Seeed Studio XIAO Series: Small in Size, Big on Features

Extremely Compact Development Boards That Can Act as Modules

Seeed Studio XIAO Series consists of 7 versions to satisfy the diverse needs of makers, product designers, and educators. If you’re a maker, you can take advantage of its rich community resources to get inspiration and knowledge for your own projects. The XIAO Series offers educators a comprehensive getting-started course and detailed wikis to quickly learn how to use XIAO for their projects. If you’re a product designer, XIAO SoM User Manual covers everything from Module Selection to Mass Production.

XIAO is a combination of compactness, capability, and user-friendly design. The whole XIAO Series features compact design with all SMD components are placed on the same side of the board, so designers can easily integrate XIAO into their own boards for rapid mass production.

Features

- **Module and Development Board Hybrid**
  Enabling Rapidly Prototype While Easily Integrate; Significantly Streamline Product Development Process

- **Invest for Your Future**
  Unified Form Factor Enables You to Seamlessly Upgrade or Downgrade Your Product at the Lowest Cost

- **Single-Sided Surface Mount Design**
  Effortlessly Incorporate XIAO into Other Boards for Large-Scale Manufacturing

- **Strong Ecosystem Support**
  Extensive Software Compatibility, Abundant Community Resources, and Dedicated Technical Assistance
<table>
<thead>
<tr>
<th>Seeed Studio XIAO SAMD21</th>
<th>Seeed Studio XIAO RP2040</th>
<th>Seeed Studio XIAO nRF52840</th>
<th>Seeed Studio XIAO nRF52840 Sense</th>
<th>Seeed Studio XIAO ESP32C3</th>
<th>Seeed Studio XIAO ESP32S3</th>
<th>Seeed Studio XIAO ESP32S3 Sense</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short Description</strong></td>
<td>Universal With Strong Stability and Compatibility</td>
<td>Compatible with the Raspberry Pi RP2040 ecosystem</td>
<td>Ultra LOW power consumption Bluetooth 5.0 Suitable for consumer-grade product applications</td>
<td>Advanced Version of XIAO nRF52840 With Onboard Microphone And 3-Axis IMU</td>
<td>With WiFi and BLE, Budget-Friendly RISC-V</td>
<td>With WiFi and BLE, High Performance</td>
</tr>
<tr>
<td><strong>Recommended Application</strong></td>
<td>Oceanic Observation; Healthcare Device; MIDI / Audiovisual Control; UAVs; Light Controller; Digital Sinae; Digital Relay Timer; Scooter; Tracker</td>
<td>Mechanical Keyboards; HDMI; Geotechnical Sampling Tools; Environmental Detection Tools</td>
<td>Smart Home Device; Elderly Care Device</td>
<td>AR / Virtual Reality; Creative Therapy Devices; Biomechanics Body Movement Sensor; Sports Data Collection</td>
<td>Smart Agriculture; Smart Home Solution</td>
<td>Robotics; Low-Power Networking; Smart Watch; Smart Thermostat</td>
</tr>
<tr>
<td><strong>Chip</strong></td>
<td>Microchip SAMD21</td>
<td>Raspberry Pi RP2040</td>
<td>Nordic nRF52840</td>
<td>Nordic nRF52840</td>
<td>Expressif ESP32C3</td>
<td>Expressif ESP32S3</td>
</tr>
<tr>
<td><strong>Architecture</strong></td>
<td>Cortex-M0+ running up to 48MHz</td>
<td>Dual-core Cortex-M0+ running up to 133 MHz</td>
<td>Cortex-M4 running up to 64 MHz</td>
<td>Cortex-M4 running up to 64 MHz</td>
<td>RISC-V running up to 160 MHz</td>
<td>Dual-core Xtensa LX7 running up to 240 MHz</td>
</tr>
<tr>
<td><strong>RAM</strong></td>
<td>32 KB SRAM</td>
<td>264 KB SRAM</td>
<td>256 KB RAM</td>
<td>256 KB RAM</td>
<td>400 KB SRAM</td>
<td>512 KB SRAM + 8MB PSRAM</td>
</tr>
<tr>
<td><strong>Flash &amp; ROM (chip)</strong></td>
<td>256KB</td>
<td>1MB</td>
<td>1MB</td>
<td>4MB</td>
<td>384KB</td>
<td>384KB</td>
</tr>
<tr>
<td><strong>Flash (onboard)</strong></td>
<td>x</td>
<td>2MB</td>
<td>2MB</td>
<td>x</td>
<td>8MB</td>
<td>8MB</td>
</tr>
<tr>
<td><strong>Built-in Sensors</strong></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>IMU, Microphone</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>I2C/UART/SPI</strong></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
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<tr>
<td><strong>Buletooth</strong></td>
<td>x</td>
<td>x</td>
<td>√</td>
<td>√</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>WiFi</strong></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>Reset Button</strong></td>
<td>x</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>Boot Button</strong></td>
<td>x</td>
<td>√</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>User LED</strong></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>Baterry Charge LED and chip</strong></td>
<td>x</td>
<td>x</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
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<tr>
<td><strong>Low power mode</strong></td>
<td>x</td>
<td>x</td>
<td>5μA</td>
<td>5μA</td>
<td>44μA</td>
<td>14 μA</td>
</tr>
<tr>
<td><strong>Programming Languages</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Arduino</strong></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>CircuitPython</strong></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>x</td>
</tr>
<tr>
<td><strong>MicroPython</strong></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
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<tr>
<td><strong>SKU</strong></td>
<td>102010328</td>
<td>102010428</td>
<td>102010448</td>
<td>102010469</td>
<td>113991054</td>
<td>113991114</td>
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</tbody>
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Seeed Studio XIAO Expansion Board
Easy & fast prototype: Easy debug and reset
Rich peripherals: OLED display, RTC, expandable memory space, etc.
No Soldering: All pin led out
Compact design: Only half the size of Raspberry Pi 4

Grove Shield For Seeed Studio XIAO
On-board Lithium Battery Charging and Management Function
Grove connectors (Grove IIC*2, Grove UART*1), all 14 GPIO led out
Compact and Breakable Design
SPI-Flash Bonding Pad Reserved
On-board Power Switch and Charging Status Indicator Light

Seeed Studio Round Display For XIAO
Exquisite 1.28" touch screen brings your ultimate design canvas
Size: 1.28"  Resolution: 240×240  Display Color: 65K
Peripherals: onboard RTC, battery charge chip, TF card slot, JST 1.25 connector, all within its compact size
Plug and Play: All pins are led out, no soldering is needed

Grove Starter Kit For Seeed Studio XIAO
Beginner friendly starter kit, compatible with all Seeed Studio XIAO series
Carefully selected grove modules for various applications
Complimentary Arduino introductory course

XIAO Resources

System-on-Modules(SoM) User Manual
XIAO SoM User Manual opensource hardware & software resources of XIAO, providing professional product design guidelines to help you accelerate your ideas off the ground. This User Manual can provide everything needed from module selection to the final manufacturing.

Seeed Studio XIAO Starter Kit Courses
This course guides you through a series of practical exercises and project-based activities. By using Seeed Studio XIAO series products, you will embark on a step-by-step journey to master Arduino, starting from the basics of LED lighting and progressing towards more advanced projects such as Arduino wearables and miniaturized device. In addition, you will learn how to quickly create a usable electronic product prototype from the course.
XIAO-based Designs

**Sensecap S2110 Sensor Builder**
A XIAO RP2040-powered sensor builder, which comes with open source code and an IP66 enclosure, enable the conversion of maker-level sensors into industrial-level sensors.

**Smoke Detectors**
Gas/Smoke Detector, Alarm system with real-time leakage monitoring using XIAO RP2040.

**SenseCAP Indicator**
4-Inch Touch Screen IoT Development Platform Powered by XIAO ESP32S3 & XIAO RP2040

**TOTEM**
A Tiny Splitkeyboard With Splay Powered by XIAO RP2040 and XIAO nRF52840 Sense

**PhatStats PC Performance TFT Display**
Arduino Tft PC Performance Monitor With Client Software Powered by XIAO SAMD21

**XIAO Project Collection**

**Unleash XIAO's Musical Potential: A Budget-Friendly Eurorack Solution, MIDI Keyboard Integration, and More!**

**Unleash the Power of Tracking with XIAO: The Unmissable Solution for Accurate, Reliable, and Affordable Tracking**

**XIAO in Healthcare: Solutions for Sun Damage, FoG Issues, Heartbeat Monitoring, and Blood Oxygen & Heart Rate Measurement**

**XIAO-Powered Detection Tools: Anomaly Detection & Motion Classification for Containers in Transit, AI-driven Yogurt Production, and Gas Leak Detection Robot**

More XIAO relative projects are continuously being updated.

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