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Introducing the EVs-2 ESP32-C3 SuperMini VOC Sensor Shield. The EVs-2 is a versatile and compact PCB designed for integration with the ESP32-C3 SuperMini microcontroller and compatibility with XIAO-ESP32 boards. This board interfaces the ESP32-C3 SuperMini microcontrollers with three sensors: the SHT-40 for high-precision temperature and humidity measurements, the SGP41 for reliable Nox and VOC air quality monitoring, and the ICP-10111 for accurate barometric pressure readings.

Whether you're building a sophisticated environmental monitoring system or a smart home application, this PCB provides a solution to evaluate these sensors or create a system based on them. It ensures easy plug-and-play connectivity, streamlining your development process and expanding the functionality of your projects.

The Arduino sketch allows you to quickly read data from the sensors, see the results using the Arduino Serial Monitor and on an OLED display.

This kit includes both pin and socket 0.1" connectors. The sockets are used if you want to duplicate as shown below. the pins could be used instead if you want to install this on a breadboard to evaluate using other microcontrollers. Since they are not soldered when you receive the kit, you can easily configure the kit differently as required.

The ESP32-C3 SuperMini arrives pre-programed with the 'Evs=2_SGP41_VOC.ino' sketch. This should be a good starting point to add desired features.

Arduino IDE (2.3.3) notes:

The Evs=2_SGP41_VOC.ino Arduino code was tested on a ESP32C3 SuperMini.

Initial configuration for the Arduino IDE

Add to File Preferences → Additional Boards Manager URLs:

https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json

In Library Manager, search for and install "Adafruit SHT4x Library"

search and install: "Sensirion I2C SHT4x by Sensirion"

search and install: "Sensirion Gas Index Algorithm by Sensirion"

search and install: "Sensirion I2C SGP41 by Sensirion"

search and install: "DFRobot_ICP10111 by DFRobot"

search and install: "Oliver U8g2 Library"

Start a new sketch and replace the startup sketch with Evs_SGP41_VOC.ino, select the XIAO_ESP32C3 (or the board you are using), attach your XIAO with the VOC Shield properly attached, select Upload in Arduino IDE.

The code should compile correctly, upload and run. Monitor the data using the Serial Monitor. If you have a display attached, you should also see that displaying data.

Note: VOC will initially read “0” but it will start to display actual values after a few minutes.

Example serial monitor reading:

SHT41

T: 23.40 RH: 40.05

Tticks: 25614 RHticks: 24143

SGP41

compensationRh: 24143 compensationT: 25614

raw VOC Index: 30025 raw NOx Index: 17777

VOC Index: 0 NOx Index: 0

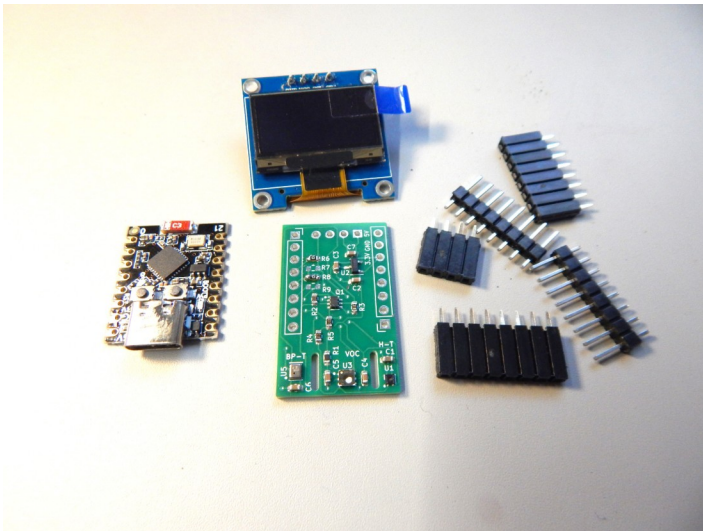
ICP-10111

Temperature: 24.36C

96694.31Pa 28.56inHg

Altitude: 407.21m

EVs-2 SGP41 VOC as delivered:



EVs-2 SGP41 VOC showing the display with the pre-loaded Arduino sketch:



EVs-2 SGP41 VOC showing the assembly. NOTE the orientation: The component side of the EVs-2 faces the ESP32 and the sensors face away from the USB connector. The OLED display mounts to the back side of the EVs-2.

