MAKE THINGS HAPPY !

IoTsmart XIAO

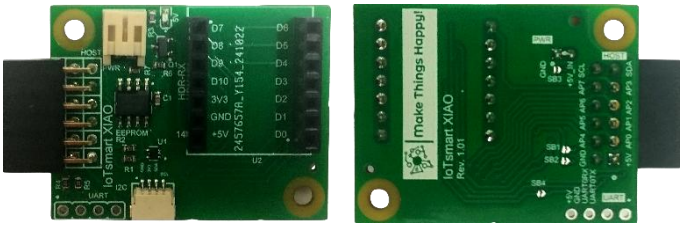
IoTsmart XIAO Module

The **IoTsmart XIAO** module is designed to accommodate various SeeedStudio XIAO and Adafruit QT Py microcontroller modules (a list is provided below).

Seamlessly expand functionality with **IoTextra** mezzanines (i.e., I/O module from the IoTextra series), enabling quick deployment of complex systems. This transforms the I/O module into an intelligent module.

The module offers two orientations for the **HOST** connector:

- **H-HOST** (horizontal connector), mounted on the **top-side** of the module, designed for **vertical** mezzanine installation
- **V-HOST** (vertical connector), mounted on the **bottom-side** of the module, designed for **horizontal** mezzanine installation



*Note: Some mezzanines, such as certain versions of the **IoTextra Relay2**, are too tall for the **V-HOST** connector*

The module features a Qwiic© connector for **I²C** communication and supports optional **UART** connector. These can be used to connect external sensors, devices, or access additional GPIO signals.

An onboard EEPROM (8 Kbit or 16 Kbit) stores configuration and user data and is accessible via **I²C** at addresses 0x54–0x57 by default.

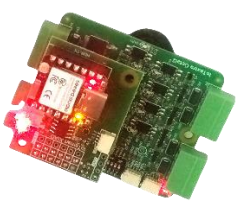
The module is powered by a +5VDC input.
The **IoTsmart XIAO** module measures 31 x 40 mm.

Common applications:

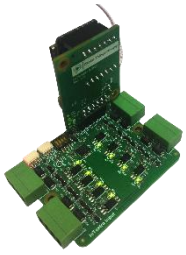
- Industrial automation
- Field Devices and PLCs
- Smart Home Systems
- Power Control
- Transport systems
- Environmental Monitoring
- HVAC and Lighting Control
- Consumer Electronics

QUICK START

The module is most commonly used with a mezzanine, as the combination of an **IoTsmart XIAO** module and a mezzanine can be easily utilized as a standalone device. The following photos show the **IoTsmart XIAO** module with various mezzanines:



IoTsmart XIAO with **IoTextra Octal2**

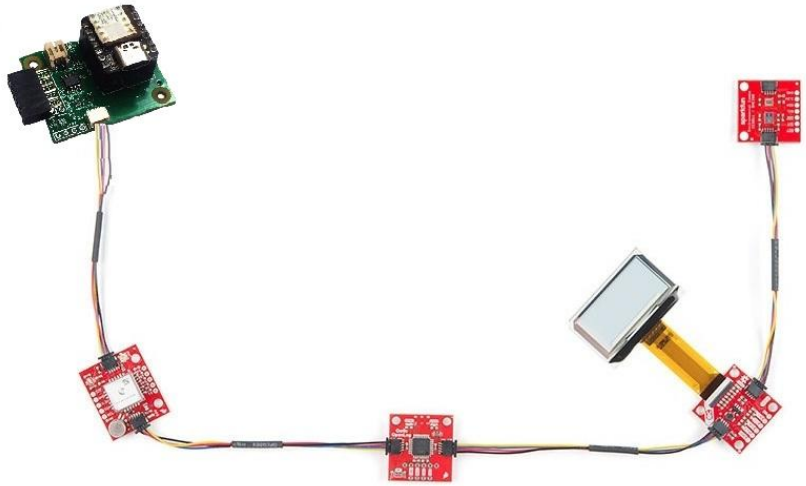


IoTsmart XIAO with **IoTextra Input**

IoTsmart XIAO with **IoTextra Analog**

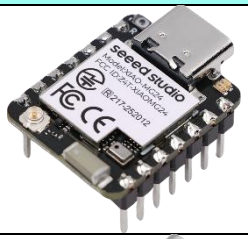
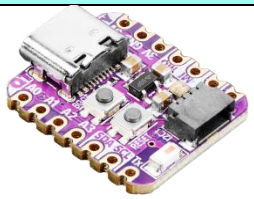
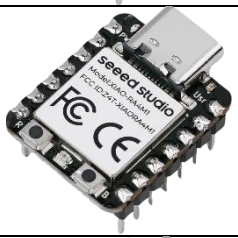
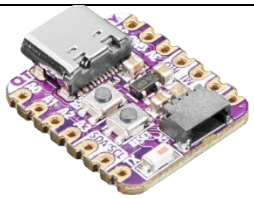
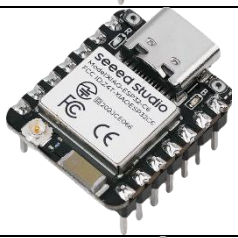
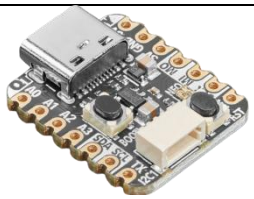
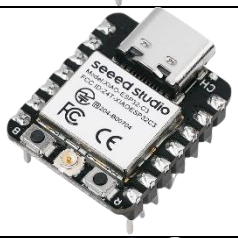
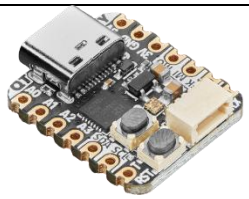
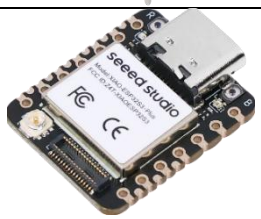
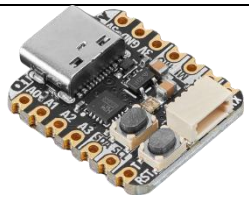
IoTsmart XIAO with **IoTextra Combo**

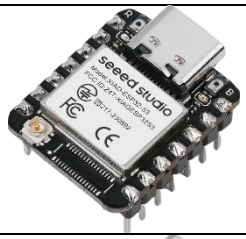
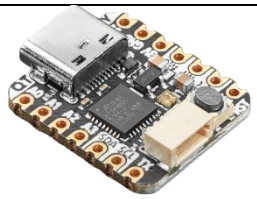
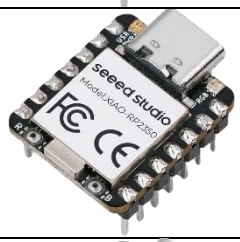
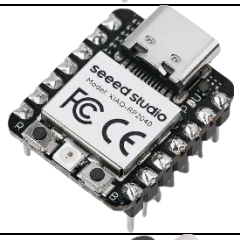
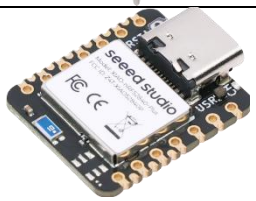
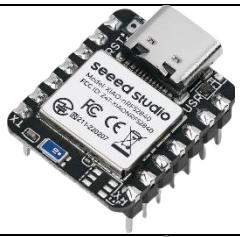
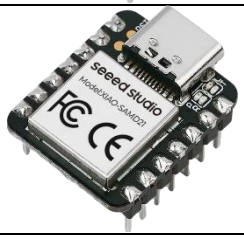
The **IoTsmart XIAO** also readily connects to numerous **Qwiic©** compatible sensors, peripherals and modules via the **I²C** connector:



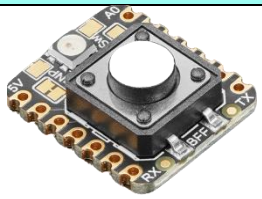
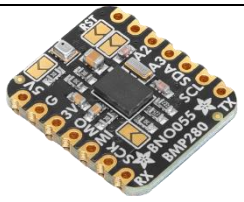
SEEED STUDIO XIAO AND ADAFRUIT QT PY MODULES

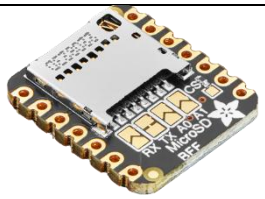
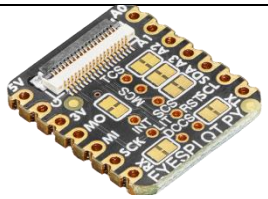
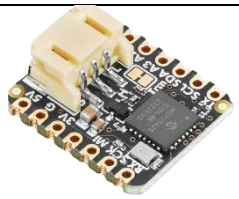
The **IoTsmart XIAO** module is compatible with the following microcontroller modules:

Seeed Studio		Adafruit	
	**Seeed Studio XIAO MG24** Silicon Labs EFR32MG24, Matter® Native over Thread/BLE 5.3, Arduino Compatible, 1.95µA Ultra-Low-Power		**Adafruit QT Py ESP32-S3** The ESP32-S3 is a highly integrated, low-power, 2.4 GHz Wi-Fi System-on-Chip (SoC) solution that now has WiFi and BLE support
	**Seeed Studio XIAO RA4M1** Renesas' RA4M1 chip (32-bit ARM® Cortex®-M4 MCU up to 48 MHz with FPU)		**Adafruit QT Py ESP32-C3** ESP32-C3 is a low-cost microcontroller from Espressif that supports 2.4 GHz Wi-Fi and Bluetooth® Low Energy (Bluetooth LE)
	**Seeed Studio XIAO ESP32C6** Espressif's ESP32-C6 MCU excels in Matter-compliant smart home applications. 2.4GHz Wi-Fi 6, BLE 5.0, Zigbee, and Thread		**Adafruit QT Py RP2040** RP2040 32-bit Cortex M0+ dual-core running at ~125 MHz @ 3.3V logic and power. 264 KB RAM 8 MB SPI Flash
	**Seeed Studio XIAO ESP32C3** New RISC-V architecture, supporting both Wi-Fi and BLE wireless connections		**Adafruit QT Py CH552** The CH552 is an 'enhanced' E8051 core microcontroller, compatible with MCS51 instruction set but
	**Seeed Studio XIAO ESP32S3 Plus** ESP32-S3's 240MHz Xtensa 32-bit LX7 dual-core MCU. 2.4GHz WiFi, BLE 5.0, 8MB PSRAM 16MB flash		**Adafruit QT Py CH32V203** The CH32V203G6 has a single 32-bit RISC-V core, running up to 144MHz, with 1-cycle multiply/divide.

	**Seeed Studio XIAO ESP32S3** 2.4GHz WiFi, BLE 5.0, 8MB PSRAM, 8MB flash. Dual-core MCU. Ideal for Smart Homes, IoT, Wearable Devices, Robotics		**Adafruit QT Py SAMD21** ATSAMD21E18 32-bit Cortex M0+ - 48 MHz 32-bit processor with 256KB Flash and 32 KB RAM RGB NeoPixel LED
	**Seeed Studio XIAO RP2350** Raspberry Pi RP2350 chip (dual industry-standard Arm Cortex-M33 cores and a pair of open-hardware Hazard3 RISC-V cores)		
	**Seeed Studio XIAO RP2040** Compatible with the Raspberry Pi RP2040 ecosystem as they share the same RP2040 chip		
	**Seeed Studio XIAO nRF52840 Plus** Powered by Nordic chipset with FPU. Low Power, Bluetooth5.0 with Onboard Antenna		
	**Seeed Studio XIAO nRF52840** Powered by Nordic chipset with FPU. Low Power, Bluetooth5.0 with Onboard Antenna		
	**Seeed Studio XIAO SAMD21** Microchip SAMD21G18 chip is an ultra-small, high-performance universal development board		

Expansion modules can also be installed, for example:

Seeed Studio		Adafruit	
	**L76K GNSS Module** The L76K GNSS Module offers global tracking through GPS, BeiDou, GLONASS, and QZSS		**Adafruit IoT Button with NeoPixel** A way for you to quickly add a chunky 12mm tactile button with a NeoPixel.
			**Adafruit BNO055 + BMP280** BNO055 - smart 9-DOF sensor BMP280 - barometric pressure and temperature sensor

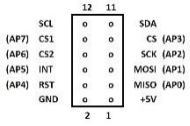
			**Adafruit microSD Card** Onboard is a slim, high quality Molex push-pull micro-SD card socket
			**Adafruit EYESPI** Allows to display information on color displays or energy-saving E-Ink screens.
			**Adafruit CAN Bus** Turn XIAO and QT Py boards into powerful CAN bus devices

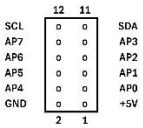
CONNECTORS

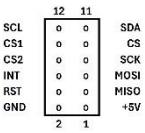
The module is equipped with the following connectors:

- A horizontal (right-angle) **H-HOST** connector installed on the **top-side** or vertical **V-HOST** connector installed on the **bottom-side** of the **IoTsmart XIAO** module. Information regarding the type of the installed **HOST** connector is provided on the **bottom-side** of the module
- An **I²C** connector for connecting external sensors and devices via the **I²C** bus
- An optional **UART** connector (not pre-installed)
- A **PWR** connector (+5VDC input)

HOST connector. Pinout of the **HOST** connectors:



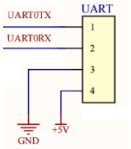




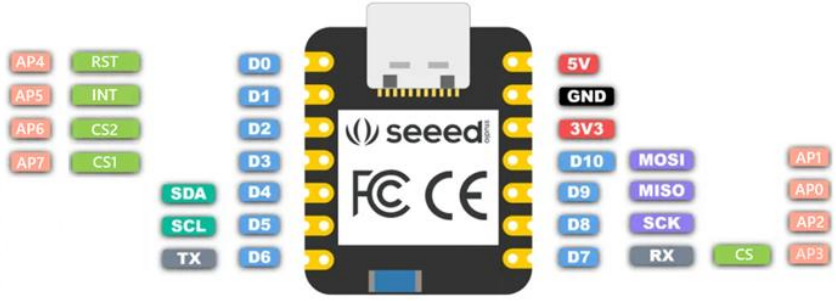
HOST on the **IoTsmart** module | **HOST-P12** on the mezzanine | **HOST-S** on the mezzanine

The **HOST** connector of the **IoTsmart XIAO** module is inserted into the **HOST-12** or **HOST-S** connector on the mezzanine. Therefore, the pinout for the **HOST-P12** and **HOST-S** connectors on the mezzanines is also shown in the figure to compare the connector signals.

UART connector. The contacts of this connector are shown in the figure:



Correspondence of **HOST** and **UART** signals to **Seeed Studio XIAO** signals:



EEPROM

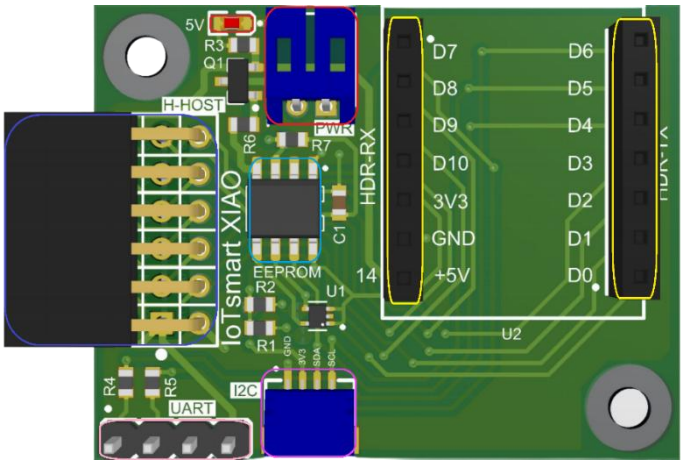
To store configuration and other user information, the **IoTsmart RP2350A** module includes an onboard **EEPROM** (8 Kbit or 16 Kbit). This **EEPROM** is accessible via the **I²C** bus and is visible at addresses 0x54-0x57 by default.

POWER SUPPLY

The module operates from a 5VDC power input supply. The power supply can be connected via a 2-pin **PWR** connector (JST S2B-PH-K-S, 2.00 mm pitch) or through the **Tiny Adapter Board**.

LAYOUT

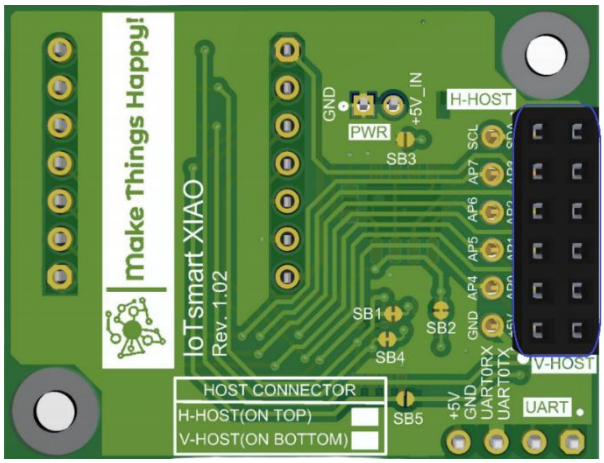
Below is the layout of the elements on the **top-side** of the **IoTsmart XIAO** module when using the **HOST-H** connector:



In this picture:

- Power-related elements (external power connector, named **PWR**, and **LED**) are highlighted in **red**
- The connectors for installing the **SeeedStudio XIAO** and **Adafruit QT Py** modules are highlighted in **yellow**.
- The **HOST-H** connector is highlighted in **blue**
- **UART** connector not installed during production are highlighted in pink
- The **Qwiic©** connector for connecting peripherals via the **I²C** bus is highlighted in **purple**
- EEPROM is highlighted in light blue

Below is the layout of the **IoTsmart XIAO** module **bottom-side** when using the **HOST-V** connector (highlighted in **blue**):



JUMPERS

Jumpers are located on the underside of the module:

1) **SB1**, **SB4** – Connect pull-up resistors to **I²C** SCL and SDA (enabled by default)
2) **SB2** – Disables +3.3V for **I²C** devices when open (closed by default)
3) **SB3** – Sets EEPROM **I²C** address:

b7	b6	b5	b4	b3	b2	b1	b0
1	0	1	0	1	x	x	R/W

- **SB5:** For route **TX** to the **UART** connector. By default, there is no connection between **TX** and the corresponding **UART** connector pin (jumper SB5 is open).

CONFIGURATION TABLES

The **bottom-side** of the module provides information about the type of **HOST** connector installed:

- **H-HOST** - horizontal (right-angle), **top-side** mounted
- **V-HOST** – vertical, **bottom-side** mounted

COMPATIBILITY WITH MEZZANINES

The **IoTsmart XIAO** is compatible with all **IoTextra** mezzanines, including

- **IoTextra Input**
- **IoTextra Relay2**
- **IoTextra SSR Small**
- **IoTextra Octal2**
- **IoTextra Analog**
- **IoTextra Combo**

ACCESSORIES

Recommended accessories:

- 2-pin power connector
- **Qwiic©** **I²C** cable (connector on both ends)