br>3<br>P<br>C<br>S<br>) |
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# Hardware Overview





# Applications

- **Wearable Devices:** Create intelligent wearables for all-day use, from fitness trackers that perform complex sensor fusion to secure smart rings that support gesture control and NFC payments.
- **Smart Home & IoT Hubs:** Build a secure Matter-Thread border router or a central hub that bridges multiple wireless protocols, with the capability to handle voice commands via wake-word detection.
- **Industrial IoT (IIoT) Sensors:** Develop intelligent industrial sensors that perform on-device TinyML for predictive maintenance, while ensuring data integrity and device security with hardware-level protection.
- **Advanced Prototyping:** Function as a versatile developer tool for debugging multi-protocol networks or rapidly creating proof-of-concept designs for secure, low-power wireless products.

## Part List

|                                                |    |
|------------------------------------------------|----|
| Seeed Studio XIAO nRF54L15 Sense(Pre-Soldered) | X1 |
|------------------------------------------------|----|

## Compliance & Logistics



|          |            |
|----------|------------|
| HSCODE   | 8543709990 |
| USHSCODE | 8517180050 |
| UPC      |            |
| EUHSCODE | 8543709099 |
| COO      | CHINA      |

### FCC Requirement

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

15.21

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy.

If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## Resource Links

- <https://www.seeedstudio.com/Seeed-Studio-XIAO-nRF54L15-Sense-Pre-Soldered-p-6500.html>
- [Wiki-XIAO nRF54L15 Series Resources](#)
- [Seeed Studio XIAO Use Case](#)

### Seeed Technology Co.,Ltd.

9F, Building G3, International E City,  
Zhongshanyuan Road, Nanshan, Shenzhen, China

**Tel:** +86 0755-80695676

**Web:** [www.seeed.cc](http://www.seeed.cc)

**Shop:** [www.seeedstudio.com](http://www.seeedstudio.com)