PRODUCT DATASHEET



Soldered Electrochemical O2 Gas Sensor Breakout (Qwiic)

333394

Oxygen sensor board with an SGX-4OX-ROHS electrochemical cell for 0 to 25 % vol, read by an LMP91000 and a 16-bit ADC over Qwiic.

Full product documentation, files and tutorials: **solde.red/333394**

CORE ATTRIBUTES

SKU	**333394**
DIMENSIONS	**38.0 × 38.0 × — mm**
ORIGIN	**HR**
BARCODE	**0732388628803**

DESCRIPTION

This board measures oxygen (O2) with an **SGX-4OX-ROHS** electrochemical cell. The **LMP91000** analog front end biases the cell and turns its current into a voltage, a **16-bit ADS1115** ADC converts that voltage, and an **ATtiny404** talks to both chips for you, so your microcontroller sees a single I2C device.

The cell covers **0 to 25 % vol** and reaches 90% of a step in under 10 s. It works from -40 to 60 °C and 15 to 90% RH. The cell needs a −600 mV bias, and after power-up it can take up to 15 minutes to settle. The libraries have no preset for this cell yet, so you set the front end's bias and gain yourself. The ADS1115's other three inputs, AIN1 to AIN3, are on a header for your own analog signals.

Connect the board with either of the two **Qwiic** connectors or the 2.54 mm headers. It runs from **3.3 V**; there is no regulator, so the header and the Qwiic connectors share one 3.3 V supply. The default address is **0x30**; the three DIP switches move it from 0x30 to 0x37, so up to eight boards share one bus. The front end's analog output VOUT and the ADC's ALERT pin are on the header too. There are libraries for Arduino and MicroPython, plus an ESP-IDF component and an ESPHome component.

TECHNICAL DETAILS

- **Gas:** oxygen (O2)
- **Gas cell:** SGX-4OX-ROHS, electrochemical
- **Range:** 0 to 25 % vol
- **Response time:** T90 under 10 s
- **Repeatability:** < ±2%
- **Operating conditions:** -40 to 60 °C, 15 to 90% RH
- **Expected cell life:** over 60 months in air

- **Analog front end:** Texas Instruments LMP91000
- **ADC:** Texas Instruments ADS1115, 16-bit
- **Bridge MCU:** Microchip ATtiny404 (factory firmware)
- **Interface:** I2C, address 0x30 (0x30 to 0x37 by switch)
- **Supply:** 3.3 V, no regulator; the Qwiic connectors share this supply
- **Header pins:** VOUT (analog out), ALERT, AIN1 to AIN3 (analog in)
- **Connectors:** 2x Qwiic, 2.54 mm headers
- **Dimensions:** 38 × 38 mm

SPECIFICATIONS

INTERFACE	I2C, Analog, Digital Gpio
QWIIC COMPATIBLE	Yes
I2C ADDRESS DEFAULT	0x30
I2C ADDRESS CHANGEABLE	Yes
BREADBOARD COMPATIBLE	No
MEASUREMENT TYPES	Gas
MEASUREMENT RANGE	0 to 25 % vol O2 (SGX-4OX-ROHS); max overload 30% O2
MEASUREMENT ACCURACY	Repeatability < ±2%; logarithmic output S = K ln(1/(1-C)); T90 under 10 s; output 0.1 ± 0.03 mA in air
IC PART NUMBER	LMP91000
MCU PART NUMBER	ATtiny404
SUPPLY VOLTAGE MIN V	3.3
SUPPLY VOLTAGE MAX V	3.3
LOGIC LEVEL	3V3 Only

DOCUMENTS

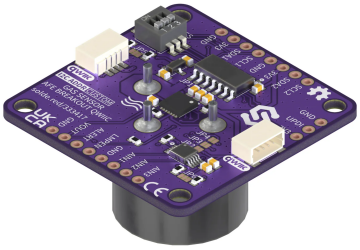
Main IC Datasheet · EN	https://cms.soldered.com/products/333394/documents/ic-datasheet/333394_ic-datasheet_5ef001.pdf

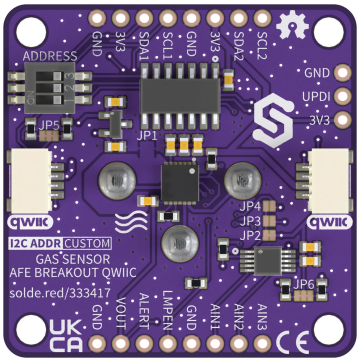
LINKS

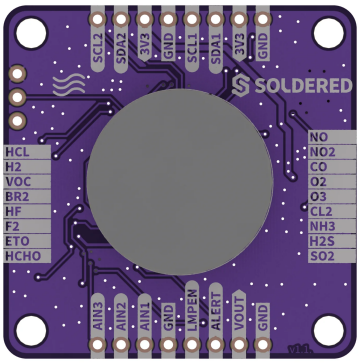
Full Documentation	https://docs2.soldered.com/soldered-electrochemical-o2-gas-sensor-breakout-qwiic/
Arduino Library	https://github.com/SolderedElectronics/Soldered-Electrochemical-Gas-Sensor-Arduino-Library
MicroPython Module	https://github.com/SolderedElectronics/Soldered-ElectrochemicalGasSensor-MicroPython-Library
mim_package	

	https://checkmim.com/packages/solderedelectronics+Soldered-ElectrochemicalGasSensor-MicroPython-Library
Pinout	https://cms.soldered.com/products/333394/media/333394_pinout-png_085a13.png

GALLERY




ADDRESS
JP5
JP1
JP4
JP3
JP2
JP6
GND
UPDI
3V3
qwiic
I2C ADDR CUSTOM
GAS SENSOR
AFE BREAKOUT QWIIC
solde.red/333417
SCL2
SDA2
SDA1
SCL1
LMPEN
ALERT
VOUT
AIN1
AIN2
AIN3


SOLDERED
HCL
H2
VOC
BR2
HF
F2
ETO
HCHO
NO
NO2
CO
O2
O3
CL2
NH3
H2S
SO2