

LamaPLC: Gas sensors

Click on the column header to rearrange!

Type of measurement	Model	Power voltage	Measurement, range, accuracy	Communication	Note
<div style="background-color: #c00000; color: white; padding: 2px; display: inline-block; width: 15px; height: 15px; text-align: center; line-height: 15px;">G</div> CO ₂ VOC	Sciosense CCS811 	3.3V (1.8 .. 3.6V)	equivalent CO ₂ (eCO ₂): 400 ppm .. 32768 ppm equivalent Total Volatile Organic Compound (eTVOC): 0 ppb .. 29206 ppb.	I ² C default address: 0x5A / 0x5B	Standard (100kbit/s) and fast (400kbit/s) I ² C interface Power Consumption maximum: 46 mW
<div style="display: flex; gap: 2px;"> <div style="background-color: #c00000; color: white; padding: 2px; display: inline-block; width: 15px; height: 15px; text-align: center; line-height: 15px;">G</div> <div style="background-color: #008000; color: white; padding: 2px; display: inline-block; width: 15px; height: 15px; text-align: center; line-height: 15px;">T</div> <div style="background-color: #0000ff; color: white; padding: 2px; display: inline-block; width: 15px; height: 15px; text-align: center; line-height: 15px;">H</div> </div> CO ₂ Air-quality Temperature Humidity	Sensirion SCD40-D-R2 	3.3V / 5V (2.4 .. 5.5V)	CO ₂ output range: 0 .. 40'000 ppm CO ₂ measurement accuracy: ± 40 ppm Humidity measurement range: 0 %RH .. 100 %RH Humidity measurement accuracy: ±6 %RH Temperature measurement range: 10°C .. 60°C Temperature measurement accuracy: ±1.5 °C	I ² C default address: 0x62	SCL clock frequency: 100 kHz
<div style="background-color: #c00000; color: white; padding: 2px; display: inline-block; width: 15px; height: 15px; text-align: center; line-height: 15px;">G</div> Smoke gas Combustible gas	Winsen MQ-2 	5V	Flammable gas concentration: 300 .. 10'000ppm Heater Resistance; RH: 29Ω ±3Ω room tem. Heater consumption; PH: ≤950mW Sensitivity;S: Ro(in air) / Rs (2000 ppm C ₃ H ₈) ≥ 5 Output Voltage;Vs: 2.5V~4.0V in 2000 ppm C ₃ H ₈ Concentration Slope;α: ≤0.6 (R3000 ppm / R1000 ppm C ₃ H ₈)	analog signal	Lifespan: 10 years Preheat time: Over 24 hour

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<p>G</p> <p>Alcohol gas</p> <p>Small sensitivity: Benzine gas</p>	<p>Winsen MQ-3</p> 	5V	<p>Detecting concentration scope 0.05 mg / 10 mg/L Alcohol</p> <p>Sensing Resistance: 1 MΩ - 8 MΩ (0.4 mg/L alcohol)</p>	analog signal	Preheat time: Over 24 hour
<p>G</p> <p>CH₄ gas Natural gas LNG</p> <p>Small sensitivity: Alcohol Smoke</p>	<p>Winsen MQ-4</p> 	5V	<p>Detecting concentration scope 200-10'000ppm CH₄, natural gas</p> <p>Sensing Resistance: 10KΩ- 60KΩ (1000ppm CH₄)</p>	analog signal	Preheat time: Over 24 hour
<p>G</p> <p>LPG Iso-butane Propane</p> <p>Small sensitivity: Alcohol Smoke</p>	<p>Winsen MQ-5</p> 	5V	<p>Detecting concentration scope 200-10'000ppm LPG,LNG, Natural gas, Iso-butane, Propane, Town gas</p> <p>Sensing Resistance: 10KΩ- 60KΩ (5000 ppm methane)</p>	analog signal	Preheat time: Over 24 hour
<p>G</p> <p>Town gas Natural gas LPG LNG Iso-butane Propane</p> <p>Small sensitivity: Alcohol Smoke</p>	<p>Winsen MQ-6</p> 	5V	<p>Detecting concentration scope 200-10'000ppm LPG ,iso-butane, propane, LNG</p> <p>Sensing Resistance: 10KΩ- 60KΩ (10'00ppm LPG)</p>	analog signal	Preheat time: Over 24 hour
<p>G</p> <p>CO</p>	<p>Winsen MQ-7</p> 	5V	<p>Detecting concentration scope over 300 ppm CO (Carbon Monoxide)</p> <p>Sensing Resistance: 2KΩ- 20KΩ (100 ppm CO)</p>	analog signal	Preheat time: Over 48 hour

Type of measurement	Model	Power voltage	Measurement, range, accuracy	Communication	Note
<p>G</p> <p>H₂</p> <p>Small sensitivity: Alcohol LPG cooking fumes</p>	<p>Winsen MQ-8</p> 	5V	<p>Detecting concentration scope 100-10000ppm Hydrogen (H₂)</p> <p>Sensing Resistance: 10KΩ- 60KΩ (1000 ppm H₂)</p>	analog signal	Preheat time: Over 24 hour
<p>G</p> <p>CO CH₄ gas LPG</p>	<p>Winsen MQ-9</p> 	5V	<p>Detecting range 20 ppm .. 2000 ppm carbon monoxide 500 ppm .. 10'000 ppm CH₄ 500 ppm .. 10'000 ppm LPG</p> <p>Sensing Resistance: 2KΩ- 20KΩ (100 ppm CH₄)</p>	analog signal	Preheat time: Over 48 hour
<p>G</p> <p>NO_x NH₃ alcohol Benzene smoke CO₂</p>	<p>Winsen MQ-135</p> 	5V	<p>Detecting range 10 ppm .. 300 ppm NH₃ 10 ppm .. 1000 ppm Benzene 10 ppm .. 300 ppm Alcohol</p> <p>Sensing Resistance: 30KΩ- 200KΩ (100 ppm NH₃)</p>	analog signal	Preheat time: Over 24 hour
<p>G</p> <p>Oxygen</p>	<p>AlphaSense O2-A2</p> 	5V	<p>Range of oxygen sensor: 0..30 % Load resistance: 47-100 Ω</p>	analog signal	-
<p>G</p> <p>Methane Natural gas</p>	<p>GL Sciences TGS-2611</p> 	5V	<p>Sensor resistance in 5000ppm of methane at 20°C and 65% R.H. Sensor resistance: 0.68 .. 6.8 kΩ in 5000 ppm methane</p>	analog signal	Conditioning period before test: 7 days
<p>G T H</p> <p>CO₂ humidity temperature</p>	<p>Sensirion SCD-30</p> 	3.3V / 5V	<p>Humidity range: 0 .. 100 %RH Temperature range: -40°C .. 70°C CO₂ range: 0 .. 40'000 ppm (I²C, UART), 0 .. 5'000 ppm (PWM)</p>	UART (Modbus Point to Point; TTL Logic), PWM and I ² C	Response time: 20s Sensor lifetime: 15 years

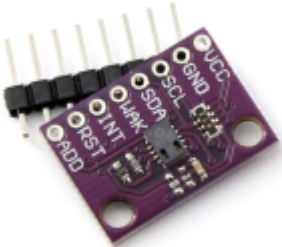
Type of measurement	Model	Power voltage	Measurement, range, accuracy	Communication	Note
G NO ²	MEMS GM-102b 	5V	Detection Range: 0.1~10ppm (NO ²) Heater Resistance: 80Ω±20Ω room temperature	analog signal	-
G alcohol gas	MEMS GM-302b 	5V	Detection Range: 1..500ppm (Ethanol vapor) 80Ω±20Ω room temperature	analog signal	-
G Alcohol (C ₂ H ₅ OH) Hydrogen(H ₂) Formaldehyde(CH ₂ O)	MEMS GM-502b 	5V	Detection: Alcohol (C ₂ H ₅ OH), 10..500ppm Detection: Hydrogen(H ₂), 1..1000ppm Detection: Formaldehyde(CH ₂ O), 10..100ppm	analog signal	-
G Carbon monoxide (CO) Hydrogen (H ₂)	MEMS GM-702b 	5V	Detection: Carbon monoxide sensor (CO) : 10..5000ppm Hydrogen sensor (H ₂): 10..500ppm	analog signal	-
G Carbon monoxide (CO) Methane (CH ₄) Ethanol (C ₂ H ₅ OH) Propane (C ₃ H ₈) Butane (C ₄ H ₁₀) Hydrogen (H ₂) Hydrogen sulfide (H ₂ S) Ammonia (NH ₃)	Fermion MICS-5524 V1.0 	5V	The module is intended for educational and hobby purposes! Measuring range: 1 .. 1000 ppm (carbon monoxide CO) 10 .. 500ppm (Ethanol C ₂ H ₅ OH) 1 .. 1000ppm (Hydrogen H ₂) 1 .. 500 ppm (NH ₃ ammonia) > 1000 ppm (methane CH ₄)	analog signal	-


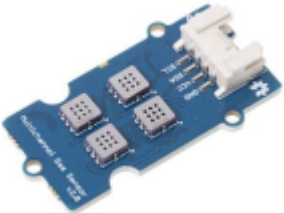
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Gas sensor moduls

The gas sensor modules contain the additional technology required for sensor ICs (voltage regulation, pull-up resistors,...) and the connection pins simplify the connection of the sensors to, for example,

Arduinos. The modules are typically universal and can be used for several sensors, so it's worth paying attention to which sensor is installed on the module, mainly because of the power supply (almost all sensors work with 3.3V, but not all of them work with 5V). There are often bridges used for addressing on the modules, which can be soldered in and out, and for example I²C addresses can be set with them.

Type of measurement	Name	Pics	Sensors	Description
<div style="display: flex; align-items: center;"> <div style="background-color: #c00000; color: white; padding: 2px 5px; margin-right: 5px;">G</div> <div style="margin-left: 5px;"> <p>CO₂</p> <p>TVOC</p> </div> </div>	<p>CJMCU-811</p>		<p>CCS811</p>	<p>I²C interface, address: ADDR pin low: 0x5A, ADD pin high: 0x5B VCC: normally 3.3V GND: GND SCL: Serial Clock Line, interface to I2C SDA: Serial Data Address, interface to I2C WAK: Wake (active low, not connected) INT: Interrupt (active low, not connected) RST: Reset (active low, not connected) ADD: 10k pull-down to GND, setting the I2C address to 0x5A Arduino library: ✓</p>

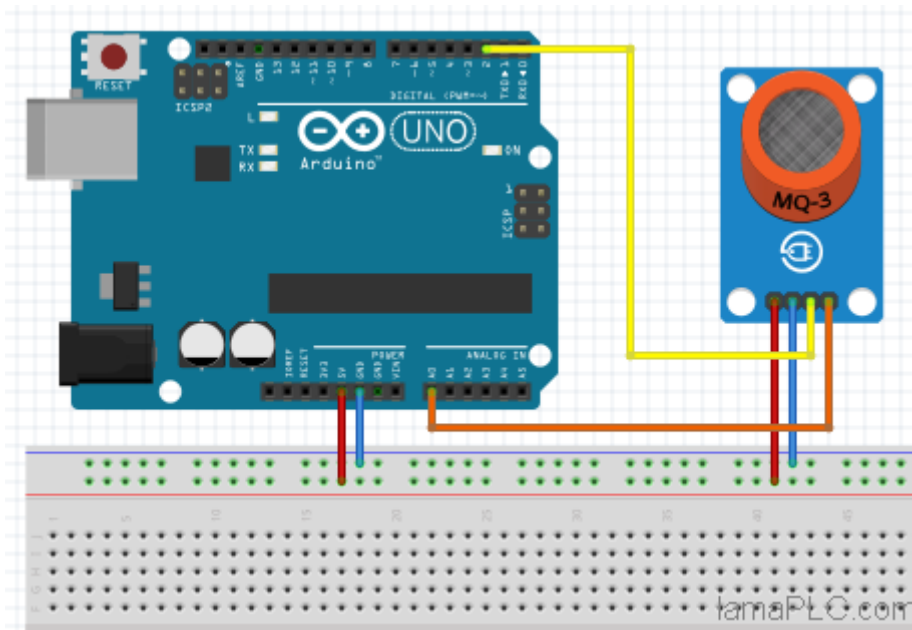
Type of measurement	Name	Pics	Sensors	Description
<p>G gas</p>	<p>MQ-nnn</p>		<p>MQ-2 (flamable gas) MQ-3 (alcohol) MQ-4 (CH₄) MQ-5 (LPG, LNG, natural gas) MQ-6 (LPG, iso-butane,...) MQ-7 (CO) MQ-8 (H₂) MQ-9 (CO, CH₄, LPG) MQ-135 (NH₃, benzene)</p>	<p>Analog and digital signals <i>Pinout for modul:</i> VCC: normally 5V GND: GND DO: Digital (alarm) signal, by setting a threshold value using the potentiometer AO: Analog (measuring) signal, 0..5 V <i>Pinout for sensor:</i> H-Pins: Out of the two H pins, one pin is connected to supply and the other to ground A-B-Pins: A pins and B pins are interchangeable. These pins will be tied to the supply voltage Preheat duration minimum 20 seconds Arduino library: ✓</p>
<p>G CO H2 Alcohol (C₂H₅OH) Hydrogen(H₂) Formaldehyde(CH₂O) Alcohol gas NO²</p>	<p>GRV GAS SENS V2</p>		<p>All 4 sensors in one platform: GM-102b (NO²) GM-302b (alcohol gas) GM-502b (Alcohol (C₂H₅OH), Hydrogen(H₂), Formaldehyde(CH₂O)) GM-702b (Carbon monoxide (CO), Hydrogen (H₂))</p>	<p>I²C interface, default address:0x55 VCC: normally 5V GND: GND SCL: Serial Clock Line, interface to I2C SDA: Serial Data Address, interface to I2C Arduino library: ✓</p>

Type of measurement	Name	Pics	Sensors	Description
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="display: flex; gap: 5px;"> <div style="background-color: #c00000; color: white; padding: 2px 5px; font-weight: bold;">G</div> <div style="background-color: #008000; color: white; padding: 2px 5px; font-weight: bold;">T</div> <div style="background-color: #0000ff; color: white; padding: 2px 5px; font-weight: bold;">H</div> </div> <p style="margin-top: 5px;">Temperature Humidity CO²</p> </div>	<p>SCD-30 modul</p>		<p>SCD-30</p>	<p>Pinout:</p> <ul style="list-style-type: none"> - VDD: Supply Voltage (-0.3 V –6.0V) - GND: Ground - TX/SCL: Modbus: Transmission line (Push/Pull with 3V level) I²C:Serial clock(internal 45kΩ pull-up resistor, pulled to 3V, for higher voltages a level shifter is needed) - RX/SDA: Modbus: Receive line (Input must not exceed 5.5V) I²C:Serial data(internal 45kΩ pull-up resistor, pulled to3V, for higher voltages a level shifter is needed) - RDY: Data ready pin. High when data is ready for read-out - PWM: PWM output of CO² concentration measurement - SEL: Interface selectpin. Pull to VDD(do not exceed 4V, use voltage divider in case your VDD is > 4V)for selecting Modbus, leave floating or connect to GND for selecting I²C <p>The default I²C address of SCD30 is 0x61</p>

Software example

The easiest way to find the example program for the current sensor is in the Arduino program in the "Library Manager".

Example to MQ-3 sensor to Arduino Uno



Arduino pin	Modul pin	Description
5 V	Vin	power supply can be 5V
GND	GND	-
D2	DO	Digital (alarm) signal from modul
A5	AO	Analog measuring value (0..5V)

gas, sensor, i2c, onewire, communication, MQ-3, MQ-4, MQ-5, MQ-6, MQ-7, MQ-8, MQ-9, MQ-135, GM-102b, GM-302b, GM-502b, GM-702b, alcohol, ch4, natural gas, smoke, lng, co, co2, lpg, h2, iso-butane, nox, nh3, benzene, town gas, formaldehyde, propane, humidity, temperature, voc, GRV GAS SENS V2

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