

μEDesign μES3 ESP32 S3 WROOM1 N16R8 Microcontroller Development Board

Product Overview

μES3 is a high-performance, tiny microcontroller development board based on ESP32-S3 WROOM 1 N16R8 module. The board runs on LX7 Xtensa dual core 32-bit microprocessor with a maximum frequency of 240 MHz. The module has 16 MB flash memory and 8 MB PSRAM which is specifically targeted for memory intensive applications like AI, speech/audio and image processing.

The module is equipped with a PCB antenna trace which facilitates 2.4 GHz WiFi and Bluetooth (BLE) communication. Board programming is done via on-chip/native USB without using an external USB-UART bridge chip.

μES3 is an embedded edge category high performance device that is highly suited for Offline AI/ML, Neural network acceleration, Speech/Voice recognition, Face recognition, Human-machine interface (HMI), Smart IOT applications etc.

Combined with edge category performance, the μES3 board is only tiny (2.7 x 2.4 cm) unlike other dev boards which makes it highly suitable for wearable applications too. μES3 board supports firmware development on ESP-IDF, Arduino IDE, Micro Python/Circuit Python and similar.

Specifications

Board dimension	2.7 x 2.4 cm
Processor	Xtensa Dual core 32-bit LX7 microprocessor
Max processor frequency	240 MHz
ROM/SRAM	384 KB ROM/512 KB SRAM on-chip
Flash Memory	16 MB
PSRAM	8 MB
Wireless Communication	2.4 GHz Wi-Fi (802.11b/g/n), Bluetooth 5.0 (BLE)
Antenna	On-board PCB antenna
USB Programming	USB-C port with native USB programming
GPIO Pins	14 pins with flexible IO configuration
Interface support	I2C, SPI, 12-bit ADC - 2 channels, Touch sensor, PWM, LCD, UART, USB 2.0 On-the-Go (OTG) support
Switches	On-board BOOT and RESET buttons
LEDs	Separate LEDs for power and control