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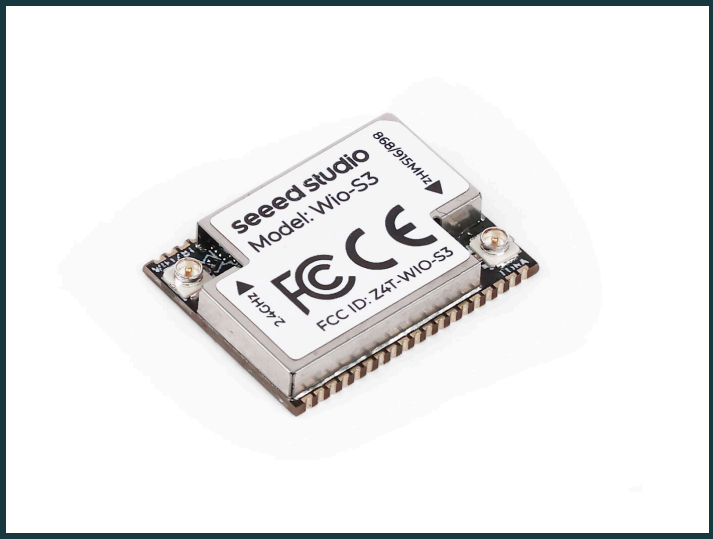
INDUSTRIAL PRODUCT DATASHEET

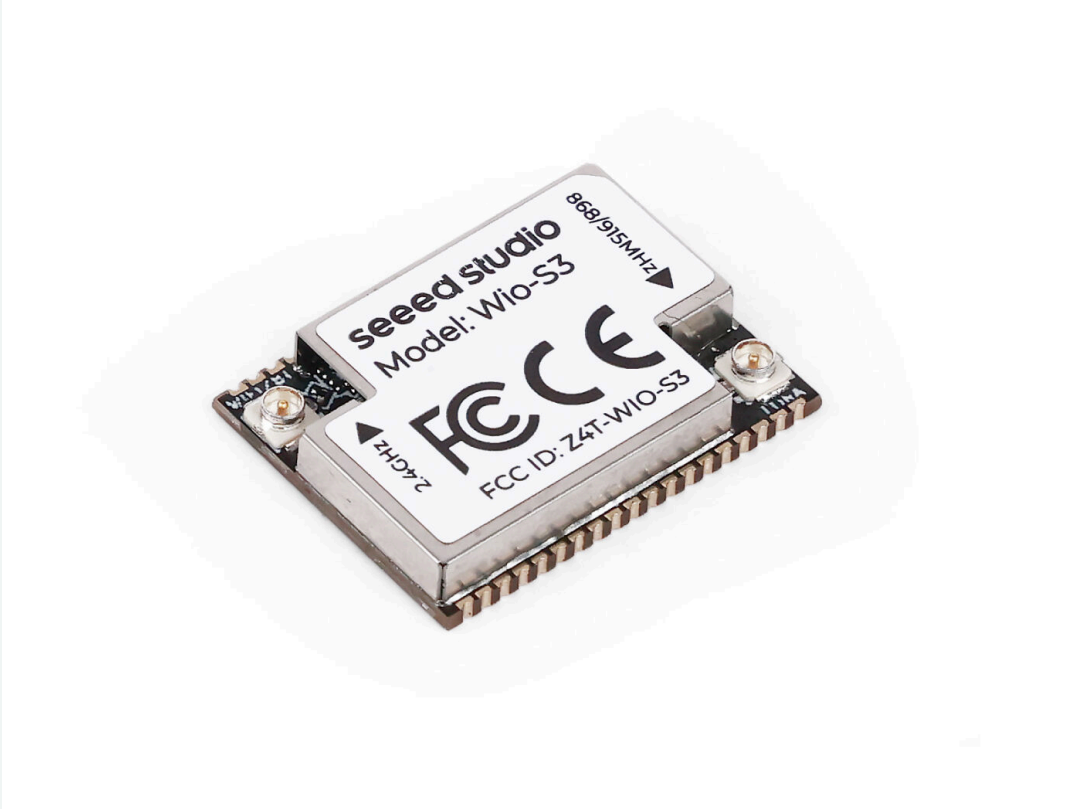
Wio-S3 Wireless LoRa Module with IPEX, ESP32-S3R8, Dual-core Xtensa® LX7 and SX1262 embedded, LoRaWAN, Wi-Fi & BLE, supports EU868 & US915

Wio-S3 Wireless LoRa Module: ultra-compact ESP32-S3R8 and SX1262 LoRa module with LoRaWAN EU868/US915, Wi-Fi, BLE 5.0, 16MB Flash/8MB PSRAM, and TCXO for reliable long-range IoT and edge AI applications.

SKU	UPDATED	PRICE
100020327	2026-09-21 10:07:58	$7.99(Excl. VAT)



Overview



The Wio-S3 Wireless LoRa Module is an ultra-compact IoT module combining the ESP32-S3R8 dual-core processor with SX1262 LoRa, supporting LoRaWAN on EU868/US915 plus Wi-Fi and BLE 5.0. With 16MB Flash, 8MB PSRAM, TCXO stability, flexible IPEX/non-IPEX antenna options, and abundant peripherals, it is ideal for smart agriculture, industrial automation, IoT data logging, healthcare/wearables, and AIoT/HMI applications.

Key Features

Note:

For Wio-S3 antenna selection, we provide the following references to help improve RF performance and ensure compliance with CE/FCC regulations:

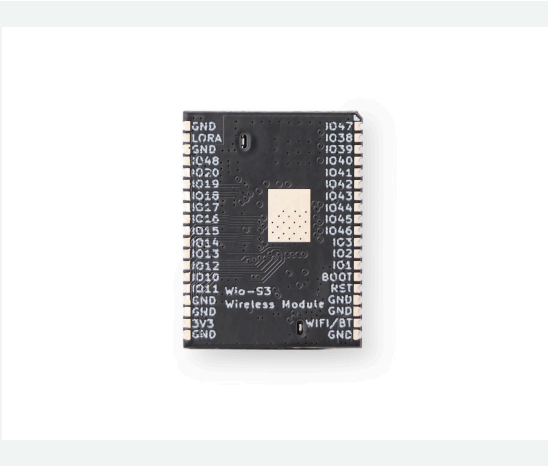
For LoRa:

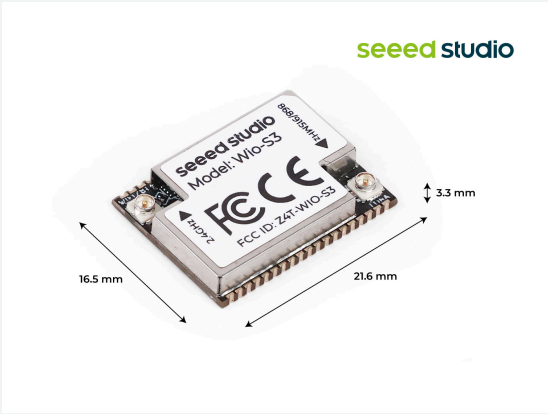
Wio-S3 is an ultra-compact wireless module designed for IoT devices. It combines the high-performance ESP32-S3R8 dual core processor with the SX1262 LoRa chip to provide reliable long range communication.
This module is a versatile solution for developers. It supports LoRaWAN on EU868 and US915 bands, and also provides stable Wi-Fi and BLE 5.0 connectivity. With 16MB Flash and 8MB PSRAM, Wio-S3 offers plenty of memory for edge AI tasks and complex data processing.
Wio-S3 is designed with hardware flexibility to meet various integration needs. We offer two versions of the module: one with an onboard IPEX connector and one without an IPEX connector. This provides developers with flexible options to choose the best antenna path for their hardware design.
To ensure consistent performance in different environments, it also includes a TCXO for high frequency stability.Small in size but powerful in performance, Wio-S3 module is ideal for many industries. It is perfect for applications such as smart home systems, industrial automation, smart agriculture, low-power IoT sensor hubs and so on.
With this module, you can connect to different LoRaWAN server platforms like TheThingsNetwork, Chirpstack, and others.
Note

If you have a large quantity request or need any further information on Seeed IIoT products and services, please don't hesitate to contact us directly at **order@seeed.cc** or click **here**. We'll be happy to offer you our best discount price. We are excited to see you can scale up and expand your business with our products and services.

- **Edge Intelligence & Computing:** Equipped with a dual-core ESP32-S3 and larger memory (16MB Flash / 8MB PSRAM), it provides the processing power required for Edge AI and complex automation tasks that go beyond simple data sensing.
- **High Performance:** The transmit power up to 20.9dBm @868/915MHz; -137dBm sensitivity for SF12 with 125KHz BW.
- **Wireless Connectivity:** Embedded LoRaWAN protocol with support for global long range frequency plan, also supports 2.4GHz Wi-Fi and BLE 5.0.
- **High Stability:** Includes a built-in TCXO to ensure consistent frequency stability and reliable performance under wide temperature conditions.
- **Flexible Hardware Design:** Available in two versions (with or without an onboard IPEX connector), offering developers versatile antenna integration options.
- **Abundant Peripherals:** Equipped with a variety of GPIO interfaces including UART, I2C, and ADC, providing great flexibility for peripheral expansion.
- **Easy to Use:** Comes with built-in command firmware and supports custom product development using an SDK.
- **FCC, CE, Telec Certified**

Product Gallery



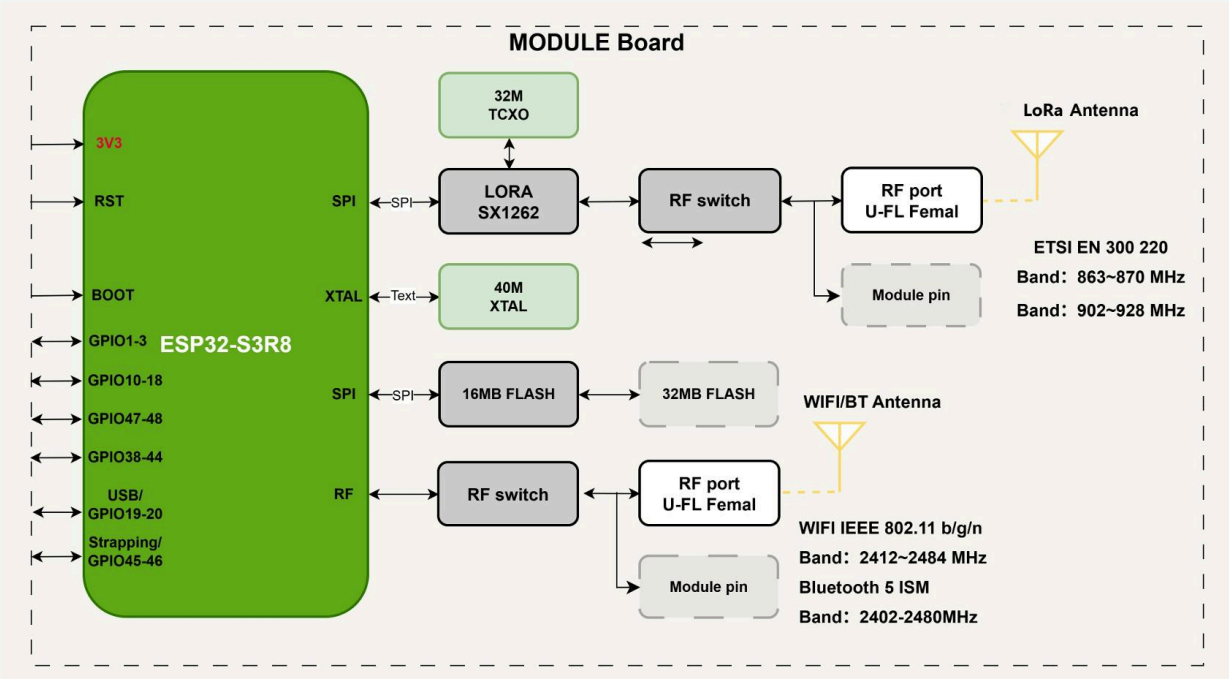


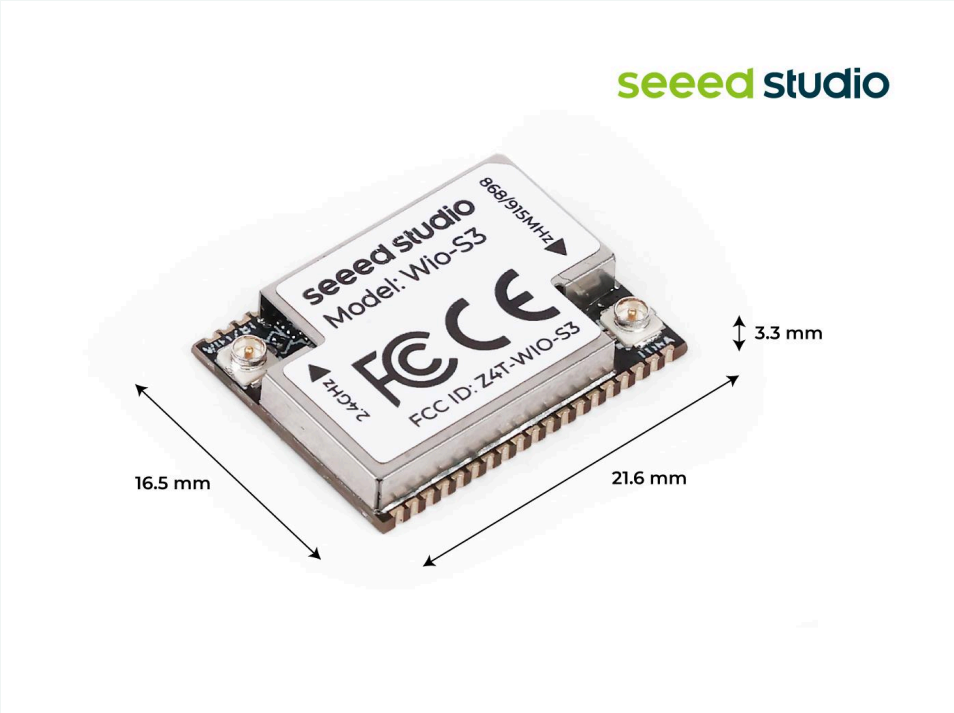
Specification

Items	Parameter	Specifications	Unit
Core	MCU	Xtensa® 32-bit LX7	
	Storage	16MB Flash, 512KB SRAM	
Structure	Size	21.6 * 16.5 * 3.3mm	mm
	Package	38 pins, SMT	

Electrical Characteristics	Power Supply	3.0 - 3.6V(@3.3V typical)	V
	Minimum Sleep Current	9.3uA	uA
	Minimum Standby Current	1.43mA	mA
	Operation Current (Transmitter+MCU)	113mA @16dBm in 868MHz type	mA
		125mA @22dBm in 868MHz type	
		127mA @22dBm in 915MHz type	
	Operation Current (Receiver+MCU)	5.5mA @BW125kHz, 868MHz type	mA
		5.7mA @BW125kHz, 915MHz type	
	Output power	20.9dBm max @868MHz LoRa	dBm
		20.74dBm max @915MHz LoRa	
	Sensitivity	@SF12, BW125kHz	dBm
		Fr(MHz) / type / max	
		868 / -137 / -137	
		915 / -136.5 / -136.9	
	Harmonics (LoRa)	< -41dBm (2nd Harmonic)	dBm
		< -49dBm (3rd Harmonic)	dBm
Interface	RFIO	2 RF ports (Wi-Fi/BT & LoRa)	
	UART	3 group of UART	
	I2C	2 group of I2C	
	ADC	2 groups of ADC, 12-bit	
	NRST	1 Manual reset pin input	
	SPI	1 group of SPI	
	USB	1 group of USB	
	BOOT	1 Manual Boot pin input	
Working Temperature	-40℃ ~ 85℃		

Hardware Overview





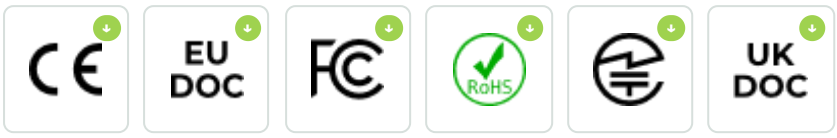
Applications

- **Smart Agriculture:** Enables remote monitoring of environmental conditions, supporting precision farming and smart irrigation.
- **Industrial Automation:** Supports industrial monitoring and mesh networking, improving system efficiency and reliability in complex environments.
- **IoT Data Logging & Remote Monitoring:** Ideal for low-power data loggers and distributed sensing applications, ensuring stable long-range communication.
- **Healthcare & Wearables:** Powers health monitoring and wearable devices with reliable data transmission and low-power operation.
- **AIoT & Human-Machine Interface:** Supports edge AI applications such as voice and image recognition, as well as touch and interactive control systems.

Part List

Wio-S3 (with IPEX antenna connector)	x1

Compliance & Logistics



HSCODE	8517799000
USHSCODE	8517620090
UPC	
EUHSCODE	8517180000
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/Wio-S3-Wireless-Module-p-6832.html
- Wio-S3 Datasheet & Specifications
- Espressif ESP32-S3R8 Datasheet
- Semtech SX1262 Datasheet
- Wio-S3 Kicad File
- Wio-S3 STEP 3D File
- ESP-IDF User Guide for ESP32-S3, SDK
- ESP32-S3 Test Tools and Guidelines

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