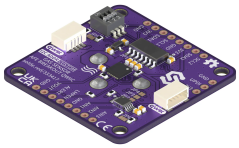
PRODUCT DATASHEET



Soldered Electrochemical Gas Sensor Breakout (Qwiic)

333417

Analog front end for SGX-4 electrochemical gas cells. It biases the cell, reads it with a 16-bit ADC and reports over Qwiic.

Full product documentation, files and tutorials: **solde.red/333417**

CORE ATTRIBUTES

SKU	**333417**
DIMENSIONS	**38.0 × 38.0 × — mm**
ORIGIN	**HR**
BARCODE	**0732388637409**

DESCRIPTION

This board reads SGX-4 series electrochemical gas cells. 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 LMP91000's bias, gain and load resistor are set over I2C, so the same board works with different cells. The libraries carry ready presets for **CO, NO2, SO2, O3, NO, H2S, NH3 and Cl2** cells, and you can set every register yourself for other cells. An MCP1525 gives the front end a **2.5 V** reference. 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

- **Analog front end:** Texas Instruments LMP91000
- **ADC:** Texas Instruments ADS1115, 16-bit, 4 inputs
- **Bridge MCU:** Microchip ATtiny404 (factory firmware)
- **Voltage reference:** MCP1525, 2.5 V
- **Gas cell:** SGX-4 series electrochemical cell, 3-electrode
- **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
- **Mounting holes:** 4× 3.2 mm

SPECIFICATIONS

INTERFACE	I2C, Analog, Digital Gpio
QWIIC COMPATIBLE	Yes
I2C ADDRESS DEFAULT	0x30
I2C ADDRESS CHANGEABLE	Yes
BREADBOARD COMPATIBLE	No
MEASUREMENT TYPES	Gas
IC PART NUMBER	LMP91000
MCU PART NUMBER	ATtiny404
SUPPLY VOLTAGE MIN V	3.3
SUPPLY VOLTAGE MAX V	3.3
LOGIC LEVEL	3V3 Only

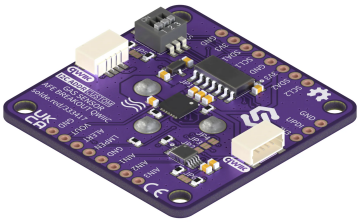
DOCUMENTS

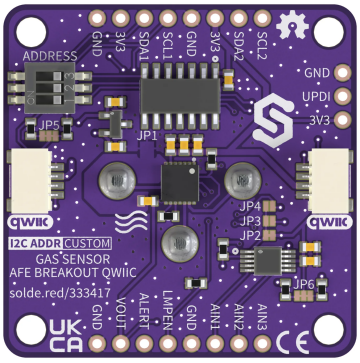
Main IC Datasheet · EN	https://cms.soldered.com/products/333417/documents/ic-datasheet/333417_ic-datasheet_cebc2f.pdf

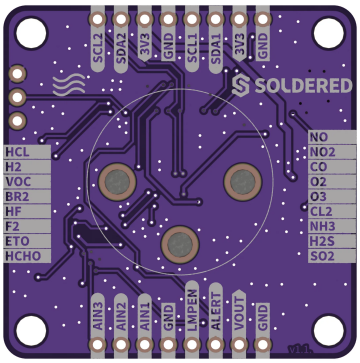
LINKS

Arduino Library	https://github.com/SolderedElectronics/Soldered-Electrochemical-Gas-Sensor-Arduino-Library
MicroPython Module	https://github.com/SolderedElectronics/Soldered-ElectrochemicalGasSensor-MicroPython-Library
Full Documentation	https://docs2.soldered.com/soldered-electrochemical-gas-sensor-breakout-qwiic/
mim_package	https://checkmim.com/packages/solderedelectronics+Soldered-ElectrochemicalGasSensor-MicroPython-Library
Pinout	https://cms.soldered.com/products/333417/media/333417_pinout-png_2cdbb7.png

GALLERY




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


SCL2
SDA2
3V3
GND
SCL1
SDA1
3V3
GND
SOLDERED
HCL
H2
VOC
BR2
HF
F2
ETO
HCHO
NO
NO2
CO
O2
O3
CL2
NH3
H2S
SO2
AIN3
AIN2
AIN1
GND
LMPEN
ALERT
VOUT
GND